Intuition and its Role in Strategic Thinking

by

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Abstract

Even though intuition is recognized as imperative in strategic thinking management literature is surprisingly silent on the issue. This inquiry thus provides an historical and hermeneutic review of philosophical, psychological and management theory on intuition. It reveals that philosophers conceive intuition as rational while psychologists tend not to. Philosophers do so primarily because intuition is anchored in Ideas, Forms and Archetypes, which are perceived as *a priori* laws governing and conditioning all existence. The argument is that intuition is the ontological foundation for any normative theory of rationality. Implications for the rationality debate are discussed.

Three levels of intuition are discerned and contrasted with analytical thinking. The first and second levels correspond to intuitions from the personal and collective unconscious experience respectively. They can be either introverted or extraverted. The third level corresponds to what some philosophers call the non-dual, integral state of mind.

An empirical study including personal interviews with 105 Norwegian top managers indicate that in strategic thinking more emphasis is put on intuition than analysis, especially in exploration of new terrain and technology. They define intuition primarily in accordance with level one. In describing its key features they focus on foresight, new ideas and synthesis. Finally Myers Briggs Type Indicator® was applied, revealing that they have a strong personality preference for intuition.

Key words: Intuition, Analysis, Rationality, Strategic Thinking.

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Gisle R. Henden
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1 INTRODUCTION

1.1 Theoretical Rationale and Objectives

Why is it that philosophers define intuition as rational and superior to analytical thinking while psychologists tend not to? Anyone acquainted with the heuristics and biases literature has noted that intuition is conceived as a largely unconscious, biased, automatic and effortless cognitive process.[1] Those familiar with philosophy know that here intuition is considered supreme intelligence and according to Plato the apprehension of it, is rather to be thought of as a revelation which can only follow upon a long intellectual training.[2] Indeed this is an intriguing issue. It is so to speak a Copernican reversal in our history of epistemology. The objective of this inquiry is to painstakingly track *the evolution of this elusive concept* from its origins to modern day folklore and in this way address the question; *what is intuition*?

More specifically I start by carving out the rationale applied by the philosophers revealing that they provide a substantial body of theory on intuition. Being equipped with their coherent view on intuition, it is confusing to find a differing and fragmented view in psychology. Osbeck notes: "it suffers from vague and multiple uses of the term, association with diverse experimental phenomena, and from minimal effort to integrate these in a consistent way."[3] No wonder management theory is silent on the issue. *The problem* however is that top managers recognize intuition as pivotal in strategic thinking and decision making. An exploratory study aiming at *conceptual clarification* may thus usefully inform the field of strategy. The theoretical inquiry is thus to serve also as a separate contribution.

Intuition in Philosophy

The structure of the first chapter then is this: In each paragraph there are three main issues that I work at. The first issue is the definition of intuition. This will be elaborated at some length. The second and equally important issue is the distinction between analytical and intuitive thinking. As this is indeed an intricate matter I do not intend to contribute in the debate. Within the scope of this thesis there is little space for it. Rather I try in a *hermeneutic* spirit to present one authentic view, which apparently is properly justified. Finally, as science is characterized by a distinct methodology it is of relevance to see how these two orientations of mind are anchored in different methods.[4] Concerning the choice of authors I have diligently scrutinized the field of philosophy aiming at the authorities on the subject. There are others as well that could add a point or two. However, in considering the limitations of this thesis we are probably well off with Plato, Kant, Bergson and the Buddhist doctrine.[5] The table below summarizes their methods.

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[1] Gilovich, Griffin, Kahneman, 2002, p. 51. Stanovich & West, 2000, p. 658, Epstein, 1996, p. 390.
[2] Cornford, 1955, p. 206.
[3] Osbeck, 1999, p. 229. See also Hogarth, 2001, p. 4-6.
[4] Nachmias, 1996, p. 3.
[5] Spinoza, Descartes, Husserl, Croce and Whitehead would be other relevant contributors.

Methods of;	*Rational Intuition*	*Analytical Thinking*
Plato	Dialogue	Dianoia
Kant	Synthesis	Analysis
Bergson	Metaphysical Science	Physical Science

Intuition in Psychology

As Jung is the only psychologist who has provided a proper theory of intuition, this third chapter starts off with his contribution. He did discover very interesting aspects of both the personal and collective unconscious and because these repositories are claimed to be the main domains of interest for intuition his account is of relevance to this study. In accordance with Jung then and the core argument of the philosophical account three levels of intuition are discerned. This is suggested as a main theoretical contribution of the thesis.

	Personal Unconscious	*Collective Unconscious*
Introverted Intuition	Level One	Level Two
Extraverted Intuition	Level One	Little or no Awareness
Integral Intuition	Level Three	Level Three

Then the historical and chronological account is taken one step further focusing on the more recent works on intuition. They include dual process theories. In many ways dual process theories are a reversed reflection of the philosophical distinction between the analytical and intuitive state of mind, in the sense that now controlled, analytical thinking is considered superior. Such an elongated frame of reference aids us in delineation and validation of constructs to be applied in the empirical research.

Intuition and Rationality

Epistemology and strategic thinking are intrinsically related to the issue of rationality. Much research has demonstrated that human responses deviate from the performance deemed normative according to various models of decision-making and rational judgment. This gap between the normative and the descriptive can be interpreted as indicating systematic biases in human cognition. However, Stanovich and West suggest four alternative explanations that preserve the assumption that human behaviour and cognition *is* largely rational.[6] They posit that the gap is due to performance errors, computational limitations, the wrong norm being applied by the experimenter, and different construal of the task by the subject. In this fourth chapter I go along with Stanovich & West and work on the third interpretation namely that the wrong norm is applied. The argument in brief is that intuition is *the ontological foundation for any normative theory of rationality*. Thus I advocate that our normative view of rationality and strategic thinking can benefit from a better understanding of intuition and by the method of *intuitive equilibrium*.

Intuition in Strategy

[6] Stanovich & West, 2000, p. 645, 649.

Chapter five starts with a definition of strategic thinking. Apparently, strategic thinking is a unified perception revealing a unique and consistent set of activities propelling the company into what it is to be. It is context-rich in the sense that it is anchored in both internal and external analysis. When key aspects of strategic thinking are compared with those that define intuitive thinking intrinsic similarities are discovered. Secondly strategic decision-making and bounded rationality are discussed. March's work on logic of consequence and appropriateness resembles aspects of the distinction between analytical and intuitive thinking as well as the one between reasoning system one and two elaborated in dual process theories. Finally, in their comprehensive coverage of the strategy field de Wit & Myer ask: what is the fundamental nature of strategic thought processes? They emphasize analytical and intuitive cognition without providing any theory on intuition.[7] Thus, right here the current work may prove its worth.

1.2 Empirical Rationale and Objectives

Getting a product to market a few weeks earlier, responding to customer inquiries a little bit faster, squeezing another penny out of cost, improving quality one small step further, capturing another point of market share, these are the obsessions of managers today according to Porter, Hamel and Prahalad.[8] If this is correct there may be little to gain from further increase in *operational efficiency*. How then should we proceed further? One suggestion is to understand the nature of intellectual capital and *how to think*. While the notion of *strategic thinking* has been increasingly used in the literature over the past two decades it has up to the 1990's been applied mainly in generic terms, and thus without a specific meaning.[9] However, Mintzberg's work is illustrative of a growing line of research efforts where the term is not merely a catchall for all sorts of notions about strategic management.[10] Rather, he approaches strategic thinking as a particular way of thinking with specific characteristics. He claims that strategic planning is an analytical process with the aim to program already identified strategies. The result is a plan. Strategic thinking on the other hand is a process of *intuitive* synthesis, where the outcome is an integrated perspective of the enterprise. Eisenhardt & Zbaracki argue that strategists do rely on a mixture of analysis and intuition and conclude that: "studying intuition is a way to create a more realistic view of how strategic decision makers actually think."[11]

In brief, *the research problem* is that even though intuition is recognized as imperative in strategic thinking, management literature is surprisingly silent on the issue. I thus had to look elsewhere. Unfortunately, the situation is similar in psychology. Here *conceptual development* remains meager and thoroughly elusive. Shirley & Langan-Fox in their review of the literature find that "researchers and scholars do not agree on what intuition actually means and bring differing perspectives to its study from many disciplines."[12] Hill observes that aside

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[7] De Wit & Meyer, 1998, p. 70-75.
[8] Hamel & Prahalad, 1994, p. x. Porter, 1998, p. 43, 59.
[9] Porter, 1980, 1985. Generic strategies can never delineate what is *unique* to the individual firm.
[10] Mintzberg, 1994, p. 273-274, 291. See also de Wit & Myer, 1998, p. 69, Hamel & Prahalad, 1994, Porter, 1998, Papadakis & Barwise, 1998, Fredrickson, 1985, 1986, and McGinnis 1987.
[11] Eisenhardt & Zbaracki, 1992, p. 33. See also Eisenhardt, 1989 and 1999.
[12] Shirley & Langan-Fox, 1996, p. 563. Osbeck, 1999, p. 229, Bastick, 1982, p. 8-9, Fishbein, 1987, p. ix, 3, Baylor, 2001, p. 243, Hogarth, 2001, p. 5.

from the works of Carl Jung there are extremely few references to intuition in the psychological literature.[13] In trying to explain these problems, Osbeck emphasizes the widespread tendency to ignore or misrepresent the philosophical heritage of intuition.[14] Thus we are not only justified in borrowing from philosophy but also forced to. The research problem is thus focused in the question: *What is intuition*?

Theory construction is therefore the primary research objective. I come at this objective from two approaches. One is a rather thorough cross-disciplinary *theoretical inquiry* of intuition aiming at *conceptual clarification* and the other is an empirical study. The former is also to serve as a separate contribution. Concepts are the most critical element in any theorizing because they guide what is captured.[15] As the literature on the issue is rather scarce and fragmented, an historical and hermeneutic approach is conducted. The theoretical inquiry and review is two-fold. The first issue of concern is *how intuition is defined in philosophical, psychological and management theory*. What is intuition? It is a question that has intrigued philosophers and psychologists alike from the very origin of their traditions. Usually intuitive thinking is contrasted with discursive or analytical thinking and this will be my approach as well. The ambition *is not* to uncover and discuss the numerous weaknesses of intuition. This is already properly done by a number of excellent researchers.[16] Rather, the intent is to *explore the concept*. In this way, the aim is to delineate main aspects, and valid dimensions which may facilitate the empirical research. Secondly, I discuss how the concept of intuition relates to rationality. The puzzling fact discovered is that philosophers conceive of intuition as rational and superior to analytical thinking while psychologists tend not to.

The other approach of this work is an exploratory empirical study, which is three-fold. First, I interviewed a sample of 105 Norwegian top managers from the private sector about *how they perceive intuition and its role in strategy*. Interpreting their replies, applying the philosophical, psychological and management theory lenses, was undertaken to facilitate further refinement of the concept. Second, *I tested certain tentative and preliminary aspects of the concept* considered relevant in this managerial context. This was done by a cross-sectional study in which the same 105 respondents were asked to both score and rank the items of an intuition and analysis scale with respect to two different decisions of their own. That is, they were asked to evaluate their emphasis on intuition and analysis and the corresponding decision quality. In order to have multiple measures, they finally completed the Myers Briggs Type Indictor® which indicates whether they have a personality preference for intuition in perception and judgment. Given the research problem the empirical study also aims at a contribution to our knowledge of *how top managers think about their intuitive and analytical thinking in strategic decision-making.*

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[13] Hill, 1988, p. 138. See also Westcott, 1968, p. 32.
[14] Osbeck, 1999, p. 229. The reference to philosophy is limited to one sentence in Hogarth, 2001 p. 15.
[15] Ghauri et al. 1995, p. 17.
[16] Dawes et al. 1985, p. 1671. Kahneman, et al. 1985, p. 416. Hammond, et al. 1997, p. 144.

The four research questions then are:

1 How is intuition conceived in philosophical, psychological and management theory, and how is it related to normative rationality?

2 How are intuition and its role in strategic thinking perceived by Norwegian top managers?

3 Do Norwegian top managers have a personality preference for intuition as indicated by Myers Briggs Type Indicator®?

4 Is intuition more or less emphasized compared with analysis in strategic thinking and decision making?

2 INTUITION IN PHILOSOPHY

2.1 Introduction

In this chapter, we find a consistency in how philosophers have treated intuition. The intricate epistemology of European philosophy turns on the distinction between intuitive and analytical thinking. In the succeeding brief exposition we find, that without exception the intuitive state of mind is perceived as superior to the analytic, discursive, dualistic state of mind. Slightly different arguments are provided but essentially, they all agree in that intuition gives access to the intelligible world of pure reason. Thus, they all define it as rational and intellectual while analytical thought is seen as relative, incomplete and fragmented. Philosophers do so primarily because intuition is anchored in Ideas, Forms and Archetypes, which are perceived as *a priori* laws governing and conditioning all existence. The coherency discovered, equip us with a rather strong bias when we in psychology find a different view. In psychology, the main tendency is to treat intuition as some sort of unconscious, automatic and biased processing devoid of proper rational qualities. This controversy may have implications for the rationality debate.

In each paragraph of this chapter, I work at three main issues. The first issue is the definition of intuition. It is elaborated at some length. The second and equally important issue is the distinction between intuitive and analytical thinking. As this is indeed an intricate matter, I do not intend to contribute in the debate. Within the scope of this thesis, there is little space for it. Rather, I try in a *hermeneutic* spirit to present one authentic view, which apparently is properly justified. Finally, it is of relevance to see how these two orientations of mind are anchored in a method. For Plato it is *dianoia* and *dialogue*. For Kant it is the *analytic* and *synthetic* method and for Bergson it is the *scientific* versus the *metaphysical* method. Concerning the choice of authors, I have diligently scrutinized the field of philosophy and psychology, aiming at the key authorities on the subject. There are others as well, that could add a point or two. Nevertheless, in considering the obvious limitations this philosophical account is subdued to in this thesis, we are probably well off with Plato, Kant, Bergson and the Buddhist doctrine.[17]

A brief synopsis then, may prepare the reader and facilitate an understanding of the somewhat difficult arguments to come. Plato is arguing that the primary weakness of the analytical or discursive intellect is that it is compelled to employ *assumptions* and because it cannot rise above these does not travel upwards to a first principle. It starts from *unquestioned* assumptions, i.e. postulates, axioms, definitions, and reasons from them deductively down to a conclusion. The premises *may* be true and the conclusions may follow but the whole structure hangs in the air until the assumptions themselves are shown to depend on an unconditioned principle. Rational intuition moves *in the other direction*, from an assumption up towards a principle, which is not hypothetical. In doing so a proportion is discovered, in which the visible world has been divided. It is corresponding to degrees of reality and truth, so that the *likeness* stands to the *original* in the same ratio as the sphere of appearances to the sphere of knowledge.

[17] Spinoza, Descartes and Husserl are other main contributors.

In his delineation of *space* and *time* as Forms of pure or rational intuition, Kant claims that intuition is characterized by being a necessary, infinite, innate, subjective, co-operative and *a priori* representation. Furthermore, it is a singular whole preceding any part and with immediate representations in it not under it. Intuition is contrasted with the main product of the discursive intellect, conception. According to Kant, concepts mediate and generalize. It is a symbolic representation of a class or genus, and refers to features and marks that several things have in common.

For Bergson the situation is similar. He contrasts intuition with the analytical talents of the discursive intellect. According to him, they are not different cognitive systems but two sides of one thinking activity. An activity powered by the spirit. The thinking activity goes in one direction when it applies a discursive, conceptual, analytic quantitative and external perspective and in the opposite direction when it sympathizes with the qualitative and *enduring psychological* reality. Bergson thus copies Plato who defines rational intuition as the eye of the psyche or *soul*. The fixed concepts of the discursive intellect may be extracted by our thought from mobile reality but there are *no means* of reconstructing the mobility of the real with fixed concepts. The discursive intellect is therefore bound to *misunderstand the fact of motion and change*. For Bergson then, intuition is primarily occupied with metaphysics or spiritual science, while the discursive intellect is primarily employed in the study and analysis of matter and physical science.

This latter view is elaborated in Buddhist doctrine. Here it is maintained that when the mind is *oriented* solely towards the empirical, towards the data provided by the six senses, and applies the discursive intellect, it comprehends conceptual, differentiated, analytic, explicit knowledge and evidence.[18] When directed towards the eight and ninth class of consciousness, achieved by a turning away from the outside world of objects, to the inner world of enduring oneness and completeness, the energy that sustains their organic unity is intuitively discovered. The claim is that this results in liberation and autonomy. Where Buddhism is clearer, than the other exponents, is in its emphasis on intuition as a stabilizing and *central point of balance*. It is upholding the *coherence* of its contents by being the center of reference. The intuitive state of mind is thus a mixture and a meeting point between the first six senses or classes of consciousness on the one side, and class eight and nine on the other. The latter correspond to Jung's notions of the personal and collective unconsciousness. It is their common ground, with no body of its own and it is in this sense it is an *immediate and singular synthesis*, as Kant argues. In this chapter, it is thus indicated that it is reasonably clear that the mind has a duality to it. It is also argued that it is intuition that facilitates a transcending of its more severe limitations.

[18] In Buddhism, thoughts are recognized as objects of perception. Thus, they define this as a sixth sense.

2.2 Socrates and Plato 427-347 BC

Greek philosophy and especially the Platonic-Aristotelian tradition distinguished between an ordinary inferential kind of thought often called *discursive thought*, and a kind of thought, which is non-discursive or intuitive. The usual term for the former in Greek is *dianoia* for the latter *nous* and *noesis*. It goes back to some of the most famous passages in Plato and Aristotle such as the divided line in the *Republic* and the *Metaphysics XII*, which discusses God's thought. Then the Neoplatonists combined Plato and Aristotle, added certain features of their own and thus created the notions that are listed below. Emilsson argues that the distinction lived on throughout the Middle Ages and to some extent beyond even if it eventually ceased to be in ordinary use. Aspects of it played a role for some of the great early modern philosophers. Descartes, Pascal and Spinoza are some examples. The concept of intuition is very much behind Spinoza's notion of seeing things *sub specie aeternitatis*.[19] Likewise, there is indeed something of this ancient distinction at work in Kant's notions of intuition and understanding.

Of the many characteristics attached to intuition only one has survived in mainstream Anglophone philosophy, namely the notion of *non-inferential* knowledge. Though, the idea that there is some foundation of knowledge which itself is not inferred from anything else has of course been fiercely attacked, according to Emilsson. In continental philosophy matters are more complicated. Some other aspects of intuition survive there, partly through German idealism.[20] Werner Beierwaltes and others have shown it to be directly influenced by Neoplatonism as well as by Plato and Aristotle and partly through Bergson who drew directly on Plotinus.[21] Emilsson also notes that various other aspects of the ancient intuition now are making a comeback into philosophical currency for instance through the holism of Quine and Davidson. The ancient notions then as they appear in Plotinus are listed below.[22] Here I will not attempt to discuss them at any length though we will return to them later on.

Intuitive Thinking	***Discursive Thinking***
Non-inferential	Inferential
A-temporal	Temporal
Grasps all at once (*totum simul, athroos*)	Grasps objects piecemeal
Non-propositional	Propositional
Non-representational	Representational
Infallible	Fallible

The enduring significance of Platonic philosophy is unquestioned. Some will have it that almost everything written in European philosophy is, footnotes to Plato.[23] Its main tenet, have survived to this very day and is vitalized by modern physics. Roger Penrose, claimed to be the greatest mathematical physicist alive writes; “To me the world of perfect forms is primary (as was Plato’s own belief) – its existence being almost a logical necessity – and *both* the other two worlds are its shadows.”[24] David Bohm agrees; “it is commonly believed that the content

[19] Emilsson, 2000, p. 1. See also Parkinson, 2000, p. 287-309, Gosling, 1973 and Tredennick, 1933.
[20] To Kant idealism is every system, which maintains that the sensible world does not exist in the form in which it presents itself to us. This position is typified in Kant’s mind, by e.g. Plato and Descartes, who are rationalists.
[21] Emilsson, 2000, p. 1.
[22] Ibid. See also Resnik & Orlandi, 2003, p. 305.
[23] Vlastos, 1975.
[24] Penrose, 1994, p. 414-417. He refers to the mental and physical world.

of thought is in some kind of reflective correspondence with 'real things', perhaps being a copy, or image, or imitation of things, perhaps a kind of 'map' of things, or perhaps (along the lines similar to those suggested by Plato) a grasp of the essential and innermost forms of things."[25] In discussing implications of quantum physics Popper concludes that: "As with Plato the emphasis upon antecedent causes and geometrical cosmology is preserved."[26] Platonic epistemology then *stress that rational intuition is the supreme state of mind* and this is coherent with Kantian and Bergsonian doctrine, which will be elaborated in the succeeding paragraphs. Only two issues will be mentioned here: First, a very brief note on the divided line presented in the *Republic* and then an equally brief note on the unique world argument from *Timaeus*. The divided line is the backbone in Plato's epistemology and it illustrates the relationship between rational intuition and discursive thinking. The unique world argument is utterly intuitive and it is thus instrumental in revealing additional aspects of Plato's view on intuition. The latter is included for a second purpose. The intent is that it will facilitate my interpretation of Kant's account on intuition. The synopsis given is derived mainly from the works of Francis M. Cornford.[27]

The Divided Line

In Plato's view, there are *five stages of cognition*, which are illustrated by a divided line and in the famous allegory of the cave. The realm of sensible appearances and shifting beliefs is contrasted with the realm of the intelligible or the eternal and unchanging Forms. The former corresponds to some degree with Kant's notion of *a posteriori* and the latter to *a priori*. Indeed, it also resonates with Bergson, and his distinction between physical and metaphysical science.[28] Moreover, we might say that elements of this classical distinction, is still with us, but now turned upside down in the notions of conscious and unconscious. That is, intuition used to be equivalent with supreme rationality and intelligence while it is now often related to unconscious, biased, irrational and automatic processing. This 'Copernican reversal' in our history of epistemology is an issue we will return to in the chapter on intuition in psychology. The vertical line then, is divided into two main parts whose *inequality* symbolizes that the visible world has a lower degree of reality and truth than the intelligible.[29] The two parts also correspond to two faculties of mind: *Knowledge* of the real and *Belief* in appearances, both of which differ in clearness and certainty.[30]

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[25] Bohm, 1981, p. 53. See also Bohm, 1993, 1994, Hannay, 1990, Jahn, 1987 and Hawking, 1988.

[26] Popper, 1989, p. 189, 206. See also Heisenberg, 1971, 1979, Churchland, 1984 and Capra, 1996.

[27] Cornford and Taylor are recognized as main authorities on Plato's cosmology. See Taylor, 1928.

[28] Kolstad, 1998, p. 110. For Bergson, the scientific method primarily requires use of the intellect, while intuition is especially suitable when the metaphysical method is in use. The former is inclined to study the material, the latter the spiritual.

[29] Each part is then subdivided in the same *proportion* as the whole line. If imagining is A, belief B, discursive thinking C, and knowledge D, we have that A+B : C+D = A:B = C:D.

[30] Cornford, 1955, p. 176. See also Shorey, 1935, 509D-511E, p. 104-117. The lower part of the line is by Plato first called the visible, but later the field of *doxa*. Both *opinion* and *belief* are inadequate, he argues. "*Doxa* and its cognates denote our apprehension of anything that *seems* to exist, like sensible appearances and phenomena." It also includes that which *seems* to be true like opinions or beliefs, and what *seems* right e.g. legal and deliberative decisions, and the many conventional notions of current morality, which vary from place to place and from time to time.

Objects	*States of Mind*	
THE GOOD	RATIONAL INTUITION	*Noesis*
FORMS	KNOWING	*Episteme*
MATHEMATICAL OBJECTS	DISCURSIVE THINKING	*Dianoia*
VISIBLE THINGS	BELIEF	*Pistis*
IMAGES	IMAGINING	*Eikasia*

Imagining

Specifically then, the lowest form of cognition is called *eikasia*. "The word defies translation, being one of those current terms to which Plato gives a peculiar sense, to be inferred from the context. It is etymologically connected with *eikon*, which means image or likeness, and with *eikos*, which means likely. Thus, it can mean likeness (representation), likening (comparison) or estimation of likelihood (conjecture)." Cornford suggests *imagining* as the least unsatisfactory rendering. "It seems to be the wholly unenlightened state of mind, which takes sensible appearances and current moral notions at their face value." This state of mind is comparable to those in the cave who see only images of images, he argues.[31] Plato's exact wording may provide additional information: "One of the two sections in the visible world will stand for images. By images I mean first shadows, and then reflections in water, or in close-grained, polished surfaces, and everything of that kind."[32]

Belief

The higher section of physical appearances corresponds to *common-sense* belief or *pistis*. "It is a belief in the reality of the visible and tangible things commonly called substantial. In the moral sphere it would include 'correct beliefs without knowledge'." True beliefs are sufficient guides for action, but are insecure until based on knowledge of the reasons for them, Cornford points out.[33] Again, Plato's own words are: "Let the second section stand for the actual things of which the first are likenesses, the living creatures about us and all the works of nature and of human hands. Will you also take the proportion in which the visible world has been divided as *corresponding* to degrees of reality and truth, *so that the likeness shall stand to the original* in the *same ratio* as the sphere of appearances and belief to the sphere of knowledge."[34] Here it is made explicit to us that there is a similarity and correspondence in and between *all* levels of reality. The challenge for the philosopher is for her to intuit this.

Discursive Thinking

The focus of higher intellectual training then, is to *detach the mind from individual appearances*, and to familiarize it with the *universal* and the *a priori*, to use Kantian terminology. Higher education is to facilitate an escape from the prison of *physical appearances* by training the intellect, first in mathematics and then in moral philosophy. The use of visible diagrams and mathematical models as imperfect illustrations of the Forms is instrumental *as a bridge* carrying the mind across from the visible to the intelligible, Cornford argues. The mind must learn to *distinguish* between the two. Each branch of mathematics starts from *unquestioned* assumptions i.e. postulates, axioms, definitions and *reasons* from

[31] Ibid. p. 217.
[32] Ibid. p. 219.
[33] Ibid. p. 217-218.
[34] Ibid. My italics.

them, *deductively*. The premises *may* be true and the conclusions *may* follow but the whole structure hangs in the air *until* the assumptions themselves are shown to depend on an *unconditioned* principle.[35] Such a state of mind is called *dianoia*, which is the ordinary word for thought or thinking. For Plato *dianoia* is reasoning from unquestioned premises to conclusion, it is equivalent to *discursive* thinking and it falls short of perfect knowledge, Cornford argues.[36] It is similar to Kant's *verstand* and it is a point we will return to later.

Because these historical sections on discursive thinking, knowledge and intuition are of special relevance to our reading of Kant and Bergson, as well as for later chapters, the entire argument is included. In considering how to divide the part, which stands for the intelligible world, Plato delineates three sections. In the first section of discursive thinking, "the mind uses as images those actual things which themselves had images in the visible world and it is compelled to pursue its inquiry by *starting from assumptions* and travels *not up to a principle but down to a conclusion*. In the second section of knowledge the mind *moves in the other direction*, from an assumption up towards a principle which is not hypothetical; and it makes *no use of the images* employed in the other section but only of Forms and conducts its inquiry solely by their means."[37] When we later turn to Bergson, we will see that he is advocating a similar view. He states that intuition and the discursive activity of our intellect are not different organs but two sides of the same thinking activity. An activity powered by the spirit. The thinking activity goes in one direction when it applies a discursive, conceptual, quantitative, analytic and external perspective and in the opposite direction when it intuitively sympathizes with the metaphysical and psychological reality. Plato also gives an example illustrating how discursive thinking works:

"You know, of course, how students of subjects like geometry and arithmetic begin by postulating odd and even numbers, or the various figures and the three kinds of angle, and other such data in each subject. These data they take as known; and having adopted them as assumptions, they *do not* feel called upon to give any account of them to themselves or to anyone else, but treat them as *self-evident*. Then, starting from these assumptions, they go on until they arrive, by a series of consistent steps, at all the conclusions they set out to investigate. You also know how they make use of visible figures and discourse of them, though what they really have in mind is the originals of which these figures are images: they are not reasoning, for instance, about this particular square and diagonal which they have drawn, but about *the* square and *the* diagonal; and so in all cases. The diagrams they draw and the models they make are actual things, which may have their shadows or images in water; but now they serve in their turn as images, while the student is seeking to behold those realities *which only thought can apprehend*. This then, is the class of things that I spoke of as intelligible, but with two qualifications: first, that the mind, in studying them, is compelled to *employ assumptions*, and because it cannot rise above these, *does not travel upwards to a first principle*; and second, that it uses as images those actual things which have images of their own in the section below them and which, in comparison with those shadows and reflections, are reputed to be *more* palpable and *valued* accordingly."[38]

Knowing

Dianoia suggests discursive thinking, or reasoning from unquestioned premises to conclusion, whereas *noesis* is constantly compared to the *immediate* act of vision and suggests rather the *direct intuition* or apprehension of its object, Cornford argues.[39] The method or technique of discursive thinking is contrasted with the one of true knowledge and rational intuition, which is *dialogue*. Dialogue then, is a philosophic conversation carried on by question and answer,

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[35] This principle may be conjectured to be *Unity* itself, Cornford argues.
[36] Cornford, 1955, p. 218.
[37] Ibid. p. 219.
[38] Ibid. p. 220. My italics.
[39] Ibid. p. 218.

and seeking to render, or to receive from a respondent an *account* of some *Form*.[40] In this *participatory* state of mind visible illustrations are no longer available and the movement is not downward, deducing conclusions from premises, but upward *examining the premises themselves* and seeking the ultimate principle on which they all depend. It is suggested that if the mind could ever rise to grasp the supreme Form, The Good, it might then descend by a deduction confirming the whole structure of moral and mathematical knowledge. This state of mind is called rational intuition or intelligence and knowledge in the full, perfect sense, that is, *episteme*.[41] Plato maintains that: "Then by the second section of the intelligible world you may understand me to mean all, that unaided reasoning apprehends by the power of dialogue, when it treats its assumptions, *not as first principles*, but as *hypotheses* in the literal sense, things 'laid down' like a flight of steps up which it may mount all the way to something that is not hypothetical, the first principle of all; and having grasped this, may turn back and, holding on to the consequences which depend upon it, descend at last to a conclusion, never making use of any sensible object, but only of Forms, moving through Forms from one to another, and ending with Forms."[42] This sentence is signifying a main position in European epistemology, namely that intuition is to be understood as a state of mind able to achieve an intelligent and rational comprehension of the intimate interplay of *Reason* and that which comes about of *Necessity*. In yet other words it perceives the intrinsic relationship between spirit and matter.

As *dialogue* is pivotal a fuller account could be appreciated.[43] However, here we must limit ourselves to Plato's comments. The *defect* of the studies occupying *discursive thinking* is that the various branches *are not seen synoptically as one connected whole*. The object of dialogue is to secure a final confirmation and a synoptic view of all mathematical knowledge in *connexion* with *the whole of reality*, Cornford argues.[44] We can relate this to Kant's *synthetic method* and to Bergson's *metaphysical method*, another point that we will hold in reserve. Plato inherited this method from Socrates. Normally the respondent is putting forward his hypothetical attempts at *analysis* or *definition* of the *concept* in the form of necessary and sufficient conditions that are thought to capture *all* and *only instances* of the concept in question. Socrates then refutes the definition by pointing out various *counterexamples*. That is situations, where the proposed definition yields a result that conflicts with our intuition about the concept in question. In this way Socrates is facilitating improvement of the definition. *Justice* for example, is defined as "nothing more nor less than telling the truth and paying back anything we have received." Socrates responds that: "Suppose, for example, a friend who had lent us a weapon were to go mad and then ask for it back, surely anyone would say we ought not to return it. It would not be 'right' to do so; nor to tell the truth without reserve to a madman."[45] It would be *un*just. After a proposed analysis or definition is overturned, dialogue continues until the definition is immune to intuitive counterexamples. On a side-note we should add that in this method is seen the seeds of many connotations attached to intuition for instance its global, unique, absolute, and integral character. Also, in the chapter on intuition and rationality it is argued that the later Plato refines this method in such a way that it differs slightly from the Socratic approach.

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[40] Ibid. The higher method is in the text called *Dialectic*, a word, which since Hegel has acquired misleading associations. In the *Republic*, it simply means *dialogue*, Cornford argues.
[41] Ibid. p. 218-219.
[42] Ibid. p. 221.
[43] Bohm, 1996. See this book for elaboration of *Dialogue*.
[44] Cornford, 1955, p. 245.
[45] Ibid. p. 7.

Plato then argues that: "At any rate, no one will maintain against us that there is any other method of inquiry which systematically attempts in every case to grasp the nature of each thing as it is in itself. .. . When the eye of the soul is sunk in a veritable slough of barbarous ignorance, this method gently draws it forth and guides it upwards. .. . It is not the *what kind* but the *what* that the soul seeks to know."[46] Here we learn that Plato is more optimistic than Kant is, in terms of *knowing the thing in itself*. It is also clear that it is with *the eye of the soul* that we can intuit it. *This organ of perfect knowledge* must be *turned around* from the world of physical appearances together with the entire soul, until the soul is able to endure the contemplation in the brightest region of being and the intelligible world.[47] *Episteme*, or perfect knowledge as revealed by rational intuition is thus to be found by looking primarily not out but in to the *psychological* reality, a point emphasized by Bergson and Jung as well.

Rational Intuition

As a further refinement of his view on perfect intelligence and utmost reality Plato elaborates on the Good as *the highest object of knowledge*. However, this upper section of the intelligible world is not easily unveiled. On the contrary it represents the philosopher's stone and Socrates refutes to define it. "The apprehension of it is rather to be thought of as a revelation which can only follow upon a long intellectual training."[48] According to Cornford this supreme Good *makes the world intelligible* just like a work of human craftsmanship becomes intelligible when we see the *purpose* it is designed to serve. "As thus illuminating and accounting for the rational aspect of the universe the Good is *analogous* to the Sun, which, as the source of light is *the cause of vision* and of visibility and also of all mortal existence."[49]

Plato starts his peculiar line of reason by pointing to the fact that hearing and sound do not stand in need of any third thing, without which the ear will not hear, nor sound be heard. The same is true for all the other senses, except the eyes. "You may have the power of vision in your eyes and try to use it, and colour may be there in the objects; but sight will see nothing and the colours will remain invisible in the absence of a third thing peculiarly constituted to serve this very purpose."[50] By analogy Plato thus alludes to the rationale that in the visible world the Sun stand in the same relation to vision and visible things, as the Good itself bears in the intelligible world to rational intuition and intelligible objects. The next step in his reasoning is the crucial one of the mind's *orientation*. "When you look at the colours of things irradiated only by the fainter luminaries of the night the eyes are dim. When the Sun is shining, the same eyes see distinctly." This comparison is then applied to the soul. "When its gaze is fixed upon an object irradiated by truth and reality, the soul gains understanding and knowledge and is manifestly in possession of intelligence. But when it looks towards the twilight world of things that come into existence and pass away, its sight is dim and it has only opinions and beliefs which shift to and fro, and now it seems like a thing that has no intelligence."[51]

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[46] Ibid. p. 248. My italics.

[47] Ibid. p. 227. "There may well be an art, whose aim would be to effect this very thing, the conversion of the soul, in the readiest way; not to put power of sight into the soul's eye which already has it, but to ensure that, instead of looking in the wrong direction, it is turned the way it ought to be." See also Noddings & Shore, 1984.

[48] Ibid. p. 206. This being in flat contradiction to the Heuristic and bias tradition where intuition is considered a rapid, automatic, biased, effortless cognitive process. See Gilovich, Griffin, Kahneman, 2002, p. 51, 436-37.

[49] Ibid.

[50] Ibid. p. 212.

[51] Ibid. p. 213.

Having established the importance of right orientation of the mind, Plato concludes that: "This, then, which gives to the objects of knowledge their truth and to him who knows them his power of knowing, is the Form or essential nature of Goodness. It is the cause of knowledge and truth; and so, while you may think of it as an object of knowledge, you will do well to regard it as something beyond truth and knowledge and, precious as these both are, of still higher worth."[52] Moreover, the final and subtle point is this: "The Sun not only makes the things we see visible, but also brings them into existence and gives them growth and nourishment; yet he is not the same thing as existence. And so with the objects of knowledge: these derive from the Good not only their power of being known, but their very being and reality; and Goodness is not the same thing as being, but even beyond being, surpassing it in dignity and power."[53] We may thus suggest that in Plato's view rational intuition is functioning a little like the illuminated film lens in a cinema, accompanied as it is by the mind of the producer. In this account we also recognize the many theories about the enlightened mind and the speculations about a 'third eye', first popularised by Descartes who identified it with the pineal gland.

These then, are the essential arguments of the brief epistemology of Plato. However, the allegory of the cave adds some vital information. Unfortunately, there is no room for it here, but we may include a key point emphasized by Thomas Kuhn, in his insightful exposition of scientific revolutions; "Imagine what would happen if he went down again to take his former seat in the cave. Coming suddenly out of the sunlight, his eyes would be filled with darkness. He might be required once more to deliver his opinion on those shadows, in competition with those prisoners who had never been released, while his eyesight was still dim and unsteady. They would laugh at him and say that he had gone up only to come back with his sight ruined; it was worth no one's while even to attempt the ascent. If they could lay hands on the man who was trying to set them free and lead them up, they would kill him."[54]

The Unique World Argument

Every thing in the phenomenal world of appearances is in an incomplete way, *part* of the manifold of Forms, according to Plato. That is, in the Archetypes, to use Jung's terminology. The Forms on the other hand are complete, their reciprocal relation being a well-defined and unambiguous one. *Rational intuition* then, may be understood as an increasing awareness of this *synthetic* or *integral* relationship, a point emphasized by Kant and Bergson, as well. The unique world argument then, serves as perhaps the best example given by Plato, on *how* the world of appearances *participates* in the intelligible world of Being and Forms. If we understand it, we may reveal aspects of the 'true' nature of intuition, as defined by philosophers. We will return to it in the chapter on intuition and rationality.

"What was the living creature in whose likeness he framed the world? We must not suppose that it was any creature that ranks only as a species, for no copy of that which is incomplete can ever be good. Let us rather say that the world is like, above all things, to that Living Creature of which *all other living creatures*, severally and in their families, are *parts*. For that *embraces and contains within itself* all the intelligible living creatures, just as this world contains ourselves and all other creatures that have been formed as things visible. For the god, wishing to make this world most nearly like that intelligible thing, which is best and in every way complete, fashioned it as a *single* visible living creature, containing within itself all living things whose nature is of the same order."[55]

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[52] Ibid. p. 214.
[53] Ibid.
[54] Ibid. p. 225-226. See Kuhn, 1975.
[55] Cornford, 1937, 30C-31B, p. 39-40. My italics.

The argument is full of oddities. We are told that the kind, of which the world is the only instance, is living-thing-in-*general*. The world as a whole is *one* living thing, the World-Animal. Though, it is not any *particular* species or specific *kind* of living thing, it is rather a *singular* whole. This is a point of some importance to my interpretation of Kant, and his definition of intuition as a *singular* representation. Because the world is *one single undivided whole* and a unique copy of that living creature which embraces and contains all other living creatures, it is *both* individual and universal. It is a *synthetic* relationship between its individual traits and its universal traits. It is single, but not separated. It is unique, *and* embedded. It partakes *of* as well as *in*, much like a white wave-crest in a black wave. "The argument is remarkable in the sense that it is one of only a few passages in the Platonic corpus, which deal simultaneously with relations *both* between a Form and its phenomenal representations, *and* between Forms."[56] Forms are portrayed canonically as paradigms and the relation of Form to particular is portrayed canonically as that of *likeness*, or more precisely, as the relation of *original* to *image*. [57] This is also the case in holography, which by Pribram is suggested as a model of how intuition works.[58]

Time

Before we turn to Kant and Bergson, who argue that time and intuition have an intrinsic relationship, though without saying much about time, we should take note of Plato's view. "Time came into being together with the Heaven, in order that, as they were brought into being together, so they may be dissolved together." In virtue then, of this plan and intent of the god, for the birth of Time, the planets were made to define and preserve the numbers of time. Moreover, the planets are living creatures with an intelligent soul, and they are bound together with living bonds. The month comes to be when the Moon completes her own circle and overtakes the Sun; the year, when the Sun has gone round his own circle, it is argued. "The periods of the rest have not been observed by men, save for a few; and men have no names for them, nor do they measure one against another by numerical reckoning. They barely know that the wanderings of these others are time at all, bewildering as they are in number and of surprisingly intricate pattern."[59] With Plato then, we have the somewhat puzzling conclusion, that supreme intelligence and rational intuition is able to look directly at the Sun and contemplate its nature, not as it appears when reflected in water or any alien medium, but as it is in itself, in its own domain. This is achieved by the eye of the soul looking primarily not out on the world of physical appearances but in to the universal domain of Forms.[60] Turning then to Kant who anchors the Forms of Plato *in the individual* as inherent and *innate* Forms that we synthesize with the empirical material provided by the senses, we find ourselves in an individualized version of Plato's more universal approach.

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[56] Mohr, 1985, p. 11-12. Mohr argues that in this passage, Plato's deep intent is to show off the machinery of the Ideal theory. This because he in 33A, only two pages later, achieves his surface aim of showing that the world is unique, on grounds completely independent from, and much less contentious than those found at 30C-31B. There he simply argues that since the demiurge did not leave behind any materials unused in his crafting out of which another world might be formed, the world, which he did form, is necessarily unique. See also Mohr, 1986.

[57] The relevant paragraphs here are 31A and 30C-D. We may relate this passage to what we read on the *Smaragdine Table*, and indicate an Hermetic influence; "True, without error, certain and most true; that which is above is as that which is below, and that which is below is as that which is above, for performing the miracles of the One Thing; and as all things are from one, by the mediation of one, so all things arose from this one thing by adaptation …." Randolph, 1871, p. 1. For a modern discussion, see Gilovich et al. 2002, p. 203.

[58] Pribram, 1971, 1991, 1998. See also Pribram, in Gunter, 1987, p. 171, and Talbot, 1991.

[59] Cornford, 1937, 38C-39E, p. 60. See also Winfree, 1987 and Sorabji, 1983, for a modern exposition of *Time*.

[60] Cornford, 1955, 514A-521B, p. 225. Such an intimate correspondence and interplay between macrocosm and microcosm, was for the Greeks firmly embedded in the art of astrology, and it continued its influence all the way up to Newton and Kepler, who published books on the issue in 1602.

2.3 Immanuel Kant 1724-1804

Bergson is recognized as *the* advocate of intuition in European philosophy, and we will turn to him in a minute. Here it suffices to say that his exposition of intuition, in many ways, is intrinsically related to the notion of *time*. This is also the case with Plato and Kant. In this respect, Bergson is indebted to both. Kant then, is indeed another main proponent of intuition, and no discussion on the subject should leave him out. Kant, as well as Bergson and Plato, supposed that we possess *two distinct cognitive capacities, both of them rational and intellectual*, namely intuition or *anschauung*, and understanding, or *verstand*. *Verstand* is by Kant, defined *only* in its *logical* or *discursive* employment, Kemp Smith and Falkenstein argues.[61] We may thus be correct in suggesting that Kant here is echoing Plato, and his upper part of the divided line. More specifically, I would like to advocate that we interpret Kant's notion of *verstand*, as similar to Plato's discursive thinking, and I intend to make this plausible as we go along. This distinction is the main one in my thesis, and its relevance is reflected in dual-process theories of modern psychology. They are discussed in the succeeding chapter.[62] There are two *Formen der Anschauung* then, namely *time* and *space*, and twelve *Formen der Verstand*, where cause and effect are recognized as the more important ones.[63] Kant's Copernican revolution then, is imposing upon us the idea that these forms are *innate in us* and that *we* in fact, *do synthesise them* with the material provided by the senses. Thus, his epistemology is split into *a posteriori* and *a priori* awareness, where the latter is *independent* of empirical sense confirmation.

Analytic & Synthetic Judgment

Furthermore, he develops the distinction between *analytic* and *synthetic judgment*, where the former is recognized by its *logical* confirmation, e.g. it is necessarily true that either it rains, or it does not. This is analytic and *a priori*, because we do not need empirical confirmation to comprehend that this is true. In principle, all analytical judgment can be verified in this way. Tentatively, we may relate the analytic mode to discursive thinking or *verstand*, and the synthetic mode to intuition. This is in agreement with Bergson. Synthetic judgments then, are much more common and more problematic. The synthetic *a posteriori* judgment is characterized by *not being self-contradictory*. This is of course the case with most judgments. However, a second criteria is involved. *Empirical sense confirmation* is required, in order to establish whether it is a true judgment or not. We can judge that an apple is rotten but only empirical sense confirmation can establish whether this is true or not. That is, the Forms *and* sense confirmation will in this case provide *the synthesis* of three things; namely the Forms, the apple *and* rotten, and in this way confirm or disconfirm the judgment.

These distinctions will be especially relevant when we turn to our discussion of rationality, which by Elster is defined as proper *judgment* or "the capacity to *synthesize* vast and diffuse information that more or less clearly bears on the problem in hand, in such a way that no element or set of elements is given undue importance."[64] In his *thin* theory of rational judgment, *logical* consistency is the only criteria. This corresponds to analytic judgment. In a

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[61] Kemp Smith, 1979, p. 81. Falkenstein, 1991, p. 171-172.
[62] Stanovich & West, 2000, p. 658.
[63] The other *Formen der verstand* are: unity and multiplicity, thing, reality, possibility, negation, being & necessity, contraction, community. The question that we would like to consider is to what degree these Forms are naturally applied by *a discursive intellect*.
[64] Elster, 1983, p. 16. My italics.

succeeding chapter, intuition and rationality will be interpreted in the Platonic and Kantian scheme. The controversial suggestion is that intuition is rational.

The notion of *synthetic a priori* judgment is the more challenging one to Kant, and to most of his readers, we may add. It is also the crux of the matter in his metaphysical deduction of pure reason. Essentially, he argues as already mentioned, that the *Forms* are something *we apply* to *any empirical experience*, and that they must be anchored in us. Our self guarantees that these Forms *can be* applied at all. Furthermore, our self-consciousness *is* a synthesis and a unity in *it-self*. As such, it is in the end also the instrument that facilitates and guarantees *a synthesis* with *any* judgment. In other words, because the unity of our self-consciousness *necessitates* such a synthesis, Kant calls it transcendental. He is of course here borrowing from Descartes. This argument is among the more important ones in the entire history of philosophy and of special relevance to my line of reason. In summarizing then, we have that:

	Synthetic Judgment	*Analytical Judgment*
A priori	Rational Intuition + Unity of self-consciousness	Discursive Thinking
A posteriori	Empirical Intuition	

This two-faculty account of cognition then, or dual processes as modern psychologists will have it, lies at the foundation of Kant's theoretical philosophy. Almost everything he has to say in the *Critique of Pure Reason* presupposes it. However, it is also problematic. "At the outset of the *Critique*, Kant simply assumes the validity of the distinction between *intuition* and *verstand*, without in any way attempting to justify it." In addition, one looks in vain through the Kantian corpus for any explanation that might legitimate it, Falkenstein argues.[65] Even more intriguing, is that Kant does not always draw the distinction in the same way. "Most notoriously, he presents two quite different accounts of intuition, defining it in some places as a *singular* representation, and in others as *immediate* cognition." Recently, this issue has been focused in a number of articles.[66] Though, there is no doubt that *concepts* or *Begriffe* is Kant's name for the representations *the discursive intellect* delivers, and that the distinction between intuition and concept is of utmost importance for understanding Kant's critical philosophy. For as Kant himself claimed: "All the distinctive claims of this philosophy rest on and develop out of a detailed account of the way all our cognition of things requires both intuitions and concepts."[67] Unfortunately, interpreting Kant's distinction between intuition and concept remains a vexed matter.

There are *three issues* then, I will work at. The first issue is Kant's notion of pure, non-sensuous, rational, intuition. Pure here signifies that which is absolutely *a priori* and which *originates from reason itself*.[68] Specifically, I start by delineating Kant's line of argument, when establishing time and space as the two Forms of pure intuition. In this way, we may come fairly close to the nature of pure or intellectual intuition, as perceived by Kant. Another purpose is also involved. In scrutinizing his line of reason, we make explicit key elements in his account of *rationality*. This will equip us with arguments that prove useful later on.[69] The

[65] Falkenstein, 1991, p. 165.
[66] Kelley, 1997, p. 289. He refers to Hintikka 1969, Parson 1969, Thompson 1972, Wilson 1975, Mitscerling 1981, Gram 1982, Gloy 1984, and Kolb 1986. See also Falkenstein 1991, and Smit 2000, p. 235.
[67] Smit, 2000, p. 235. See also Falkenstein, 1991, p. 172, Weathersston, 1991, and Weinberger, 1997.
[68] Kemp Smith, 1979, p. 1-2.
[69] Falkenstein, 1991, p. 172. Intelligence or rationality is by Kant, defined as the *faculty* of a subject, by which it has the power to represent things, which cannot by their own quality come before the senses of that subject.

next step is then to contrast intuition with discursive thinking through its main product, concepts. As this is indeed an intricate matter, I do not at all intend to contribute in the debate. Rather, I try to present one view that apparently is properly justified.[70] Finally, the third issue, which is to be addressed briefly, is Kant's distinction between the analytic and the synthetic method.

Time and Space as Forms of Pure Rational Intuition

Kant's conception of space is given in four arguments. They will be outlined below. Then, his conception of time will follow. This summary is derived directly from Norman Kemp Smith's commentary to *The Critique of Pure Reason*, which authority is widely recognized.[71] Finally, I attempt to extract key characteristics of pure, rational intuition.

1 The first argument is that space is *not an empirical concept*, abstracted from outer experience. "For in order that certain sensations be related to something outside me (e.g. to something in another region of space from that in which I find myself), and similarly in order that I may be able to represent them as outside (and alongside) one another, and accordingly as not only (qualitatively) different but as in different places, the representation of space *must be* presupposed."[72] As a *subjective* form that lies ready in the mind, as a *potentiality*, space *precedes* experience, and powers the *co-operation* and *generation* of it.

2 The second argument is that space is *a necessary representation*, and consequently it is *a priori*. The proof given by Kant is that it is impossible to imagine the absence of space, though it is possible to imagine it as existing *without objects* to fill it. "A representation, which it is *impossible for the mind to be without*, is a *necessary* representation. Necessity is one of the two criteria, of the *a priori*. This proof of the necessary character of space is therefore also a proof of it being *a priori* and in a *psychological* not logical sense." The first argument proves that space is a subjective necessity, and the second argument, that it is a *necessary objective ingredient*.[73]

3 The third argument seeks to show that space is *not a discursive or general concept, but an intuition*. "As we intuitively apprehend not only the space of the object which affects our senses, but the whole space, space cannot arise out of the actual affection of the senses, but must precede it in time."[74] We can represent only a *single* space, Kant argues. For though we can speak of many spaces, we mean only parts of one and the same single space. "The *parts* of space cannot precede the one all-comprehensive space. They can be thought only in and through it. The parts, which compose a concept, on the other hand, *precede* it in thought. Through *combination* of them, the concept is formed. Space cannot, therefore, be a concept. Only in an intuition does *the whole precede the part*. In a concept, *the parts always precede the whole*. Intuition stands for multiplicity in unity, conception for unity in multiplicity. Space must therefore be an intuition." Kant also stresses that a concept always refers *indirectly*, to a *plurality* of individuals. Intuition is *directly* related to a *single* individual, Smith argues.[75]

4 The fourth argument is again, intending to prove that *space is an intuition, not a general concept*. This is proved by reference to the fact that space is *given* and *determined*, as an *infinite magnitude*. This key characteristic of our space representation cannot be accounted for if it is regarded as a concept. "A *general conception* of space would try to abstract out those properties and relations, which are common to all spac*es*, and could not possibly determine anything in regard to infinite magnitude. For since *spaces differ in magnitude*, any one magnitude *cannot* be a common quality. Moreover, a general conception, which abstracts out common qualities from a plurality of particulars, contains an infinite number of possible different representations *under* it, but it cannot be thought as containing an infinite number of representations *in* it." Space must, however be thought in this latter manner, for it contains an infinite number of coexisting parts. Since, then, space cannot be a concept, it must be an intuition.[76]

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[70] This view is represented by e.g. Houston Smit and Rudolf Steiner.
[71] Kemp Smith, 1979, p. 99-112 and 123-128.
[72] Ibid. p. 99.
[73] Ibid. p. 103.
[74] Ibid. p. 106.
[75] Ibid. p. 105. See Palmer, 1963, for peculiar research demonstrating the role of space in the navigation of birds.
[76] Ibid. p. 108-109.

Time as the other Form of pure, rational intuition, is especially interesting due to the pivotal importance it has in Platonic cosmology and in Bergson's doctrine on intuition. The latter will be elaborated in the next paragraph. Kant then, is arguing in the following way;

1 The first argument is in all respects the same as the first argument on space. The thesis is that the representation of time *is not of empirical origin*. "*The idea of time does not originate in, but is presupposed by the senses*. When a number of things act upon the senses, it is only by means of the idea of time that they can be represented whether as simultaneous or as successive. Nor does succession generate the conception of time; but stimulates us to inform it. Thus the notion of time, even if acquired through experience, is very badly defined as being a series of actual things existing one *after* another. For I can understand, what the word after signifies only if I already know what time means. For those things are *after* one another which exist at *different* times, as those are *simultaneous* which exist at one and the same time."[77]

2 The second argument is again the same as the second argument on space, namely that it is given *a priori*. Proof is found in the fact that it cannot be thought away, Smith notes. "There is an innate *subjective necessity*, and from this follows objective necessity, as far as all appearances are concerned. Time may be necessary to appearances, *once appearances are granted*."[78]

3 The third argument differs only slightly, from that given in regard to space.

4 The fourth argument differs fundamentally, from that considered in regard to space, and must therefore be independently analyzed. The thesis is again that time is an intuition. "Proof is derived from the fact that time is a representation *in which the parts* arise *only* through *limitation of one single time*, and in which therefore the whole must precede the parts. The particular tim*es* will always arise as secondary products."[79]

In summarizing then, we have that rational or pure intuition is characterized by being a necessary, infinite, innate, psychological, subjective, co-operative and *a priori* representation. Furthermore, it is a singular whole that precedes any part, and with immediate representations in it, not under it. Let us then turn to a comparison with the discursive intellect and its main product, *Begriffe* or concepts.

Intuition versus Conception

Before we contrast the workings of intuition with that of conception, a few remarks about empirical or sensuous intuition are perhaps necessary. It differs from pure or *a priori* intuition, primarily in that it refers to an *external* percept, e.g. objects.[80] They are both *synthetic* in their approach, and how this relates to the analytic method is further discussed in the next paragraph. A strict division between the two types of intuition is perhaps illusionary.[81] For Bergson it is. In many ways, it resembles Jung's notion of extraverted intuition, which will be elaborated later on. Kant then, defines empirical intuition as knowledge, which is in *immediate* relation to objects. It is thus clear that he has in mind its distinction from conception, which is related to objects only *indirectly*, Kemp Smith argues.[82]

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[77] Ibid. p. 123.
[78] Ibid. p. 123-124.
[79] Ibid. p. 125. Kant's view is especially interesting, when compared with modern science, which has virtually nothing to say about time. More specifically, Penrose argues that; "according to general relativity, time is merely a particular choice of coordinate in the description of the location of space-time event. There is nothing in the physicists' space-time descriptions that singles out time as something that flows. Indeed, physicists quite often consider model space-times in which there is only one space dimension in addition to the single time dimension; and in such two-dimensional space-times there is *nothing to say which is space and which is time*." Penrose, 1994, p. 384. See also Penrose & Hawking, 1996, Feynmann, 1997, Heidegger, 1972 and Jaques, 1982.
[80] Parson, 2000, p. 310. Parson argues that a factor that makes intuition rational is the absence of an accompanying event like an external perception. See also Sher & Tieszen, 2000.
[81] Rational intuition is characterized by its synoptic qualities, and thus it embraces empirical intuition.
[82] Kemp Smith, 1979, p. 79. See also the fourth argument on space.

Kant also argues that *all representations* consciously referred to an object are *either* intuitions *or* concepts and that intuition is *immediate* and *singular*, the concepts *mediate* and *generalize*. A concept is thus a *symbolic* representation of a class or genus, it refers to features and marks that several things have *in common*.[83] Around the above mentioned passages a rather lengthy debate has arisen, which can be traced to modern psychology as well. On the one side, there are those who emphasize that intuition is to be understood in terms of *singular* representations and on the other side are those who favor the *immediacy* view.[84] Is there a chance that this controversy can be reconciled?

Let us start by looking again at the contrast between intuition and *discursive* thinking or cognition. According to scholastic theory, a discursive cognition is one, which requires mental discourse that is the drawing of a conclusion, *not* immediately evident to the mind by a process of reasoning. Discourse, therefore, has *stages* and it *takes time*. Intuition is the opposite – it occurs immediately. Whereas all God's thinking was supposed to be intuitive, the human cognition was supposed to be largely discursive, Falkenstein argues.[85] For Kant, our *verstand* is exclusively discursive, in principle it is incapable of an intuitive cognition and it is essentially a classificatory function. Rather than representing objects, as such it reflects on representations obtained from elsewhere and from these it infers or extracts, in a discursive manner, specific *differentia* features and marks. Concepts or *Begriffe* is thus Kant's name for the representations that the discursive intellect delivers. Kant adhered to this doctrine more stringently than his predecessors did, Falkenstein argues.[86]

The major problem then is perhaps not so much the discursive nature of our *verstand*, but rather the *immediacy* and *singularity* of our intuition. What exactly does it mean? No one seems to be able to provide a cogent account of singularity, Kelley writes.[87] Though, Kant says something that may prove useful, namely that "it is a mere tautology to speak of general or common concepts, a mistake based on a wrong division of concepts into general, particular, and singular. Not the concepts themselves, only their use can be divided in this way."[88] So, what are we to make of this? Let us start by looking at the essence of pure or rational intuition. It is defined as a universal and undivided *whole* that precedes any *part*, and with representations *in it*. I suggest that we interpret the meaning of this as identical to the meaning inherent in Plato's unique world argument, which was presented earlier on.

Apparently, there are intrinsic similarities. To recapitulate: "Let us rather say that the world is like that Living Creature of which all other living creatures are *parts*." When we scrutinize Plato's argument, it becomes clear that The Creator's Model is one where individual or *singular wholes* are embedded in universal and *undivided* wholes. My reading then of Kant is this; what he is trying to convey is that intuition is a representation or *mental picture of the undivided whole*, which is immediately present in *every part of the whole.* The difficulties we have with the term *singularity* are thus to some extent resolved. It is to be comprehended as

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[83] Kelley, 1997, p. 290. Smit, 2000, p. 235-236. The word mediate originates in the Latin *mediare*, and its meaning is e.g. to reconcile differences. The concept thus occupies a middle position, between intuition and percept.
[84] Ibid. p. 289.
[85] Falkenstein, 1991, p. 171.
[86] Ibid. p. 172. "This doctrine was a constant of his philosophy, figuring in ID (10), in the Critique (A230=B283), in Prolegomena 46 (Ak 4 333), and given its fullest exposition in 1-16 of his lecture on logic (Ak 9, 91-100), published only a few years before his death."
[87] Kelley, 1997, p. 290-291. The most noteworthy proponents of the singularity view are Parson and Hintikka. Figuring on the other side, are e.g. Kelley and Falkenstein. Apparently, Smit tries to reconcile them.
[88] Ibid.

an *individual* part where the undivided whole is *innate* and where this part is *not* separated but intimately embedded, integrated, and one with the universal, like a hologram or a human cell in a body.[89]

To make my interpretation more persuasive and to bring this inquiry one step further we still need a more detailed and precise description of the *immediacy* of intuition. To facilitate this we may quote Steiner who was an arduous student of Kant: "An abstract concept taken by itself has as little reality as a percept taken by itself. The *percept* is the part of reality that is given objectively, the *concept* the part that is given subjectively, through intuition."[90] Our mental organization then, *tears the reality apart* into these two factors. One factor presents itself to perception, the other to intuition. Only the union or *synthesis* of the two, that is, the percept *fitting systematically and orderly into the universe*, constitutes the full reality.[91] An observed object of the world thus remains *unintelligible* to us until we have within ourselves the *corresponding* intuition, which *adds that part of the reality*, which is lacking in the object of perception. What appears to us in observation as *separate parts* then becomes combined bit by bit, into *one singular piece*, through the *coherent*, *unified* world of our intuitions.

To anyone who is incapable of finding intuitions corresponding to the things, the *full* reality remains *inaccessible*, Steiner argues.[92] Houston Smit is advocating a similar view: "Explaining Kant's positive conception of the *immediacy* of intuition, that is, the way intuition relates to an object simply through itself, would require examining his account of synthesis. *For synthesis is the act of mind that produces intuitions*, in a fashion analogous to the way reflection produces concepts. …. This act of synthesis is the act that *orders* appearances *into* the *whole* representation of a *single* phenomenal world …… Insofar as appearances have this *ordered relation* to each other, and constitute such grounds of cognition, they constitute empirical intuitions."[93] A unified mind is thus characterized by rational intuition, as contrasted with a discursive or fragmented one.

Kant defines intuition, as a singular and *immediate representation*, and concepts as something that *mediate*. The word representation, or *vorstellung*, is thus pivotal. We have discussed the terms *singular* and *immediate* now let us look at *representation*. It is by Kant, employed in the widest possible meaning. It covers any and every cognitive state, and is equivalent to his term *gemüt* or mind.[94] This is somewhat vague. Poppelbaum thus suggests that we interpret representation as the *mental picture*, which the thinker *forms* to *represent* the *concept* in her *individual* way.[95] If this is correct, we have that intuition is a universal, singular, undivided, unified mental picture, and that this mental picture can be focused and operated in and through individuals, *who use various concepts to mediate between percept and intuition*.

As the meaning of representation is not clearly distinguished by Kant, we may again quote Steiner who defines a mental picture as a percept in him self and as an individualized concept.[96] "I know that something happens in me while I am observing a tree. When the tree

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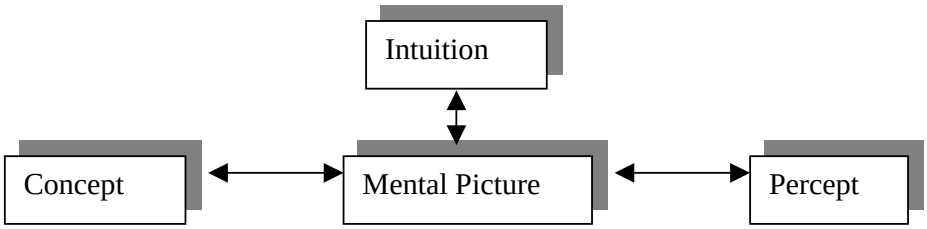
[89] All the information required to build a whole human being is embedded in each single cell!
[90] Steiner, 1964, p. 213, xvi. The German word *Wahrnehmung*, like the English 'perception' can mean either the process of perceiving or the object perceived as an element of observation. Steiner uses the word in the latter sense, and the word percept, though not in common use, does avoid the ambiguity.
[91] Thus, we have *Geistwissenchaft* und *Naturwissenschaft*, Spiritual Science and Natural Science.
[92] Steiner, 1964, p. 73, 84.
[93] Smit, 2000, p. 265. My italics.
[94] Kemp Smith, 1979, p. 81, 104.
[95] Steiner, 1964, p. xvii.
[96] Ibid. p. 49, 84.

disappears from my field of vision, an after-effect of this process *remains* in my consciousness – a picture of the tree. This picture has become *associated with my self* during my observation. My self has become enriched; *its* content has *absorbed* a new element. This element I call my *mental picture* of the tree."[97] Mental pictures may also evolve from within. He concludes, in accordance with Kant and his notion of *synthetic a priori*, that we should never have occasion to speak of representations or mental pictures if we did not experience these mental pictures *in the percept of our own selves*. Perceptions would then come and go; the *I* should let them slip by. In summarizing, we can visualize the relationship between intuition, mental picture and concept, in the following way:



Reality shows itself to us as percept and concept. The subjective representative of this reality shows itself to us as mental picture. We may hypothesize that intuition provides the larger and singular picture, where individualized pictures are nested, connected and embedded. It is the wallpaper, against which all perception and conception can be seen. It is a source, which so to speak provides the glue that connects concept and percept. It is also the faculty synthesizing them into more encompassing concepts and a grander scheme. To conclude this paragraph then, we can list the main differences between intuition and conception in a table.

Rational Intuition	***Conception***
Representation in it	Representation under it
Immediate	Mediate
Direct	Indirect
Given	Derived
Non-discursive	Discursive
Singular	General
Whole precedes the part	Parts precedes the whole
Multiplicity in unity	Unity in multiplicity

The Analytic and Synthetic Method

Kant's central problem is, as we have already indicated, focused in the question; How are synthetic *a priori* judgments possible? Kant personally believed that the possibility of valid *a priori* synthetic judgment is proved by the fact that we have the sciences of mathematics and physics. In *Prolegomena*, he argued that they are synthetic, not analytic, and because they are not empirical, they have to be synthetic *a priori*. This is only possible, *if* mathematics can be said to be contingent upon time and geometry upon space. Being so, there were for Kant two very different methods, which could be employed in accounting for their possibility, the synthetic or *progressive*, and the analytic or *regressive*.[98]

[97] Ibid. My italics.
[98] Kemp Smith, 1979, p. 44.

The synthetic method then, starts from given, ordinary experience, to *discover its conditions*, and from them *to prove the validity of knowledge* that is *a priori*. The analytic method, start from given a priori synthetic judgments, *assuming them as valid*. The synthetic method may easily be confounded with the analytic method. For in the process of its argument it makes use of analysis, Kemp Smith points out. "By analyzing ordinary experience in the form in which it is given, it determines the *fundamental elements of which knowledge is composed*, and the generating conditions from which it results. From these the *validity* of the *a priori* principles that underlies mathematics and physics can be *directly deduced*."[99]

Kemp Smith thus argues that the fundamental differentiating feature of the so-called synthetic method is not its synthetic procedure, since it employs an analytical method in the most difficult portion of its task. Rather, it is *its attitude* towards the one question of, *the validity* of *a priori* synthetic knowledge. It *does not* postulate this validity *as a premise*, but *proves it* as consequence of conditions, which are independently established. By a preliminary regress upon the conditions of our *de facto* consciousness, it acquires data from which it is enabled to advance by a synthetic, progressive or deductive procedure to the establishment of the validity of synthetic a priori judgment.[100]

The analytic method, on the other hand, does not *attempt* to prove the validity of *a priori* knowledge. "It seeks only to discover the conditions under which such knowledge, *if granted to exist*, can possess validity."[101] In addition, it seeks to discover to what degree its paradoxical and apparently contradictory features can be viewed as complementary to one another, Kemp Smith notes. The conditions, thus revealed, will render the validity of knowledge conceivable, will account for it once it has been assumed, but they do not prove it. *The validity is a premise*. The whole argument rests upon *the assumption of its truth*. The conditions are postulated only as conditions. Their reality becomes uncertain, *if* the validity, which presupposes them, *is itself called in question*. If we attempt to reverse the procedure, and to prove validity from these conditions our argument *must necessarily adopt the synthetic form*. This involves the prior application of a very different and much more thorough process of analysis.[102]

Kemp Smith thus maintains that the distinction between the two methods may be stated as follows. "In the synthetic method, the grounds which are employed to explain *a priori* knowledge are such as also at the same time suffice to *prove its validity*. In the analytic method, they are grounds of explanation, but *not of proof*. They are themselves proved only insofar as the assumption of validity is *previously granted*."[103] Kemp Smith adds that the analytic procedure, which is involved in the complete synthetic method, ought for the sake of clearness, to be classed as a separate, third, method. It is because this new transcendental method is an *integral part* of the complete, synthetic method that the synthetic method alone serves as an adequate expression of the Kantian standpoint.[104] There is no doubt, that the synthetic and the analytic method, in important respects, are copies of Plato's two distinct methods. In addition, when we turn to Bergson, we will see the same structure in his two methods. The following table thus summarizes our main findings:

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[99] Ibid. My italics.
[100] Ibid.
[101] Ibid.
[102] Ibid.
[103] Ibid.
[104] Ibid. p. 45.

Methods of;	Rational Intuition	Discursive Thinking
Plato	Dialogue	Dianoia
Kant	Synthetic	Analytic
Bergson	Metaphysical Science	Physical Science

2.4 Henri Bergson 1859-1941

Henri Bergson, recognized as *the* advocate of intuition in European philosophy, argues that a comparison of the definitions of metaphysics and the various concepts of the absolute leads to the discovery that philosophers, in spite of their apparent divergence, agree in distinguishing *two profoundly different ways of knowing a thing*. "The first implies that we move round the object, the second that we enter into it. The first depends on the point of view at which we are placed and on the symbols by which we express ourselves. The second neither depends on a point of view nor relies on any symbol. The first kind of knowledge may be said to stop at the *relative*, and the second, in those cases where it is possible, to attain the absolute."[105] The former is characteristic of the discursive intellect, the latter of intuition. These are the first lines, in his celebrated essay *An Introduction to Metaphysics*, first published in 1903.

Henri Bergson was born in the year, which saw the publication of the *Origin of Species*. His philosophy can be interpreted in the light of this theory of biological evolution. This theory was further developed by Darwin's followers to include the understanding that the human intellect and the process of thinking are designed for wholly practical purposes. Their aim is to help the individual adjust himself to his world and to facilitate action. This conception also forms an essential part of Bergson's doctrine. The intellect is regarded by him as a kind of instrument or tool employed in the service of life.[106] I will apply the same structure as in the preceding sections on Plato and Kant, and work at three issues. First, I will elaborate Bergson's distinction between intuition and the analytical nature of the discursive intellect. Secondly, examples on the workings of intuition are given. As time is pivotal in this respect, a paragraph will be devoted to this issue. I will end with an outline of Bergson's method of intuition, the metaphysical.

Intuition & Intellect

In early writings of Bergson, intuition is described as intellectual, in accordance with Plato and Kant. This is also the case in *An Introduction to Metaphysics*. When the original text appeared modified in 1934, this has changed. Here the intellect is seen as *different* from intuition. As this change may be pivotal, for intuition and its more recent connotations, especially within psychology, we need to know *why* Bergson did this. In a footnote, he mentions that the distinction between intellect and intuition is sharpened, due to an increasing need for precision.[107] What does he mean? A letter to Jacques Chevalier from 1920 reveals that: "As my use of the word intelligence is wider than that of Kant, I could call intuition intellectual. Though, I prefer to call it *supra-intellectual*. This is because I find it best to limit the use of the word intellect, to the *discursive* talents of our spirit." Moreover he defines the

[105] Bergson, 1949, p. 21.
[106] Ibid. p. 10.
[107] Kolstad, 1998, p. 107. Kolstad refers to *La pensée et le mouvant*.

intellect as the attention spirit gives to matter, and intuition as the attention spirit gives to life, that is, to *itself*.[108]

Intuition and intellect are thus *not* different organs, but two sides of one and the same *thinking* activity. An activity powered by the spirit. The thinking activity goes in one direction when it applies a discursive, conceptual, analytic quantitative perspective, and in the opposite direction when it sympathizes with the qualitative and *psychological* reality. Here Bergson copies Plato, who defines rational intuition as *the eye of the soul*.[109] "This organ of *perfect knowledge* must be *turned around* from the world of *physical appearances*, together with the entire soul, until the soul is able to endure the contemplation in the brightest region of being and *the intelligible* world."[110] For Bergson, intuition is thus primarily occupied with inductive metaphysics or spiritual science, while the discursive intellect is primarily employed in the study of matter and physical science.[111] This relationship can be illustrated in the following way:

A few words of reflection may be legitimate here, as they bear directly on *a core argument of the thesis*. Plato draws a distinction between the *intelligible* world, and the world of appearances. His notion of discursive thinking, *dianoia*, is attached to the former. For Kant, the situation is similar. He draws a distinction between the *a priori* and the *a posteriori*. His notion of discursive thinking, *verstand*, is also related to the intelligible world, or the *a priori*. The new and confusing element introduced by the later Bergson, is thus that *his* notion of discursive thinking, made equivalent to intellect, is *fallen* from the *a priori*, *intelligible* world, down to an occupation in the cave, where its primary interest is the world of physical appearances.

With Bergson, we therefore have the contradictory situation, that *the intellect* no longer occupies a place in *the intelligible* world. Its character and memory is from now on, gradually, becoming devoid of soul. Rational intuition is thus left alone with the intelligible, metaphysical, spiritual agenda, and the intellect is solely in charge of the more solid affairs. The trend continues today, when the discursive intellect is regarded by many as rational and intuition as irrational, automatic and biased. This then, is one reason why I do not focus in on the heuristics and biases tradition. Let us thus look more closely at Bergson's main distinction, the one between intuition and analysis which only later turns into the one between intuition and intellect.

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[108] Ibid. p. 108. My italics.
[109] *Psyche* means soul, and it is peculiar that psychological literature, hardly, refers to it.
[110] Cornford, 1955, p. 227.
[111] Kolstad, 1998, p. 110.

Intellectual Analysis
Analysis is for Bergson, as it is for Kant, the operation, which reduces the object to elements already known, that is, to elements common both to it and other objects. It separates, divides and dissolves the unity. To analyze, therefore, is to express a thing as a function of something *other than itself*. "All analysis is thus a *translation*, a development into *symbols*, a representation taken from successive points of view. From there we note as many resemblance's as possible, between the new object, which we are studying, and others, which we believe we know already. In its eternally unsatisfied desire to embrace the object, around which it is compelled to turn, analysis *multiplies without end*, the number of its points of view, in order to complete, its *always incomplete*, representation. Ceaselessly it varies its symbols, striving to make perfect, its always imperfect, translation. It goes on, therefore, to infinity."[112]

Bergson argues that it is easy to see that the ordinary function of positive science is analysis. "Positive science works, above all, with *symbols*. Even the most concrete of the natural sciences, those concerned with life, confines themselves to the *visible form* of living beings, their organs and anatomical elements. They make *comparisons* between these forms, they reduce the more complex to the more simple; in short, they study the workings of life in what is, so to speak, only its *visual symbol*."[113] In this line of reason, we recognize Plato's description of *dianoia*, or discursive reasoning, which uses as images *those actual things* which themselves have images, in the realm of physical appearances. *Dianoia* proceeds, as we know, from premises to conclusion, without questioning the assumptions upon which the premises ultimately rests, thus it falls short of perfect knowledge, or *episteme*.

Turning then to the discursive intellect, we find Bergson arguing that it has, in a similar way, certain inherent limitations in its way of functioning. Normally it apprehends the world externally as a collection of things in space. The very language we use to describe the world is saturated with spatial terms and metaphors. Secondly, the intellect deals with the world by means of *discrete* units capable of being counted or measured, like dollars, kilometers, kilos, pages, etc. Thirdly, the intellect treats the world as though it were fundamentally *static* and *immobile*. The *fixed concepts* of the discursive intellect may be extracted by our thought from mobile reality, *but there are no means* of reconstructing the mobility of the real *with fixed concepts*.

This is for Bergson the most serious limitation of all. For it means that, the intellect is bound to misunderstand the fact of *motion and change*. Like a camera lens, it can only form a picture of a process by transforming the latter into a static image or series of images. "Duration can be presented to us directly in an intuition, it can be suggested to us indirectly by images, but it can never be enclosed in a conceptual representation."[114] These limitations, he argues, are clearly seen in the most typical product of the intellect, namely the natural sciences. For the sciences, seek always to state their results in mathematical terms. One result of this has been that phenomena like motion and time are analyzed into a succession of points.[115] As *time* is of great significance to Bergson's understanding of intuition, we will delve deeper into it, below.

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[112] Bergson, 1949, p. 24.
[113] Ibid. My italics.
[114] Ibid. p. 30.
[115] Ibid. p. 10-11. See also Cornford, 1931. On a side-note we could mention that the scholastic record he left behind was one of uniform brilliance, including a national prize in mathematics.

Before we contrast intellectual analysis with intuitive synthesis, we should take further note of Bergson's view on *conception*, so that we provide the reader with continuity from Plato and Kant. Concepts, especially if they are simple, have the disadvantage of being symbols, substituted for the object they symbolize. When examined closely, we find that they retain only *that part* of the object, which is common to it and to other objects. Thus, they can never reveal what is essential and *unique* in the object. Concepts offer a *comparison* between similar objects. Also, we easily persuade ourselves that by setting concept beside concept we are reconstructing the whole of the object, with its parts, obtaining so to speak its intellectual equivalent. *There precisely is the illusion*, Bergson argues. "These concepts, laid side by side, never actually give us more than an *artificial reconstruction* of the object, of which they can only symbolize certain *general* and, in a way, *impersonal* aspects. It is therefore useless to believe that with them we can seize a reality of which they present to us *the shadow* alone." Plato's allegory of the cave is here looming in the background.

And he continues; "Besides the illusion there is also a very serious danger. For the concept *generalizes at the same time as it abstracts*. The concept can only symbolize a particular property by making it common to infinity of things. It therefore always more or less *deforms the property* by *the extension* it gives to it."[116] So if we are bent on reconstructing the object with concepts, everything will depend on the weight we attribute to this or that concept. Though, *this weight will always be arbitrary*, due to the fact that the concept extracted from the object has no weight, being only the shadow of a body. From this line of reason, he concludes that simple concepts not only divide the concrete unity of the object into numerous symbolical expressions, they also divide philosophy and science into distinct schools that carries on with the others a game that will never end. The challenge posed to metaphysics, is to transcend concepts in order to reach intuition.[117] No wonder the *concept* intuition is elusive.

Intuitive Synthesis

Intuition then, as opposed to intellectual analysis, is for Bergson, an *immediate* and higher *synthesis*.[118] His use of the word immediacy does not differ significantly from Kant's, and the reader may refer to that discussion. Larsson, in his reading of Bergson, argues that the use of the word intuition almost always indicates a synthesis, and that it is the direct antonym to discursive thinking and nothing else. In discursive thinking one thing is perceived after another, *without* holding on to the preceding. Intuition on the other hand, manages to hold on to the manifold of the preceding, and to see it in *one enduring picture*.[119] In this view, intuition is a sort of long-term memory. Kolstad adds that it is a synthesis working on *several levels*, that is, with degrees of density and rhythm.[120] It works horizontally as the opposite to analysis and discursive thinking, in the rather dense domain of 'hard' natural science, as well as in less dense psychological and spiritual realms. Both a horizontal and a vertical movement thus characterize intuition. It is an increasing awareness of this *synthetic* or *integral* relationship. The analytic activity participates in the unity of duration and intuition is in no way alien to it. Reality does not share with us an intuition of its inner nature, until we

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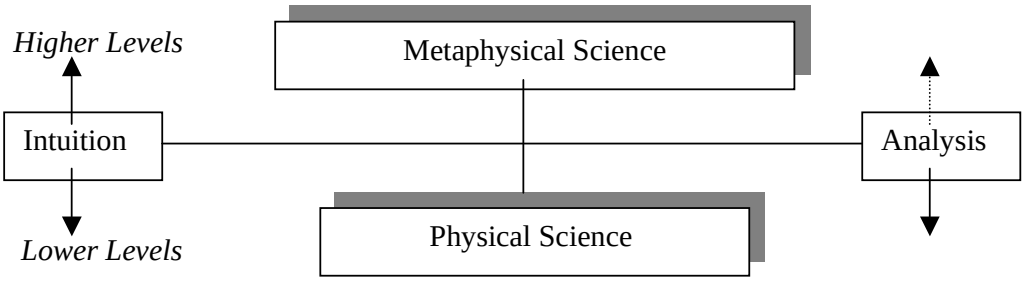
[116] Ibid. p. 28, 38. Thinking usually consists in passing from concepts to things, and not from things to concepts. When an object is brought under several concepts, we normally say that we have a broad and comprehensive knowledge of the object. Concepts also generally go together in couples and represent two contraries.
[117] Ibid. p. 30.
[118] Kolstad, 1998, p. 109.
[119] Larsson, 1925, in Kolstad, 1998, p. 109. See also Lazey, 1989.
[120] Bergson may have in mind the Pythagorean doctrine of *harmony of the spheres*. See Burkert, 1972.

painstakingly have acquainted ourselves with its outer manifestations.[121] We may illustrate this relationship in the following way:



For the sake of clearness, we should here repeat that Bergson draws a general distinction between two directions of our thinking effort, as is the case with Buddhism as well.[122] One is the attention spirit gives to matter the other is the attention spirit gives to life, that is, to itself. The former is typically the discursive intellect, while the latter is normally assigned to intuition. Each of these, is again subdivided into an exteriorized action oriented focus, and an interiorised focus, which is reflected in Jung's notions of the introverted and the extraverted intuition.[123] These divisions may be related to the different levels of intuition in the following way:

The higher levels of intuition emphasise the internalised focus. A peculiar and important aspect of this level is the *counter analysis*, or in other words, *the analysis of the analysis*. Intuition here utilizes analysis with the aim of dissolving the concepts, and the imperfect, relative knowledge construed by ordinary analysis. This approach is in important respects, identical to Plato's dialogue and to Kant's synthetic method. The counter analysis resonates very well with the transcendental analytic method, which is integral to the complete synthetic method. In working this way intuition is approaching a flowing state of mind best characterized as a consciousness, *which is conscious of it-self*.[124] It has liberated itself in and through the ever-rolling stream of *time*. How this goes about will be delineated in a separate section below. The main difference between the counter analysis and the interiorised discursive intellect is thus that the latter stops short at a lower level of conceptual reflection and abstraction.

The lower levels of intuition correspond mainly to the exteriorized focus and may be seen as *instinct*. Often instinct is discussed in relation to intuition. Here it suffices to say that for Bergson, all organic life is seen as a flowing stream that in its *evolution towards self-consciousness*, move in two directions; towards intuition and instinct or towards discursive thinking. The bee then, in its instinctive attack upon its victim has a knowledge that in regard to its object is *perfect and absolute*. It knows exactly where to hit. The key difference between instinct and intellect is thus that the instinct relates to the content, the intellect to the form. If the instinct could postpone its often, immediate action and reaction, and be *disinterested* in its object and reflect upon itself, it would reveal the secrets of life, Bergson maintains. The

[121] Kolstad, 1998, p. 109, 112.
[122] Yamaguchi, 1969, p. 77. The author compares the thinking-methods of Zen Buddhism and Bergson.
[123] Jung, 1971, 366-370, 398-403.
[124] Kolstad, 1998, p. 102. A similar point is made by Fichte in; I think that I think.

knowledge that is inherent in the instinct is thus by intuition made conscious, and thought.[125] How intuition is capable of transcending analysis and the discursive intellect completely, is indeed more difficult to explain. Bergson starts by giving these subtle examples:

Examples of Intuition

"Were all the photographs of a town, taken from all possible points of view, to go on indefinitely completing one another, they would never be equivalent to the solid town in which we walk about. Were all the translations of a poem into all possible languages to add together their various shades of meaning and, correcting each other by a kind of mutual retouching, to give a more and more faithful image of the poem they translate, they would yet never succeed in rendering the inner meaning of the *original*. Or suppose that I wished to communicate to someone who did not know Greek the extraordinarily simple impression that a passage in Homer makes upon me; I should first give a translation of the lines, I should then comment on my translation, and then develop the commentary; in this way, by piling up explanation on explanation, I might approach nearer and nearer to what I wanted to express; but I should never quite reach it."[126]

"When you raise your arm, you accomplish a movement of which you have, from within, a simple perception; but for me, watching it from the outside, your arm passes through one point, then through another, and between these two there will be still other points; so that, if I began to count, the operation would go on forever. Viewed from the inside, then, an absolute is a simple thing; but looked at from the outside, that is to say, *relatively* to other things, it becomes, in relation to these signs which express it, the gold coin for which we never seem able to finish giving small change."[127] Bergson here alludes, to the ancient philosopher Zeno of Elea, and his famous example of a flying arrow. It is easy to show that it does not really move, Zeno says. For at each instant of its flight it occupies one and *only one point* of space. This means that at each instant the arrow must be at rest, since otherwise it would not occupy a given point at that instant. However, its whole course is composed of such points. Therefore, the arrow does not actually move at all. The moral to be drawn from Zeno's paradoxes is for Bergson, not that motion is impossible, but rather that it is impossible for the intellect to comprehend motion. These examples are somewhat problematic, but will be easier to interpret when we have discussed Bergson's notion of time and duration. Here it suffices to say that they *reflect* the main tenet of Plato's epistemology, namely the dynamic between *original and image*.

Time & Duration

From the above examples, it is clear that we must not confuse intuition with mere feeling or emotion. Nor should we think of it as depending on some special faculty having a non-natural origin. Intuition is rather a series of acts, of direct participation in the *immediacy* of experience. It is *integral experience*. It can be accomplished by making an effort to detach oneself from the demands of action, by *inverting* the normal attitude of consciousness, and immersing oneself in the current of direct awareness. The result will be cognition of reality that must be expressed in *metaphors* or *fluid* concepts quite different from the *static abstractions* of logic. In so far as, this reality is communicable at all. "There is one reality, at least, which we all seize *from within*, by intuition and not by simple analysis. It is our own

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[125] Kolstad, 1998, p. 102-104. See also Bailey, 1960, p. 103, and 1974, p. 120.
[126] Bergson, 1949, p. 22-23.
[127] Ibid. p. 23

personality in its *flowing through time - our self which endures*. We may sympathize intellectually with nothing else, but we certainly sympathize with our own selves."[128] The inner life is variety of qualities, continuity of progress, and unity of direction, and cannot be represented by concepts, that is, by abstract, general, or simple ideas. No concept can reproduce exactly the original feeling we have of *the flow* of our *conscious life*. If a man is incapable of getting for himself the intuition of *the constitutive duration* of his own being, no concept will ever give it to him, according to Bergson.

Metaphysics must therefore begin by applying its method to the inner experience of the individual he argues. The personality in its flowing through time, *is* a ceaselessly changing process. The term which best conveys the character of this process is duration, *la durée* or *pure time*. Here we arrive at Bergson's most original conclusion. *Absolute reality* as revealed by intuition is the ever-rolling stream of *time*. Immediately, we recognize that this is in line with the reasoning of Plato and Kant, and we should remember that Plato provides us with a perspective of time that is deep, and rich in nuances. On a side-note, we should mention that Taylor argues that Bergson's argument applies as much to space as to time.[129] In order to contrast duration with the mathematical and 'spatialized' time of the intellect, Bergson offers certain additional comments. Duration is a heterogeneous flux or becoming. It is irreversible, straining always towards the future. It is continually creating newness or novelty, and hence it is intrinsically unpredictable. It is the inexhaustible source of freedom. Its living reality can never be communicated by images or concepts, but must be directly intuited.

However, if intuition has the mobility of duration as *its object*, and if duration is of a *psychical nature*, the attentive reader may wonder if not the philosopher then is confined to the exclusive contemplation of him or herself. Bergson argues in accordance with Kant, that this would be to misconceive the *singular* nature of duration, and its essentially *active* character. It would be failing to see that intuition alone permits us to go *beyond idealism, as well as realism*, to affirm the existence of objects inferior and superior to us, to make them *coexist without difficulty*.[130] Plato phrased this only slightly differently, maintaining that rational intuition reveals the intrinsic interplay between the works of Reason and the world of physical appearances. It is an increasing awareness of this *synthetic* or *integral* relationship.

Analysis of Duration

Duration is of pivotal importance to Bergson's notion of intuition, and even though it is close to a hopeless task, he embarks upon an analysis of it. If I seek to *analyze* duration, I am compelled, by the very nature of the concepts and of analysis, to take two opposing views of it, with which I then attempt to reconstruct it, he says. "I shall have to say, for example, that there is, on the one hand, a *multiplicity* of successive states of consciousness, and, on the other, a *unity* which binds them together."[131] He starts by considering duration as a multiplicity. "It will then be necessary to add that the terms of this multiplicity, instead of being distinct, as they are in any other multiplicity, *encroach* on one another; and that while we can no doubt, by an effort of imagination, solidify duration once it has elapsed, divide it into juxtaposed portions and count all these portions, yet this operation is accomplished on the

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[128] Ibid. p. 24-25. My italics. See also Moore, 1996, and Michon, 1985.
[129] Taylor, 1928 p. 689-690. Of the many critical comments Bergson receives on the issue of time, F. Pillon and Taylor are main opponents. They agree in that the measurement of time would be absolutely impossible if it were, as Bergson assumes, *wholly* indirect. See also Kolstad, 1998, p. 154 and Sorabji, 1983.
[130] Bergson, 1949, p. 45-46.
[131] Ibid. p. 46.

frozen memory of the duration, on the stationery trace which the mobility of duration leaves behind it, and not on the duration itself."[132] Bergson thus argues that if there is a multiplicity, it bears no resemblance to any other multiplicity we know, as if echoing Plato and his *one unique world* argument, which we did discuss.

Then he goes on to consider duration as a *unity*. "Shall we say, then, that duration has unity? Doubtless, a continuity of elements which prolong themselves into one another participates in unity as much as in multiplicity; but this moving, changing, colored, living unity has hardly anything in common with the abstract, motionless, and empty unity which the *concept* of pure unity circumscribes."[133] The question then, posed by Bergson, is this: Shall we conclude that duration must be *defined* as unity and multiplicity *at the same time*? His conclusion is that however much we manipulate the two concepts, we never obtain anything, which resembles the simple intuition we have of duration. "When I replace myself in duration by an effort of intuition, I immediately perceive how it is *unity*, *multiplicity*, and many other things besides. These different concepts, then, were only so many standpoints from which we could consider duration. Neither separated nor reunited have they made us penetrate into it."[134] However, by intuition we do penetrate into it, facilitating inner, absolute knowledge of the duration *of the self by the self*.

Kant used different words but meant much the same, when proving that our transcendental unity of self-consciousness gives us *synthetic a priori* knowledge. Duration then, will be the *synthesis* of unity and multiplicity. According to Bergson there is, and can only be, one *single* duration, that in which our consciousness habitually works. To summarize then, we can list the main differences between intuition and analysis as perceived by Bergson. We recognize that essentially, they are similar to the ones provided by Plotinus on intuition and discursive thinking and to those mentioned by Kant on intuition and conception.

Rational Intuition	***Analysis***
Metaphysical Science	Physical Science
Spirit	Matter
Qualitative	Quantitative
Synthesis	Analysis
Complete	Incomplete
Absolute	Relative
Simple	Complex
Original & Unique	Copy
Real	Symbolic
Unification	Fragmentation
Integrates	Separates
Enduring & Dynamic	Static

[132] Ibid. p. 30.
[133] Ibid. p. 30-31.
[134] Ibid. p. 31.

The Metaphysical Method

The main elements in Bergson's metaphysical method then, is discussed above, and Bergson gives a summary of it, which we include here. For Plato, *dialogue* represents the method most suitable to rational intuition. For Kant, it is the *synthetic* method. Bergson calls his method *metaphysical*, and it is clear that they all share intrinsic similarities and intentions, namely to reveal the nature of the rational, intelligible world of perfect knowledge, which is to be found by looking primarily not out, but in to the *psyche* which means soul. In this domain the Ideas, Forms and Archetypes are found and rational intuition see them reflected and integrated in the world of physical appearances. Such an emphasis is indeed, also firmly embedded in the Tibetan tradition, of three years long dark room retreats, as final exam in the monasteries.[135]

1 "There is a reality that is external and yet given *immediately* to the mind. This reality is *mobility*. Not things made, but things in the making, not self-maintaining states, but only changing states exist. Rest is never more than apparent, or, rather, relative. The consciousness we have of our own self in its continual Heraclitean flux introduces us to the *interior* of a reality, on *the model* of which we must represent *other realities*. All reality, therefore, is tendency, if we agree to mean by tendency an incipient change of direction."[136] This view is shared by Popper, who in his thorough comparison of quantum physics and philosophy, argues in agreement with Aristotle that: "To be is both to be the actualization of a prior propensity to become, and to be a propensity to become."[137] Apparently, quantum physics approves of Bergson's doctrine, and Gunther gives an account on this subject.[138]

2 Bergson stresses that our mind, which seeks for solid points of support, has for its main function in the ordinary course of life that of representing *states* and *things*. "It takes, at long intervals, almost instantaneous views of the undivided mobility of the real. It thus obtains *sensations* and *ideas*. In this way the discursive intellect *substitutes* for the continuous the discontinuous, for motion stability, for tendency in process of change, fixed points marking a direction of change and tendency."[139] Bergson argues that this substitution is necessary to common sense, to language, to practical life, and to positive science. "When our discursive intellect follows its natural bent, it proceeds in this manner, by solid perceptions and stable *conceptions*." A *crucial point* in his line of reasoning is thus that the discursive intellect *starts* from the *immobile*, and only conceives and expresses movement as *a function of immobility*. "It takes up its position in *relative* and ready-made *concepts*, and endeavors to catch in them, as in a net, something of the reality which passes. This is certainly not done in order to obtain an internal and metaphysical knowledge of the real, but simply in order to utilize the real."[140] It is thus not difficult to agree in one of his main conclusions, namely that, in doing so, it lets that which is its very essence escape from the real.

3 The next point is consequently, that *fixed concepts* may be extracted by our thought from mobile reality, but *there are no means* of reconstructing the mobility of the real *with fixed concepts*. Here Bergson adds a pivotal argument that makes it easier to understand Kant's definition of intuition as a singular and *immediate* representation, and concepts as something relative, that *mediate*. However, even though we fail to reconstruct the living reality with stiff and ready-made concepts, it does not follow that we cannot grasp it in some other way:

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[135] Riencourt, 1950, p. 247-248. The same ritual is to be found in many cultures, e.g. the Egyptian.
[136] Bergson, 1949, p. 49-54.
[137] Popper, 1989, p. 205. "Propensity may be described as a generalization of dynamism. This view is developed into a *relational* theory in which relational structures, instead of inhering in each material thing, may be characterized by potentialities. The world is full, as with *Parmenides*, in the sense that the void, the vacuum, has a structure, and is itself a field of propensities, which are real. Like the moving tealeaves, in a cup. The dualism of the full and the empty, matter and space or field, is, up to a point, preserved, as a distinction between the realization of a propensity, and the propensity to be realized. As with Plato, the emphasis upon antecedent causes and geometrical cosmology is preserved, and used to describe the distribution of matter in the world. The theory of vorticular movement and fluids of the Cartesians is preserved in the form of the law of conservation of energy. Their action at vanishing distances is preserved in the form of the field theory. Central forces, which correspond to the Aristotelian inherent potentialities, give place to fields of potentialities of a relational character."
[138] Gunter, 1987, p. 271-303, 308-343. See also Gunter, 1969.
[139] Bergson, 1949, p. 50.
[140] Ibid.

4 “Our intelligence can follow *the opposite method*. It can place itself within the mobile reality, and adopt its ceaselessly changing direction; in short, can grasp it by means of that *intellectual sympathy* which we call intuition.”[141] This is extremely difficult according to Bergson. The mind has to do violence to it-self. It has to reverse the direction of the operation by which it habitually thinks. It has perpetually to revise, or rather to recast, all its *categories*. In this way, it will attain to fluid concepts, capable of following reality in all its sinuosity’s and of adopting the very moment of the inward life of things. Bergson concludes in accordance with Plato and Kant, that this is the only way to build a *progressive* philosophy.

5 “This inversion has never been practiced in a methodological manner; but a profoundly considered history of human thought would show that we owe to it all that is greatest in the sciences, as well as all that is permanent in metaphysics.”[142] Metaphysics, which aims at no application, can and usually must abstain completely from converting intuition into symbols. Liberated from the obligation of working for practically useful results, it will indefinitely enlarge the domain of its investigation. What it may lose in comparison with natural science in utility and exactitude, it will regain in *range* and *extension*.[143] “Though mathematics is only the science of magnitudes, and though mathematical processes are applicable only to quantities, it must not be forgotten that quantity is always quality in a nascent state. It is natural then, that metaphysics should adopt the generative idea of our mathematics in order to extend it to all qualities, that is, to reality in general.”[144] The object of metaphysics is thus to perform *qualitative differentiations and integrations*, Bergson argues.

6 “The reason why this object has been lost sight of, and why science itself has been mistaken in the origin of the processes it employs, is that intuition, once attained, must find a mode of expression and of application which conforms to the habits of our thought, and one which furnishes us, in the shape of well-defined concepts, with the solid points of support which we so greatly need. In that lies the condition of what we call exactitude and precision, and also the condition of the unlimited extension of a general method to particular cases.”[145] Bergson thus argues that a truly intuitive philosophy would realize the much desired, union of science and metaphysics.

2.5 Buddhism

Not surprisingly, we find, in eastern philosophy, intricate and comprehensive epistemologies. They facilitate our reading of their European counterpart, and are indeed, well worth mentioning when intuition is concerned. Here we will limit ourselves to a sketch of certain perspectives found in Buddhism, more specifically, its treatise of the seventh class of consciousness, which is *the dual mind*. Apparently, there are only minor changes in between the different Buddhist traditions on this issue.[146] Let us start then, with the early Tibetan Buddhism, and the works of Lama Anagarika Govinda, who is recognized as an authority on the subject. In his *Foundations of Tibetan Mysticism*, he inquires into the eight-folded path, leaving us with many good suggestions on how to develop *autonomy*. Autonomy is, according to Elster, a pivotal component in *rational judgment*, thus we will return to it, in a separate chapter on intuition and rationality. Elster also suggests that autonomous desires “are those deliberately chosen, acquired or modified by an act of will or by a process of character planning, like we find it in Buddhism.”[147]

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[141] Ibid. p. 51.
[142] Ibid. p. 52
[143] Ibid.
[144] Ibid. p. 53.
[145] Ibid.
[146] Govinda, 1969, p. 73-80. See also Sangharakshita, 1998, p. 51-64. Although the Yogãcãra contradicts the standard Abhidharma teaching, the same meaning shines through.
[147] Elster, 1983, p. 21, 44. See also Elster, 1986, p. 233.

On this path to autonomy, *the mind is a key*. "The mind alone is the radiant jewel, the philosopher's stone, from which all things borrow their temporal reality."[148] In brief, the human individual and experience is in Buddhism defined as a collaboration of *five* aggregates or groups, called *skandhas*. These are descriptions of the individual's *active and reactive functions of consciousness*. As with Plato and Bergson they are seen in a sequence of increasing density and materiality, or in increasing subtlety, dematerialization, mobility, spiritualization and re-vitalization.[149]

According then, to Govinda, *the first and most dense group of material form and corporeality* comprises the past elements of consciousness, represented by the body; the present elements, as the sensation or idea of matter; and the future or potential sensuous elements in all their forms of appearance. It is the epistemological object, and is traditionally described in terms of the four great elements. *The second group of feelings* includes all reactions derived from sense-impressions as well as from emotions arising from inner causes, e.g. feelings of bodily pleasure and pain, mental joy and sorrow, indifference and equanimity. *The third group of perceptions* of the discriminating awareness and representation includes the reflective as well as the intuitive faculty of discrimination. *The fourth group of mental formations* or form-crating forces and tendencies of the will represents the active principle of consciousness, the character of the individual; namely, the karmic consequences caused by conscious volition or choice.[150]

Although the *skandhas* represent different functions, they are anchored in a synthetic ontology: "Whatever there is of feeling, perception, and mental formations, it is mutually connected, not disconnected; and it is impossible to separate the one from the other and to show up their difference. Because what one feels, that one perceives, and what one perceives, that one is conscious of."[151] This is in accordance with Bastick, who writes that: "The intuitive process is dependent upon the interaction of emotional states and cognitive processes. It is evident from the feeling of satisfaction and reductions in tensions that accompany an insight that emotional involvement plays a part in intuitive processes. A whole body unifying theory is needed to describe intuitive processes."[152]

The fifth skandha is consciousness and it is of special relevance and concern to us. Before we embark upon the discussion of its nature, the bold statement of the Yogãcãra tradition is worth mentioning. Here it is claimed that there is really *only one skandha*, namely *mind only*, and the other four that we have mentioned above, are only manifestations of it.[153] It comprises, combines, and co-ordinates all the previous functions and represents the potentiality of consciousness, in its pure, unqualified form. *Nine kinds of consciousness* are discerned, *the first five* being our familiar senses, sight, hearing, smell, taste, and touch. They represent a *discriminating*, or *judgmental* awareness to use Jung's terminology. That is, the eye with respect to form, the ear with respect to sound, and so on. Some authors feel more comfortable in using the word perception, when describing these first five senses.[154] Consciousness is not easy to define. However, one can begin to define it in an ostensive way by contrasting situations where it is present and absent. That is, situations where one is conscious of

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[148] Govinda, 1969, p. 59.
[149] Ibid. p. 70-72.
[150] Ibid.
[151] Ibid. "In the same way the different colors of a rainbow cannot be separated from it or from each other, and have no existence or reality in themselves, although they are perceived by the senses."
[152] Bastick, 1982, p. 133.
[153] Sangharakshita, 1998, p. 19, 51-52. In some respect, this position is close to the one of Berkeley.
[154] Ibid. He refers to e.g. Guenther and Yeshe Guyaltsen. See also Williams, 1989, p. 90.

something as opposed to not being conscious or aware of that thing.[155] The five senses will then facilitate consciousness, but they differ from mind itself, which belongs to the seventh class of consciousness.

The Sixth Class of Consciousness

The sixth class corresponds in many ways to the discriminating awareness of *the discursive intellect*, and it does not have a special elevated position above the other five senses. It sorts out, co-ordinates, integrates and judges the results of the five kinds of sense-consciousness, followed by attraction or repulsion, and the illusion of an objective world.[156] However, the Buddhist viewpoint, most interestingly, *also recognizes thoughts themselves, as objects of perception*. Just as objects flow through one's visual field, so does objects fly through one's cognitive field. "One could even say that, in a sense, one's thoughts are *even less a part of oneself* than the objects of the other five senses, because it would seem that one has rather less control, generally speaking, over what one thinks than over what one sees, hears, tastes, smells, and feels." Sangarakshita thus argues that it seems *unreasonable to identify oneself* with a realm of experience over which one seems to have so little control.[157] This aspect of consciousness is therefore to some degree a mechanical or reactive process of *perceiving mental objects*, which may indeed be intricately constructed and constituted.

There is yet another aspect of the sixth class of consciousness, translated by Guenther as *categorical perception*. And here, a very interesting twist is introduced. It is argued that in addition to the mind's awareness of the impressions presented to it by the five senses, there is awareness of ideas that arise independently of sense perception, *out of the mind itself*.[158] This latter aspect is of three kinds. "First of all, there are the ideas and impressions that arise in the course of meditation, as when one experiences light that doesn't have its origin in any sense impression but comes from the mind itself. Then, secondly, there are functions such as *imagination*, *comparison*, and *reflection*."[159]

Here Sangarakshita gives an example to illustrate his point. In some cases, we may experience that our *immediate* impression of a person is that he or she is untrustworthy. This may of course be a subtle *sense* impression, but the reason may also be that we have met in the past, someone who appeared similar to this person, and who turned out to be untrustworthy. In this latter case, one's impression would come under the heading of categorical perception. "Thirdly, there are *images perceived in dreams*, which again come not from sense impressions but directly from the mind itself. Categorical perception, in short, covers any perception that does not come in through the physical senses. It is the perception of all kinds of mental operations, including recollections of experiences *that originally came through the senses* and also things that were never experienced through the senses at all."[160] As intuition is often defined as ideas and images that arise out of the mind it-self, it is of interest to keep this Buddhist perspective in mind for a moment. Because, when we turn to the seventh and eight class of consciousness, we find distinctions and nuances that provide a sharp focus on intuition.

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[155] For a proper exposition on consciousness, see e.g. Max Velmans, 2000.
[156] Sangharakshita, 1998. p. 54. See also Govinda, 1969, p. 73.
[157] Ibid.
[158] Ibid. The word being translated into categorical perception is *mano-vijnãna*.
[159] Ibid. p. 55. My italics.
[160] Ibid.

The Seventh Class of Consciousness

The seventh class is *the mind* itself and it is intrinsically *dual.* That is, the mind is either dualistic in its functioning or it is not. In the latter case, it is *intuitive*. Why this is so, becomes clearer as we inquire into the eight and ninth classes of consciousness. Thus, we will return to intuition later on. Here it suffices to say that the mind can be said to be an *overlapping* between the first six senses and the eight & ninth class of consciousness. This is illustrated in the model presented a little later on. Apparently, the crux of the matter is, as Plato, Spinoza, Descartes, Kant, Bergson, and Jung all pointed out as well, *the orientation* and *state* of mind. Is it towards matter, towards spirit, or does it strive towards a unified, that is, intuitive state. In the first case, it is primarily oriented towards the first six classes of consciousness, and in the latter, it is a synthesis of the first six, with the eight and ninth classes, which resembles the personal and collective unconscious of Jung. Buddhism indicates that in the former situation the mind usually operates in a dualistic mode, which is called afflicted, defiled and tainted. Whatever it experiences, it interprets in terms of a subject and an object – subject as self, and object as world or universe. Everything is seen in terms of pair of opposites: good and bad, true and false, right and wrong, existence and non-existence, and so on. The mind is here characterized by the sixth level of consciousness, and by the numerous talents of the discursive intellect, that we have discussed earlier on. Of course, this dualistic mode of discriminative awareness or consciousness characterizes the way in which we usually live our lives.

There is within this thesis little space and time for the issue of dualism, thus my comments on it will be only superficial.[161] The conventional Western view is, as we have seen, *that thought* remain part of oneself as a subject, set against a *separate* world of objects. However, this is perhaps a limited viewpoint. "It is akin to what William Blake calls the *ratio* of the senses, the split-off intellect, representing a process of induction from a narrow field of experience."[162] Here you observe, *conceptualize* and *generalize* from *the limited field of sense experience*. When you look out, you construe a world of actually existing material objects, and when you look within, you construe an actually existent ego. The enlightened and intuitive mind, we are told, is completely *free of such dualism*. Between the experience of non-duality and our ordinary, everyday dualistic consciousness, there is obviously a great gulf; and to move from the one experience to the other will entail a complete and absolute *reversal* of all our usual attitudes.[163]

Such a reorientation or turning, in the deepest seat of consciousness, is to some degree reflected in the works of Bergson, and is further explained below. Before we do that, it may be relevant to mention the rather stunning discovery from quantum mechanics that "there is no distinction between a wave and a particle." At high frequencies, the particle aspect is the more evident, and at low frequencies, the wave aspect is the more evident. "Why this is so, is impossible to explain in any classical way, it has in it the heart of quantum mechanics, and in reality it contains the *only* mystery."[164] The almost universally accepted Copenhagen interpretation thus states in brief that "*objective reality has evaporated*, and quantum mechanics does not represent particles, but rather our knowledge, our observations, or our *consciousness*, of particles."[165] The ontological and epistemological implications are

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[161] For a proper exposition see Velmans, 2000.
[162] Sangharakshita, 1998, p. 54.
[163] Ibid. p. 51, 54.
[164] Feynman, 1995, p. 36, 117. We thus say that the particle has a built in *non-local* feature.
[165] Popper, 1989, p. 35, 174-175. My italics. See also Popper, 1975.

profound, causing Popper to conclude that; "A large part of *The Logic of Scientific Discovery* was devoted to the problems of quantum theory."[166]

Basically, cittamãtra doctrine *denies* the reality of matter as a separate category from mind. "The objects of our perception are not external objects as such. They are not objects as opposed to our-selves - the subject. We perceive mental impressions, that's all."[167] The significance of this insight is that if one removes the notion of an object, one also effectively removes the notion of a subject. In this way one breaks down the notion of *an ego that is separate from the world*, to be left with *mind only*. This mind only *is not* mind as opposed to matter, but a completely different conception of mind, according to Sangarashita. "Rather than being able to make a sharp distinction between subject and object, all one can really say is that there is a perceptual situation comprising *two opposite poles*.

One pole is the experience of what I call myself, together with everything I have under my immediate control; that is the subjective content of the perceptual situation. And then, at the opposite pole, there is everything and everyone that is independent of my direct control – the objective content of the perceptual situation."[168] According to Sangarashita, this may not be as difficult as it sounds. "What it amounts to is that through meditation we come to know that our flow of perceptions and of experiences really *lacks the fixed enduring subjects and objects*, which we have constructed *out of it*."[169] We may experience only the *single, enduring* flow of perceptions and experiences. That is, the flow of perceptions is *empty* of *enduring entities*. Individual life and death comes and goes. What remains, is the substratum, the implicate order of Bohm, which is empty of those enduring entities.[170] The flow of perceptions themselves nevertheless does exist.

According to Buddhism then, in the Enlightened being, the perceptual situation still occurs, but *one no longer identifies* oneself with its subjective content, which means that the whole perceptual situation is expanded, clarified, illuminated, enlightened.[171] The challenge then, is more one of performing qualitative differentiations and integrations, as Bergson pointed out. "The Yogãcãra interpretation is thus not so much that there is a thing called mind and a thing called matter, and that the thing called matter is discovered actually to be mind. It is not as if discovering that what one thought was a jug is in reality clay. It is more that mind is the term *applied to that undifferentiated substratum* which has been polarized into subject and object, mind and matter. Mind and matter are just symbols for the two poles of the one perceptual situation, and its sometimes very difficult to tell where one ends and the other begins."[172]

In this *non-dualistic*, intuitive state of mind, the element of resistance to the objective content of the perceptual situation ceases to exist. Your will is not separate from that of others. It is more like a thorough identification with others, and with your environment, in general. As your projections have disappeared, you do not experience other persons or situations as brick walls that you are coming up against. Such a state of mind then, we may compare to a kind of reflexive monism.[173] As the deeper and elusive nature of intuition is hidden to us, until we

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166 Popper, 1989, p. 97-98.
167 Ibid. p. 52.
168 Ibid.
169 Ibid. p. 82-85.
170 Bohm, 1981.
171 Sangharakshita, p. 54.
172 Ibid. p. 52-53.
173 Velmans, 2000, p. 168, 233, 235. The counter analysis of Bergson may lead in this direction.

have discovered the workings of the eight and ninth class of consciousness, we postpone further discussion of it, for a minute.

The Eight & Ninth Class of Consciousness

Classes eight and nine then, are *repositories or stores*. The former is said to be *relative* and the latter *absolute*, and again this resonates with Bergson. *The relative part* consists of, or contains, the impressions left deep in the mind by all our previous experiences. This eight class is in many ways identical to the personal unconscious of Jung, which we will elaborate in the next chapter. "Whatever we have done or said or thought or experienced, a trace or residue of it remains there; nothing is absolutely lost."[174] According to Sangharashita, the Yogãcãra School conceives of these impressions and consequences, as *seeds*. They are *active* impressions, left like seeds in the soil, and when conditions are favorable, they sprout and produce fruits. In other words, their *incubation period* may differ substantially.[175]

We thus start to see the *origin* of new ideas, images, and flashes of insight that *arise out of the mind itself*. Plato alluded to such a perspective, when warning us to be careful in whom we listen to, because what goes in, stays. All these seeds in our personal unconscious, sown by previous actions, thoughts, feelings and deeds, eventually fructifies and evolves into the *six* sense perceptions and *the activity and state of mind*. Right here we find that Buddhism indicates a *causal* relationship, between all our previous actions and *how* our mind works. Depending then, upon *the quality* of the seeds, our mind is primarily dualistic *or* more intuitively bent. The beauty is in the eye of the beholder. It is precisely this dynamic that may move us in the direction of *autonomy*. In the normal case, our dualistic ego-consciousness, interprets the impressions it receives from the other six senses, as representing an objectively existing world, and at the same time interprets a reflection in itself of a separate ego.

The *absolute* aspect of the repository or store is claimed to be *Reality itself*, and is by certain traditions called *the ninth* consciousness. It is immaculate, pure awareness or consciousness, free from all traces of subjectivity and objectivity.[176] While the relative aspect corresponds to Jung's notions of the personal unconscious, the absolute aspect resembles the collective unconscious. *Intuitions may originate in both*, thus we may discern several *levels of intuition*. This issue is further elaborated in the section on Jung. Here it suffices to say that the first and second level of intuition relates to the personal and collective unconscious, while the third level is the mature, integral intuition, further described below. The absolute aspect of the repository then, is *continuous*, or a *duration*, if we apply Bergson's terminology. It is multi-dimensional, or even non-dimensional awareness in which there is nothing of which anyone is aware, nor anyone who is aware. It is indeed beyond idealism and realism, to use more familiar European phraseology. It is awareness without subject and without object, something scarcely possible for us to imagine.[177]

The attentive reader would perhaps here like to have somewhat more tangible guidelines to follow, securing a steady progress towards the intuitive state of mind, where we become one with reality. Govinda provides us with these directions; "In the moment in which the mind *turns away from sense-consciousness and from the discursive intellect* and directs its attention

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[174] Sangharakshita, 1998, p. 56.
[175] This is a technical term used in psychology, which we will discuss in the succeeding chapter.
[176] Sangharashita, 1998, p. 56. E.g. the Paramãrtha tradition.
[177] Ibid.

upon the primordial *cause* of it's being, the illusion of the ego-concept becomes apparent."[178] This revelation does not come about through intellectual analysis, or logical conclusions, but through meditation and the *complete coming to rest* and relinquishing of *all thought-activities*, whereby we create the necessary conditions under which intuition can arise, he argues. We recognize the same emphasis on the absolute and the inner psychological world here, as with Plato and Bergson.

Obviously, the *reorientation* from outer to inner reality is central. However, is this all? Is it possible to say something more about it that could facilitate our inquiry? Sangharakshita adds that this reorientation is brought about by *the accumulation of pure impressions in the relative part of the repository*. "Through spiritual practice, more and more pure seeds are gathered, and as these pure seeds accumulate, they put pressure on the impure seeds until in the end the impure seeds are pushed right out of the repository."[179] When this occurs, the eight classes of *discriminating* consciousness are *transformed* into five modes of pure, that is *non-discriminating* awareness or wisdom, represented in the iconography of the five archetypal Buddhas. Here then, we are touching ground, on *the result of the reorientation*. The result is *a non-discriminating* awareness, or non-judgmental as Jung would say. Is it possible to be even more specific about what such non-discriminating awareness is about? "It does not mean an annihilation of sense-activities or suppression of sense-consciousness, but a new attitude towards them, consisting in the removal of arbitrary discriminations, attachments and prejudices."[180] The ninth class then, contains e.g. the Ideas of Plato, the Forms of Kant, and the Archetypes of Jung. They are but different names of much the same realm.

Discrimination here means the biased judgment of things, from the *relative* standpoint of an *ego*, in contrast to an attitude, which is able to view those things in the *larger context* of the self. In Buddhism this is phrased as: "from the point of view of fundamental oneness or wholeness, which is at the bottom of all consciousness and its objects. For only through the experience or the knowledge that we are not only parts of a whole, but that each individual has the whole as its basis, being *a conscious expression of the whole* – only through this experience are we awakened into reality, into a state of utter freedom."[181] This perspective aligns very well with the unique world argument of Plato, which we did discuss.

Such a state of mind then, is thus undisturbed by egoism, unruffled by distinction, desires and aversions.[182] In the more poetic words of Govinda it is compared to the ocean, "on the surface of which currents, waves and whirlpools are formed, while its depth remains motionless, unperturbed, pure and clear. This level of consciousness transcends all individuation and limits, is thoroughly pure in its essential nature, subsisting unchanged and free from faults of impermanence." David Bohms` acclaimed theory about implicate & explicate order may give us a conceptual framework that, by analogy, is usable here.[183] The rather simple model then, that perhaps illustrates important aspects of our mind and consciousness, is this:[184]

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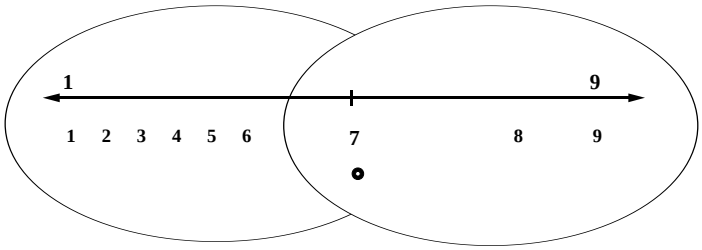
[178] Govinda, 1969, p. 77. My italics.
[179] Sangharakshita, 1998, p. 56. On a side note, this leaves us with a question mark on the utility of the violent media-picture we are confronted with.
[180] Govinda, 1969, p. 80.
[181] Ibid. My italics.
[182] Ibid. p. 74. He refers to D. T. Suzuki and D. Goddard.
[183] Bohm, 1981, p. 144. See also, Bohm, 1994, and Bohm & Hiley, 1993.
[184] Govinda, 1969, p. 74.



The Seventh Class of Consciousness Continued

The model clearly illustrates the *immediate* and *synthetic* nature of mature, third level intuition. It represents the *stabilizing* and *central point of balance*, upholding *the coherence* of its contents, by being the *center of reference*. "But for the same reason it is also the cause for the conception of *ego* in the unenlightened individual, who *mistakes* this *relative* point of reference for the *real* and permanent center of his personality." The mature intuitive state of mind is thus *a mixture and a meeting point* between the first six classes of consciousness on the one side, and class eight and nine on the other. It is their *common ground* and it anchors our ego in the self. "The intuitive mind has thus *no body of its own, nor any marks, by which it can be differentiated*. The consciousness of class eight and nine is its cause and support, but it evolves along with the notion of an ego, to which it clings, and upon which it reflects."[185]

Because the intuitive mind participates and is *integral* to all levels of consciousness, it can be an *active ingredient in our body and feelings* as well. Depending then, upon the evolution and quality of all the classes of consciousness, the intuitive mind is able to create an enduring, harmonic, unified mosaic of patterns, pictures and relations. This may be exemplified by e.g. Mozart, who six years old composed his first symphony. If the quality is less good, the result is more likely to be a dualistic and fragmented mind. The intuitive mind is thus the agent *through* which the universal consciousness *experiences itself* and through which it descends into the multiplicity of things, into the differentiation of senses and sense-objects, out of which arises the experience of the material world.

To repeat and conclude, when the mind is directed solely towards the empirical, towards the data provided by the six senses, and applies the discursive intellect, it comprehends conceptual, differentiated, analytic, inferential, explicit knowledge and evidence. When directed towards the eight and ninth classes of consciousness, achieved by a turning away from the outside world of objects, to the inner world of enduring oneness and completeness, the energy that sustain their organic unity is discovered, resulting in liberation and autonomy. In Buddhism then, it is argued that the mind becomes a source of error if it is oriented and directed from the universal towards the individual self-consciousness, while in the experience of the opposite direction, from the individual towards the universal, it becomes a source of highest knowledge, or *episteme* to use Plato's terminology. "It is that which either binds us to the world of the senses or which liberates us from it. It is the base metal of the alchemists, which through magic power is turned into gold, the coal that is turned into diamond, the

[185] Ibid. No wonder that research on intuition is a slippery issue. The attentive reader recognizes that Bergson emphasizes intuition's access to the *absolute*, while in Buddhism the focus is on its role as a *relative* and central point of balance. The work of Prigogine, 1977, 1984, 1997, may be relevant here.

poison that is transformed into the Elixir of Life."[186] It is integral awareness and consciousness. We may thus say that Kant, in stopping short at the synthetic *a priori* of our ego-consciousness, is unable to transcend the limitations of the ego. In a thorough way, he is strengthening the illusory *conception* of it. Consciousness *per se*, is most likely synthetic *a priori*, and the challenge posed to our mind, body, feelings, and perception, is to rediscover and rebuild it. March may thus very well be right in suggesting that we treat the self as a hypothesis.[187] Again, we can summarize our main findings in a table.

The Intuitive State of Mind	The Dualistic State of Mind
Balanced	Unbalanced
Unified	Fragmented
Non-discriminating	Discriminating
Coherent	Incoherent
Pure	Defiled
Multi-dimensional	Three-dimensional
Integrates	Separates

2.6 Conclusion

In this chapter, a consistency was revealed, in how philosophers have treated intuition. The epistemology of European and Eastern philosophy, as it is contained in the works of e.g. Plato, Spinoza, Descartes, Kant, Bergson, and Buddhism turn on the distinction between intuitive and discursive thinking. In the preceding brief exposition, I have found that without exception the intuitive state of mind is perceived as superior to the discursive, analytic, dualistic state of mind. Slightly different arguments are provided, but essentially, they all agree in that intuition gives access to the intelligible world of pure reason. Thus, they all define it as rational and intellectual while discursive thought is seen as relative, incomplete and fragmented. Philosophers do so primarily because intuition is anchored in Ideas, Forms and Archetypes, which are perceived as *a priori* laws governing and conditioning all existence. The coherency discovered, equip us with a rather strong bias when we in the next chapter find a different view. In psychology, the tendency is to treat intuition as some sort of unconscious, biased and automatic processing. This controversy may have implications for the rationality debate. Tentatively we may suggest that philosophers emphasize vertical rationality, or consistency between the *a priori* and the *a posteriori*, while psychologists are less inclined to do so.

[186] Ibid. p. 75. Intuition is also pivotal in Husserl's transcendental phenomenology. See Hanna, 1993, p. 183.
[187] March, 1994, p. 262.

3 INTUITION IN PSYCHOLOGY

3.1 Introduction

Philosophers tend to define intuition as superior to the analytical talents of our mind. They define it as rational primarily because it is anchored in Ideas, Forms and Archetypes, which are perceived as *a priori* laws governing and conditioning all existence. In psychology, we find a rather different view. When the historical review is continued we learn that in psychology the tendency is to treat intuition as some sort of unconscious, biased and automatic processing, inferior to controlled analysis. Why this 'Copernican reversal' in our history of epistemology has taken place, is more difficult to explain. Historically, psychologists have ignored the notion of intuition.[188] Conceptual development thus remains meager and thoroughly elusive.[189] Osbeck notes that "it suffers from vague and multiple uses of the term, association with diverse experimental phenomena, and from minimal effort to integrate these in a consistent way."[190]

Bastick maintains that intuition has been a baffling and elusive subject for generations. "The lack of a clear-cut definition and the loose usage of the word has only added confusion to this nebulous matter."[191] Fischbein points to the fact that "no attempt has been made to identify systematically those findings, spread throughout the research literature, which could contribute to the deciphering of the mechanisms of intuition." Nor has there been extensive clinical investigation. He adds that "intuition as concept as well as method, revives itself again and again in philosophical disputes, in the theoretical foundations of science and mathematics, in ethics and aesthetics, in pedagogy, and yet very little and very seldom in psychology."[192]

Hill argues that aside from the works of Carl Jung, there are extremely few references to intuition in psychological literature.[193] Westcott, who is credited with one of few clinical studies on intuition, corroborates this view: "The only grand theory of intuition, which has arisen in psychology, is probably the one presented by Jung."[194] Moreover, we will discover that it does not provide much new information about intuition. To quote Jung himself: "I say that intuition is a sort of perception that does not go exactly by the senses, but it goes via the unconscious, and at that I leave it and say I don't know how it works."[195] Thus, even though it *is* recognized as the only robust theory of intuition, which has arisen in psychology, it is a meager one. To further prove this point we need only look at the more recent contributions in cognitive psychology, where intuition hardly receives any space at all. The related concept *soul* shares the same destiny.[196] This may be a paradox for theoretical psychology as long as the promise of intuition is perception of the psyche or soul. Thus we are not only justified in borrowing from philosophy, we are forced to.

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188 Shirley & Langan Fox, 1996, p. 563-565, Hill, 1988, p. 137, Osbeck, 1999, p. 229.
189 Baylor, 2001, p. 243. Hogarth, 2001, p. 6.
190 Osbeck, 1999, p. 229.
191 Bastick, 1982, p. 8-9.
192 Fishbein, 1987, p. ix, 3.
193 Hill, 1988, p. 138.
194 Westcott, 1968, p. 32.
195 Jung, 1968, p. 14.
196 Kaufman & Helstrup, 2000, p. 313. Teigen, 1999, p. 412.

In trying to explain these problems, Osbeck emphasizes the widespread tendency to *ignore or misrepresent the philosophical heritage of intuition*. She writes that the avoidance of epistemological perspectives on intuition might reflect psychology's development into an *empirical* science.[197] "Some more obvious possibilities include methodological constraints, predominant interest in folk conceptions of intuition, and unfamiliarity with philosophical literature. Hence a discrepancy between understandings of intuition in psychology and philosophy is frequently acknowledged without elaboration or defense."[198]

Westcott prefers a slightly different explanation. He emphasizes the advent of positivism, and the rise of analytical philosophy. Here views of reality became suspect, if not properly supported by demonstrative reasoning and empirical observation. "As psychology began to make its break from philosophy, the conflicts of the parent were visited upon the child. The opposition between intuitionism and empiricism has persisted in psychology to the present day, just as it has in philosophy. Though, in psychology it has taken on many different guises, some more deceptive than others."[199] Yet another twist is the one presented by Bastick, who thinks it is partly due to the division between Gestalt and Behaviorist psychologists. "Any reference to the concept avoided the term intuition and was conducted under designations such as preconscious concept formation, preverbal concepts, instinctive knowledge, cognitive reorganization, etc."[200] The rest of the story we know as the heuristics and biases tradition, where Gilovich, Griffin and Kahneman still conceive intuition as automatic, biased, rapid, and effortless processing.[201]

I thus start this chapter with Jung who discovered what he termed the *personal* and *collective* unconscious. As these repositories are the main domains of interest for intuition, his account is indeed of relevance to us. In brief, intuition gives access to both the personal and collective unconscious, which is identical to the eight and ninth class of consciousness, as described in Buddhism. The former contains all *the accumulated personal experience and knowledge*. These intuitions may be more or less certain and mature, depending on the individual's level of expertise.[202] The latter contains "*the accumulated experiences of organic life in general*, a million times repeated and condensed into types. In these archetypes, all experience are represented which have happened on this planet since primeval times. They represent *the laws governing the course of all things we can experience*."[203]

Jung argues that through its perception of these processes intuition can supply certain data, which may be of the utmost importance for understanding what is going on in the world. It can even *foresee new possibilities* in more or less clear outline, as well as events, which later actually do happen.[204] In building his theory on intuition around archetypes which means original pattern, idea, or model, he is copying the Forms of Kant, as well as the main tenet of Platonic doctrine. In accordance with Jung then, and the core argument of the previous chapter, *three levels of intuition* are discerned. This is suggested as a main theoretical contribution of my thesis. The first and second levels correspond to intuitions from the personal and collective unconscious. The third level corresponds to the fully developed, mature intuition, the non-dual integral state of mind, elaborated in the previous chapter.

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[197] Osbeck, 1999, p. 229. See also Teigen, 1999, p. 412-413.
[198] Ibid.
[199] Westcott, 1968, p. 16.
[200] Bastick, 1982, p. 4.
[201] Gilovich, et al. 2002, p. 51.
[202] Baylor, 2001, p. 243. Fischbein, 1987, p. 54.
[203] Jung, 1971, p. 400-401. My italics.
[204] Ibid. p. 401.

In the third paragraph, my hermeneutic exploration of the historical account is taken one step further, now focusing on more recent works on intuition. This particular approach is chosen, much because such an elongated frame of reference aid us in delineation and *validation* of reliable dimensions and categories to be applied in the empirical research. A tentative conclusion is that; *timing, possibilities, previous experience, and synthesis* are important aspects of intuition. There is yet a second purpose involved, and that is to make explicit some of the key contributors, that directly or indirectly have transformed the philosophical concept of *rational* intuition, into a psychological one, identified with automatic, biased, and irrational processing. With Bergson, and definitely with Jung, pivotal aspects of the rational and intelligible world are defined as *unconscious*. Thus, we now have the peculiar situation that our consciousness of the rational and intelligible world gradually is disappearing into the great black void of the unconscious, which is often linked to the automatic and instinctive. This is posing difficulties that indeed are reflected in the more recent works on intuition. Here the immediate and direct access, as well as the integral awareness of *Ideas, Forms* and *Archetypes* is more or less evaporated.

In the fourth and final paragraph, I look closer at dual process theories. In many ways, these theories reflect the philosophical distinction between the discursive and intuitive mind elaborated in the previous chapter. According to Stanovich and West system 1 and 2 do not really, represent different types of rationality. Rather, "they are terms for characterizing optimization procedures operating at the *sub-personal* and *personal* levels, respectively."[205] We may thus go along with March, and suggest that both systems serve the evolution and fulfillment of an *identity*, and that both are intrinsically subjective.[206] Perhaps neither one, provide *the* rationale for a normative theory of rationality. Finally, the age-old question of the efficacy of intuitive and analytical cognition in expert judgment is addressed at the end of the paragraph. Here one conclusion is that in *direct* comparison, intuition apparently performs as good as analysis.

3.2 Carl Gustav Jung 1875 - 1961

Clearly, Jung has influenced psychology, and he is in many ways an instrumental bridge between philosophy and psychology. Jung's diverse and profound knowledge of Continental philosophy is widely documented.[207] He also had an interest in many aspects of Eastern philosophy and worked with the *I Ching*. In his exploration of the *personal* and *collective unconscious*, he is echoing the eight and ninth class of consciousness, described in Buddhism. In addition, his notion of *archetype* is a blueprint of the main tenet of Platonic doctrine. It means original pattern, idea or model, which all things of the same type are representations or copies of.[208] And, it is intuition that perceives it. With few exceptions, philosophical epistemology maintains that the rational and intelligible world is to be found intuitively by looking first, not out but into the psyche or soul, and then secondarily, to see how it is *innate*

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[205] Ibid.
[206] March, 1994, p. 61.
[207] Jung, 1964, 1968, 1971, 1989.
[208] Jung, 1971, p. 413, 437-439. In the previous chapter, the unique world argument served to illustrate how a Form or Idea relates to the particular. It is portrayed canonically as that of *likeness*, or more precisely, as the relation of *original* to *image*. It is also reasonably clear that Jung's 4 functions reflect Platonic epistemology. For a modern discussion see Gilovich et al. 2002, p. 203.

in the world of physical appearances. Jung took on this challenge, and leaves a mark in history for his effort mapping the psychological reality. With Bergson and definitely with Jung, the rational and intelligible world is thus become largely *unconscious*.[209] And eventually the intuitive perception of it is, as we will see in dual process theories, equated with automatic and biased processing.

Before we inquire into the details of Jung's theory we should mention that in addition to its status as an *epistemological* concept, intuition has status as a *behavioral concept*. Jung's theory of intuition is primarily embedded in a theory of personality, not in a theory of knowledge and epistemology. We started out with Plato's *cosmological* view on intuition, continued with Kant and Bergson's more *individualized* versions, and now we have come to Jung, who embed it in a theory of *personality types*. For Jung then, intuition is a *cognitive* event which occurs and which must be accounted for. It is one of four psychological functions, present in *all* individuals. These four functions attain different degrees of ascendancy during the life of each individual and, in combination with three levels of consciousness and two general orienting attitudes, determine largely each individual's characteristic behavior. The four functions, which are central in Jungian typology, are *thinking, feeling, sensation and intuition*.[210] Because I will apply the Myers Briggs Type Indicator®, an instrument originating in Jung's theory, some space is devoted to all four functions. The psychometric properties of the MBTI are discussed in chapter seven.

Feeling

Feeling is, according to Jung, primarily a process that takes place between the ego and a given content. It is a process that imparts to the content a definite *value* in the sense of likes and dislikes acceptance and rejection. Feeling therefore, is an entirely *subjective* process, which may be entirely independent of external stimuli, though it allies itself with every sensation. Hence feeling is a kind of judgment.[211] Thus, it is argued that both thinking and feeling are *rational*, but incompatible, in the sense that they both involve judgments and cannot operate at the same time. That is, an object cannot be judged by two standards at once. Valuation by feeling extend to every content of consciousness, and when the intensity of feeling increases, it turns into affect. "Feeling is distinguished from affect by the fact that it produces no perceptible physical innervations, i.e. neither more nor less than an ordinary thinking process."[212] Jung also emphasizes that he *does not* see thinking governed by feeling, as intuitive. Thinking dependent on feeling does not follow its own logical principle but is subordinated to the principle of feeling. In such thinking, the laws of logic are only ostensibly present; they are suspended in favor of the aims of concrete feeling.[213]

The distinction between *abstract* and *concrete* feeling is an important one. Abstract thinking abolishes the differences between things it apprehends. Similarly, "abstract feelings rises above the differences of the individual contents it evaluates, and produces a 'mood' or feeling-state which embraces the individual valuations and thereby abolishes them." Jung argues that in the same way that thinking organizes the contents of consciousness under

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[209] Ibid. p. 483. "The concept of the *unconscious* is for me an *exclusively psychological* concept, and not a philosophical concept of a metaphysical nature."
[210] Jung, 1968, p. 33. His model is thus a cross, where thinking & feeling and intuition & sensation are opposites.
[211] Jung, 1971, p. 434.
[212] Ibid.
[213] Ibid. p. 482.

concepts, feeling arranges them according to their *value*. "The more concrete it is, the more subjective and personal is the value conferred upon them; but the more abstract it is, the more universal and objective the value will be."[214] Feeling is thus a rational function, since values in general are assigned according to the laws of reason, just as concepts are. However, strictly speaking, it is only active, directed feeling which is rational, according to Jung. Passive undirected feeling resembles feeling-intuition and is irrational. The former would be akin to loving, while the latter would capture being in love.

Sensation

Sensation mediates the perception of a physical stimulus. It is therefore identical with perception. It is related not only to external stimuli but to inner ones as well. As with the other three functions, sensation is either concrete or abstract. Concrete sensation is sense perception. Jung writes that it is always mixed up with feelings, thoughts and ideas. Abstract sensation is a differentiated kind of perception, "which detaches itself from all contamination with the different elements in the perceived object and from all admixtures of thought and feeling, and thus attains a degree of purity beyond the reach of concrete sensation."[215] Concrete sensation is a reactive phenomenon, while abstract sensation, like every abstraction, is always associated with the *will*. That is, with a sense of *direction*. Since sensation is an elementary phenomenon, it is given *a priori*, and unlike thinking and feeling, it is not subject to rational laws. Jung thus defines it as irrational.

Active Thinking

Thinking is, according to Jung, either *active* or *passive*, both of which can be extraverted or introverted. Active thinking is an act of the will and passive thinking is *equated with intuition*.[216] Thinking is thus an apperceptive activity.[217] In emphasizing orientation of the thinking activity, Jung is copying Bergson, who argues that our thinking is oriented in two directions. Each of these, are for Bergson, subdivided into an *exteriorised* and *interiorised* focus.[218] Jung echoes this, when defining active and passive thinking as both introverted and extraverted. The active aspect then, is *linked to our ego*, while the origins of intuition is somewhere in the personal and collective unconscious.[219] Intuition is thus perception of the

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[214] Ibid. p. 435.
[215] Ibid. p. 462.
[216] Jung, 1971, p. 481.
[217] Ibid. p. 412. *Apperception* is by Jung, defined as a psychic process by which a new content is articulated with similar, already existing contents in such a way that it becomes understood, apprehended, or clear. "We distinguish active from passive apperception. The first is a process by which the subject, of his own accord and from his own motives, consciously apprehends a new content with attention and assimilates it to other contents already constellated. Passive apperception is a process by which new content forces itself upon consciousness either from without, through the senses, or from within. In the latter case, it is from the unconscious, and it compels attention and enforces apprehension. In the active aspect the activity lies with the ego, and in the passive, with the self-enforcing new content."
[218] Bergson, 1949, p. 51. Passive here resembles intellectual *sympathy*, which is equated with intuition.
[219] Jung, 1971, p. 425. "By ego I understand a complex of ideas which constitutes the center of my field of consciousness and appears to possess a high degree of continuity and identity. Hence I speak of an *ego-complex*. The ego-complex is as much content as a condition of *consciousness*, for a psychic element is conscious to me only in so far as it is related to my ego-complex. But inasmuch as the ego is only the center of my field of consciousness, it is not identical with the totality of my psyche, being merely one complex among other complexes. I therefore distinguish between the ego and the *self*, since the ego is only the subject of my consciousness, while the self is the subject of my total psyche, which also includes the unconscious. In this sense the self would be an ideal entity which embraces the ego." For a brilliant and thorough discussion of the *self*, see Karterud & Monsen, 1997.

self. This is in accordance with the philosophical account, where intuition is seen as able to *transcend the ego*. In active thinking, the contents of ideation are submitted to a voluntary act of *judgment*. In passive or intuitive thinking, conceptual connections establish themselves of their own accord, and judgments are formed that *may contradict* our intentions, he writes.

"They are not consonant with my aim and therefore, *for me*, lack any sense of *direction*, although I may afterwards recognize their directedness through an act of *active* apperception." The term thinking is thus confined to the active linking up of ideas by means of a concept, in other words to an act of judgment. Active thinking thus corresponds to directed thinking and to intellect. "The capacity for directed thinking I call intellect; the capacity for passive or undirected thinking I call intellectual intuition."[220] We should here take note of the fact that Jung defines intuition as an *intellectual, thinking* activity, which *might* be unconsciously directed, resulting in conceptual connections. Many a reader of Jung is not aware of this, perhaps due to the widespread application of the MBTI where intuition is *contrasted with sensing*, and presented as a distinct function separate from thinking.

According to Jung, thinking in general is fed on the one hand from subjective and in the last resort unconscious sources, and on the other hand from objective data transmitted by sense perception. Active, *extraverted* thinking is conditioned in a larger measure by the latter than by the former. The valid and determining *criterion for judgment* is thus here supplied by *external, objective* conditions. This is so, no matter whether it be represented directly by an objective, perceptible fact, or by an idea abstracted from objective experience. When we in chapter five discuss intuition and rationality, the issue of a valid criterion for judgment is of special importance. It is thus a point we will return to later. Active, extraverted thinking, therefore, need not necessarily be purely concrete. It can just as well be ideal thinking, if for instance it can be shown that the ideas it operates with are largely borrowed from outside, e.g., have been transmitted by tradition and education. Active, extraverted thinking then, comes into existence only when the objective orientation predominates. Jung also notes that: "our age, and its most eminent representatives know and acknowledge only the extraverted type of thinking."[221] We may indicate that this is the situation today as well.

So, what then, are the characteristics of active, *introverted* thinking? "Thinking that is directed neither to objective facts nor to general ideas, one might argue, scarcely deserves the name thinking at all." However, any thought preoccupied with a concrete object or a general idea, necessarily, stands in a constant relation to the *subject*. This relation is a *sine qua non*, without which no thinking process whatsoever could take place, Jung argues. "Even though my thinking process is directed, as far as possible, to objective data, it is still *my* subjective process, and it can neither avoid nor dispense with the admixture of subjectivity. We may struggle towards an objective orientation of thought but it is impossible to cancel out the parallel subjective process. When the main accent lies on this simultaneous subjective process, the active thinking is introverted."[222] This thinking is neither determined by objective data nor directed to them. It is a thinking that starts from the subject and is directed to subjective ideas or subjective facts. In this line of argument, Jung is in full agreement with Descartes and Kant. That is, introverted, active thinking resembles a key aspect of the *synthetic a priori*.[223] Concerning a valid *criterion for judgment* in this mode of thinking, Jung

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[220] Ibid. p. 481. My italics.
[221] Ibid. p. 342-343.
[222] Ibid. p. 344.
[223] Ibid. p. 383. Kant argues that our Self-consciousness *is* a synthesis and a unity in *it-self*. As such, it is in the end, the instrument that facilitates and guarantees *a synthesis*, with *any* judgment. Due to the fact that the unity

leaves us with no specific suggestions, except for a reference to Kant. However, it is reasonably clear that the ego of the subject serves the purpose here as well.

According to Jung, the essence of active, extraverted thinking is no less fruitful and creative than the introverted. It merely serves other ends. "The differences are seen quite clearly, when for instance a subjective conviction is explained analytically in terms of objective data. Each mode may feel the other trespassing on its own province, thus they are incessantly at war." One might think that a clear distinction between objective and subjective data would solve this tension. However, being one-sided, the two orientations cannot do without each other. They may benefit from a process of *reflective equilibrium*.[224] This is yet another issue we will return to later. When objective data predominate over thinking in great extent, thinking is *sterilized*, Jung argues. "It is no longer capable of abstracting itself into an independent concept. It is reduced to a kind of imitative, after-thought, which affirms nothing beyond what was visibly and immediately present in the objective data in the first place. It leads directly back to the *object*, but never *beyond* it."

The materialistic mentality is an instructive example, Jung argues. When the point of departure is a second hand objective *idea*, the very poverty of this kind of thinking is compensated by an even more impressive accumulation of facts around the sterile point of view.[225] In deciding then, whether our active thinking is extravert or not, we must ask *by what criterion does it judge*? Does it come from outside, or is its origin subjective? A further criterion is the direction the thinking takes in drawing conclusions. Is it principally directed outwards or is it not? [226] By and large, active thinking corresponds to the analytical and conceptual talents of discursive thinking, as described in the preceding chapter.

Intuitive Thinking

Passive, undirected, intuitive thinking is "the function that *mediates* perceptions in an unconscious way."[227] Thus, its nature is very difficult to grasp. Right here we find that Jung differs from the many authors who define intuition as *immediate*. We have suggested earlier on that intuition is an *immediate* and singular perception, which is unique and embedded, participating *of* as well as *in* the *duration* of life. Jung continues, stating that "*everything*, whether outer or inner objects or their relationships, can be the focus of this perception. The peculiarity of intuition is that it is neither sense perception, nor feeling, nor intellectual inference, although *it may also appear in these forms*."[228] Jung is here advocating that intuition is some kind of non-judgmental, chameleon-like function, so subtle and encompassing, that it can work its way through *any* of his other three functions.

How are we to interpret this? This would be a rather strenuous and most difficult undertaking, if it were not for the Buddhist perspective, already discussed. There it is suggested that the non-dual, intuitive state of mind is a mixture and a meeting point between the first six classes of consciousness on the one side, and class eight and nine on the other. It thus represents the stabilizing and central point of balance, upholding *the coherence* of its contents, by being the

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of our Self-consciousness *necessitates* such a synthesis, Kant calls it transcendental.

[224] Rawls, 1971, p. 20.

[225] Jung, 1971, p. 345-346.

[226] Ibid. p. 342.

[227] Ibid. p. 453.

[228] Ibid.

center of reference. It is their common ground. “The intuitive mind has thus no body of its own, nor any marks, by which it can be differentiated.”[229] Because the intuitive mind participates and is *integral* to all levels of consciousness, it can be an active ingredient in our body and feelings as well. This might explain what Jung is alluding to here. We may also indicate that his definition of intuition as a non-judgmental function is reminiscent of the Buddhist, non-dual state of mind.

In accordance with the philosophers then, he writes that in intuition the content presents itself *whole* and *complete*. However, he also says that we are *not able* to discover or explain how this content comes into existence. Like sensation, it is an *irrational* function of perception. As with sensation its contents have the character of being *given*, in contrast to the *derived* character of active, directed thinking and feeling contents. “Intuitive knowledge also possesses an *intrinsic certainty* and conviction, which enabled Plato, Spinoza and Bergson to uphold the *scientia intuitiva* as the highest form of knowledge. Intuition shares this quality with sensation, whose certainty rests on its *physical* foundation. The certainty of intuition rests equally on a definite state of *psychic alertness* of whose origin the subject is unconscious.”[230] More or less unconscious, we might add.

Turning then to *extroverted intuition*, we find Jung arguing that it is wholly directed to external objects, thus it comes *very close to sensation*. In many ways, this mode resembles Kant’s empirical intuition. However, this is a rather new twist, as long as most authors align intuition primarily with contemplation of the psyche. “The intuitive function is represented in consciousness by an attitude of *expectancy*, by *vision* and *penetration*. But only from the subsequent result can it be established how much of what was seen was actually in the object, and how much was read into it.”[231] Here we start to recognize main features of what dual process theories define as system one.

In direct opposition to his main definition, where intuition is considered passive, Jung also writes that: “intuition, like sensation, is not mere perception or vision, but an *active*, creative process that puts into the objects just as much as it takes out. However, the primary function of intuition is simply to transmit images, or perceptions of relations between things.” These images have the value of specific *insights*, which have a decisive influence on action, whenever intuition is given priority, he argues. “Just as extraverted sensation strives to reach the highest pitch of actuality, because this alone can give the appearance of a full life, so intuition tries to apprehend the widest range of potentials and *possibilities*.” These are possibilities inherent and innate in the psyche, evolving in and trough the individual intuition. Thus, only through envisioning possibilities, intuition is fully satisfied, and the capacity to inspire and to kindle enthusiasm for anything new is unrivalled. It thus seeks to *discover* what possibilities the objective situation holds in store, and resembles the hunch, gut feeling, or good nose for objectively real possibilities.[232] Possibilities, is thus one item in my questionnaire.

Introverted intuition is directed to the inner object, a term that might justly be applied to *the contents of the unconscious*. The relation of inner objects to consciousness is *entirely analogous* to that of outer objects, though their reality is not physical but psychic, Jung

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[229] Govinda, 1969, p. 74.
[230] Jung, 1971. p. 453.
[231] Ibid. p. 366.
[232] Ibid. p. 367, 369. In the MBTI intuition is the perception of possibilities, patterns, symbols, and abstractions, forging ground in new areas. Briggs, 1998, p. 176, 178.

argues.[233] They appear to intuitive perception as subjective *images*. These contents *per se* are not accessible to experience. "For just as external objects correspond only *relatively* to *our* perception of them, so the phenomenal forms of the inner objects are also relative." More or less so, we could add, because the inner objects include the archetypes, Kantian Forms and Platonic Ideas, which have a rather permanent character. "Although introverted intuition may be stimulated by external objects it does not concern it-self with external possibilities but with what the external object has released *within* the person." Jung argues that it receives from sensation only the impetus to its own immediate activity. It peers behind the scenes, quickly perceiving the inner image that gave rise to this particular *form* of expression. Every detail of how it changes, unfolds and fades is explored. "In this way introverted intuition *perceives all the background processes of consciousness* with almost the same *distinctness* as extraverted sensation registers external objects."[234] Let us pause for a moment. The ego is by Jung, defined as the center of our consciousness. It is a center embedded, integrated and embraced by the self, which *includes the unconscious*. Thus, it appears somewhat limited to anchor rationality in only the active aspect of thinking, as long as the ego is its sole reference. The ego is wholly relative to its location in the grander scheme and evolution of the self, thus leaving us with a notion of rationality that is *relative*.

Jung argues that introverted intuition *apprehends the images arising from the a priori inherited foundations of the unconscious*. These archetypes, whose innermost nature is inaccessible to experience, are *the precipitate* of the psychic functioning of the entire ancestral line. Dual process theories do not assign this talent to intuition. The question that is imposing itself here is this; what exactly are the structure, coordinates, and content of the unconscious? We would like to know more about it because it is the domain of the *self*, where the *ego* is embedded. Moreover, familiarity with it could provide us with a profound understanding of intuition. "It is *the accumulated experiences* of organic life in general, a million times repeated, and condensed into types. In these archetypes, therefore, *all* experience are represented which have happened on this planet since primeval times. The more frequent and the more intense they were, the more clearly focused they become in the archetype. The archetype would thus be, to borrow from Kant, the *noumenon* of the image which intuition perceives and, in perceiving, creates."[235]

They may be primitive in the sense that they are not clothed with the dress of any particular time, space or culture, and they are in the same form in children and primitive peoples as they are in highly civilized adults. Here we may again refer to Kant, who claims that time and space, contain a manifold of pure *a priori* intuition. *Space* and *Time* are thus ontologically dependent upon an intuiting act. Apart from our intuiting act then, space and time *does not* have any objective existence.[236] The personal and collective unconscious of Jung, as well as the eight and ninth classes of consciousness in Buddhism, are thus given specific and particular clothing by Kant's *a priori Forms of intuition*.[237]

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[233] Ibid. p. 398, 453. Jung thus draws a distinction between *subjective* and *objective* intuition. "The former is a perception of unconscious psychic data originating in the subject. The latter is a perception of data dependent on subliminal perception of the object and on the feelings and thoughts they evoke." Though, he does not draw the likely conclusion that they may unite in one singular perception.

[234] Ibid. p. 399. My italics.

[235] Ibid. p. 400-401. My italics. A particularly good example on this is the work of Schønberger & Govinda, 1992. They make a persuasive correlation between the *I Ching* and the DNA code.

[236] Wong, 1998, p. 50-51. It is in this sense Kant's theory of space and time is *constructive*. This is a point we will return to when intuition and rationality is discussed.

[237] Thus *timing* is used as item in the questionnaire.

At the very end of his exposition of intuition, Jung leaves us with this crucial and condensed insight: "Since the unconscious is not just something, that lies there like a psychic *caput mortuum*, but *coexists* with us and is constantly undergoing transformations which are inwardly connected with the general run of events, introverted intuition, through its perception of these *processes*, can supply certain data which may be of the utmost importance for understanding what is going on in the world. It can even *foresee new possibilities* in more or less clear outline, as well as events, which later actually do happen. Its prophetic foresight is explained by its relation to the archetypes, which represent *the laws governing the course of all things we can experience*."[238]

In emphasizing the ability to perceive the laws hidden in the collective unconscious, which govern all that which takes place in the world of physical appearances to use Plato's terminology, Jung articulates *a key feature* of the developed intuition.[239] Moreover: "Sensation tells us that a thing *is*. Thinking tells us *what* that thing is, feeling tells us what it is *worth* to us. But there is yet another category, and that is *time*."[240] In stressing that things have a past and a future, and that *intuition perceives this duration*, be it inner, outer, or unified, Jung aligns with all his predecessors. Timing and perception of cycles are thus included as items in the questionnaire. Regarding a valid criterion of judgment then, for this mode of thought, we may suggest the somewhat elusive *self*.[241]

Yet another point, of particular relevance to the empirical part of this thesis is Jung's view that "people who live exposed to natural conditions use intuition a great deal, and people who risk something in an *unknown* field, who are *pioneers* of some sort, will use intuition. *Inventors* and judges will use it. Whenever you have to deal with *strange conditions* where you have *no established values or established concepts*, you will depend upon the faculty of intuition."[242] Thus, the respondents are asked to describe two strategic decisions. One is to be characterized by *exploration*; that is search for new possibilities, experimentation with completely new alternatives and technology, variation, risk taking, and innovation. The other is to be characterized by *exploitation* of old certainties, refinement, improvement and increased efficiency of existing production, and technology.[243] The assumption then, is that there is more emphasis on intuition in exploration than in exploitation.

The final point then, which we need to address, is Jung's distinction between *concrete* and *abstract* intuition. Just like active thinking can be represented directly by an objective, perceptible fact *or* by an idea abstracted from objective experience, intuition can be concrete or abstract, according to the degree of participation on the part of sensation. "Concrete intuition mediates perceptions concerned with the actuality of things, abstract intuition mediates perceptions of ideational connections. Concrete intuition is a reactive process, since it responds directly to the given facts. Abstract intuition, like abstract sensation, needs a certain element of *direction*, an act of the will, or an aim."[244] This is rather confusing, as long as Jung also defines intuition as the passive mode of thinking, *devoid of direction* and will, and as given, not derived. However, this is not a new controversy. Kant, in making a

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[238] Jung, 1971, p. 401. My italics.

[239] These laws are the main occupation of those who study *Geistwissenschaft*, or spiritual science, e.g. the *Rosicrucians*, and the *Theosophical* and *Anthroposophical* Societies.

[240] Jung, 1968, p. 13-14. Jung relates intuition to the hunch, and writes: "That is what is called *intuition*, a sort of divination, a sort of miraculous faculty. ….. It is a function by which you see round corners"

[241] In doing so, we may also refer to the Greeks, who inscribed *know your self*, at the temple in Delphi.

[242] Jung, 1968, p. 13-14. My italics.

[243] March, 1994, p. 80, 237.

[244] Jung, 1971, p. 453. My italics.

distinction between pure and empirical intuition struggles with much the same problem. Below, three levels of intuition are discerned, which may clarify this issue. Here it suffices to say that the third level of intuition resembles the synthesis of abstract and concrete, introvert and extravert, pure and empirical intuition. As such, it is not devoid of direction. On the contrary, it is integral to the involution and evolution of the psyche and self. In summarizing Jung's view then, we have that:

Intuitive Thinking	***Active Thinking***
Non-judgmental	Judgmental
Beyond Rationality	Rational
Given	Derived
Whole & Complete	Separated
Self	Ego

Three Levels of Intuition

In concluding this section, and in accordance with the main findings of the previous chapter, I suggest that we delineate *three levels of intuition*. This may provide us with more nuances, as requested by Teigen.[245] It is also suggested as a main theoretical contribution of this thesis. We have then first, intuitions from the *personal unconscious*, or the Buddhist' eight class of consciousness. This level relates to *all the accumulated personal experience and knowledge*. These intuitions may be more or less pure and mature, depending upon the individual's way of living and *level of expertise*, as Baylor points out.[246] Secondly, there are intuitions from the *collective unconscious*, that is, the Buddhist' ninth class of consciousness. This level relates to *all the accumulated collective experience and knowledge*. Intuitions from the collective unconscious are by Jung held to be generally far more important than are intuitions from the personal unconscious. Here we find the Ideas, Forms and Archetypes, *that condition all that we can experience*, to quote Jung. The individual can be more or less in contact with them.

In other words, the awareness and access that the individual has to these repositories will wary a lot. The introvert tends to have better access. If say, the individual is totally out of touch with these values and levels of the psyche, these intuitions are not much more than instinctive impulses, as Bergson and Jung points out. They can work their way through the individual *mind, body and feelings*.[247] With no awareness of these levels of the psyche and self, *any* activity can have a substantial portion of *automatic* flavor and functioning. This might include the so-called controlled, analytic activities of system two elaborated in dual process theories.[248] March alludes to the same point when arguing that students of rule following tend to regard the rational model of choice as *simply one version* of rule following, associated with the *identity* of the decision maker.[249]

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[245] Teigen, in Stanovich & West, 2000, p. 698. See also Baylor, 2001, p. 243. See also Teigen, 2001.

[246] Baylor, 2001, p. 239. She suggests two types of intuition, immature and mature, which are differentiated by the level of expertise in a given knowledge domain. We will return to her work.

[247] Vaughan, 1979, p. 55.

[248] Of the many techniques suggested, facilitating access to these repositories, meditation figures prominently. The flux of thought is then easier rearranged and synthesized into clearer pictures, new ideas and solutions. Stress may inhibit intuitive problem solving.

[249] March, 1994, p. 59. The rational model of choice is described in the chapter on rationality.

The third level is the developed, mature intuition. We may say that it is this level that corresponds to the proper *rational* intuition. It is nurtured by, and anchored in, a rich and profound perception and understanding of the personal and collective unconscious, as well as of their mutual and *integral* relationship. It is the ability to see how Ideas, Forms and Archetypes are reflected and unified with what is going on in the personal ego and the world of physical appearances.[250] A certain amount of inference is required here. Kant thus argues that the analytic procedure is involved in the complete synthetic method, and Bergson emphasizes the counter analysis. However, as inferential thought activity is coming to a rest, the result may eventually be the non-dualistic state of mind as the Buddhist doctrine proclaims. It is a consciousness being conscious of it-self.

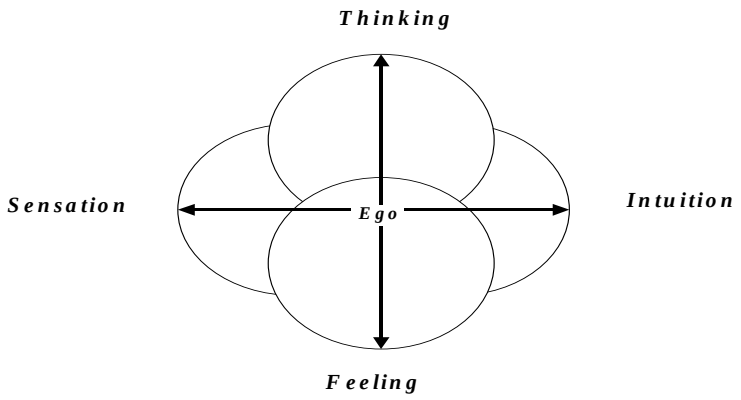
Thus, there is *immediate* awareness of the *meaning* being in- and unfolded, clothed as it is in specific *space* and *time* coordinates. The individual mind and being is here a *singular synthesis*, as Kant would say, but still not separated. It is unique *and* embedded. It partakes *of* as well as *in*, much like a wave-crest in a wave or a cell in a body. It is *integral* experience and intellectual sympathy, by which one places oneself within an object in order to *coincide* with what is *unique* in it.[251] The research of Pribram and Penrose on intuition and consciousness indicates that this state of mind is equal to "a global (essentially quantum) large-scale coherent 'hologram' activity in the brain"[252] These three levels then, can tentatively be anchored in Jung's notions in the following way:

	Personal Unconscious	*Collective Unconscious*
Introverted Intuition	Level One	Level Two
Extraverted Intuition	Level One	Little or no Awareness
Integral Intuition	Level Three	Level Three

When we merge the model developed in Buddhism, with the one suggested by Jung, we can draw the model below.[253] In a preliminary way, it suggests certain dimensions that may serve as starting point for further discussion and research. It may also facilitate our reading of the more recent works on intuition. Certain aspects of it, aligns very well with a model developed by Baylor that will be discussed at the end of the next paragraph.[254]

[250] Wilber, 2000, p. 40. Wilber describes this as *holonic* consciousness. A holon is a whole that is a part of other wholes. Bohm does the same when discussing *participatory* thought. See Bohm, 1996, p. 84, and Moxnes, 1999, p. 1427, and Wilber, 1979, 2001.
[251] Bergson, 1949, p. 23-24. See also *The Unique World Argument* of Plato, which we did discuss.
[252] Penrose, 1994, p. 368. Beck & Eccles, 1992, p. 11357-61 represent the more notable exception from this view. However, they as well present a quantum mechanical model for the relationship of brain activity to conscious intentions.
[253] Jung, 1968, p. 17.
[254] Baylor, 2001, p. 238. See also Cappon, 1994. His work is discussed below.

Figure 3.2.1 A Model of Intuition



Rationality

Jung calls *active* thinking a *rational* function, because it arranges the contents of ideation under concepts, in accordance with a rational norm of which we are *conscious*. Passive or intuitive thinking is beyond rationality because it arranges and judges the contents of ideation by norms of which we are *not conscious*, and therefore cannot recognize as being in accord with reason. Only subsequently, we may be able to recognize that the intuitive act of judgment accorded with reason, although it came about in a way that appears irrational. However, there are numerous norms of rationality, *many of which we are not conscious*, and we can thus not avoid the question; what is the ontological foundation for our normative theories of rationality? Jung does not address this issue properly and we may arrest him on this pivotal point because we have discovered fairly strong arguments, indicating that intuition does assist in the building of such a foundation. Moreover, his conception of intuition seems to stop short at the second level of intuition. The promise of the third level is consciousness of the unconscious. It may thus reveal what norm of rationality the individual ego is evolving by.

Jung maintains that thinking and feeling are rational functions in so far they are decisively influenced by *reflection*. They function most perfectly when they are in the fullest possible accord with the laws of reason. The irrational functions, sensation and intuition, are those whose aim is *pure perception*.[255] Intuition functions most perfectly when it is in the fullest possible accord with the archetypes "which represent the laws governing the course of all things we can experience."[256] The puzzling point then, is that it is defined as irrational. Tentatively, we may indicate that this is because he emphasizes the more common first level of intuition. In philosophical epistemology, intuition is seen as *pure perception* as well. However, contrary to Jung, it is also seen as main distributor of the intelligible world of pure reason. Thus, it is defined as rational. This may be due to emphasis on the second and third level of intuition. The *immediate* and *direct* nature of intuition is seen as *closer* to the *Ideas, Forms* and *Archetypes* than the indirect or *reflected* nature of analytic, discursive thinking, which is *relative* to an ego. This is plausible. The fully developed, mature intuition is so to speak *integral* to these more permanent laws of the psyche. Jung then, *breaks the long tradition of conceiving intuition as rational*. We must therefore take further note of his definition of rationality.

[255] Jung, 1971, p. 459.
[256] Ibid. p. 401.

Interestingly he defines it as an *attitude* whose principle is to conform thought, feeling and action to *objective values*.[257] Objective values are established by the everyday experience of external facts on the one hand, and of inner, psychological facts on the other. Such experiences, however, could not represent objective values if they were valued as such by the subject, for that would already amount to an act of reason, Jung argues. "The rational attitude which permits us to declare objective values as valid at all is not the work of the individual *subject*, but the product of human history."[258] Jung's view then, is that objective values, and reason itself, are firmly established *complexes of ideas* handed down through the ages. "Countless generations have labored at their organization with the same necessity with which the living organism reacts to the average, constantly recurring environmental conditions, confronting them with corresponding functional complexes."[259] In this line of argument, individual, subjective rationality is not given much guidance. Moreover, this definition of rationality is more or less identical to the one of archetypes. Archetypes are perceived by intuition. In a strict sense then, it is not logical of Jung to define intuition as irrational.

This account is contrasted by his definition of irrationality, *which is not something contrary to reason*, but something *beyond*. "The irrational is an existential factor which, though it may be pushed further and further out of sight by an increasingly elaborate rational explanation, finally makes the explanation so complicated that it passes our powers of comprehension. The limits of rational thought being reached long before the whole of the world could be encompassed by the laws of reason."[260] A completely rational explanation of an object that actually exists is thus a Utopian ideal according to Jung. Only an object that is posited or postulated can be completely explained on rational grounds, since it does not contain anything beyond what has been posited by rational thinking. This is the case with empirical science, because by *deliberately excluding* the accidental it *does not* consider the actual object *as a whole*, but only that part of it which has been *singled out* for rational observation.[261] Such an object is usually *devoid of its full context*. It therefore tells us only *half the story*, according to Jung. This view on rationality is thus consonant with Kant's notion of the *analytic a priori*, and with reasoning system 2, which will be elaborated later on. It also reflects the view of Bergson, who limits the use of the word intellect to discursive thinking, while intuition is defined as supra-intellectual.[262]

It is on this background then we must understand Jung, when he defines thinking and feeling as directed, *rational* functions. "When these functions are concerned not with a rational choice of objects, or with the qualities and interrelations of objects, but with the perception of accidentals which the actual object never lacks, they at once lose the attribute of directedness and, with it, something of their rational character."[263] The kind of thinking or feeling that is directed to the perception of accidentals, is irrational, and is either intuitive or sensational. They find fulfillment in the *absolute* perception of the *flux of events* Jung writes, as if echoing Heraclitus and Bergson. "Hence, by their very nature, they will react to every possible occurrence and be attuned to the *absolutely contingent*, and must therefore lack *all direction*.

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[257] Ibid. p. 414. "To have an attitude means to be ready for something definite, even though this something is unconscious; for having an attitude is synonymous with an a priori orientation to a definite thing, no matter whether this be represented in consciousness or not."
[258] Ibid. p. 458.
[259] Ibid.
[260] Ibid. p. 454.
[261] Ibid. p. 455.
[262] Ibid. p. 108. My italics.
[263] Ibid.

For this reason I call them irrational functions."[264] Again, Jung is opposing himself. He defines intuition as the ability to perceive, and even foresee processes and possibilities, thus it must possess an innate direction. We will return to these issues in the succeeding chapter on intuition and rationality.

3.3 Recent Works on Intuition

In this paragraph, the *historical* and chronological account is taken one step further. It may illustrate *why* the concept of intuition has become so multi-faceted, ambiguous and fragmented. This particular approach is chosen, much because such an elongated frame of reference will aid us in *delineation* and *validation* of reliable dimensions and categories to be applied in the empirical research. The theoretical account on intuition indicates that; *timing, possibilities, previous experience, and synthesis*, are important aspects of intuition, and this is reflected in the questionnaire. A diligent embedding of the contributors in such a historical frame of reference may also facilitate a *structured reading* of this concepts elusive evolution. There is a second purpose involved and that is to make explicit some of the key authorities that directly or indirectly have moved the philosophical concept of *rational* intuition into a psychological one, identified with biased, irrational, and automatic processing. We have learned that with Bergson, and definitely, with Jung, central aspects of the rational and intelligible world are defined as *unconscious*. This is posing difficulties, reflected in the more recent works on intuition. Here the immediate and direct access and integral awareness of *Ideas, Forms* and *Archetypes* is gradually dissolving.

Many psychologists, and most notably Bastick, have strived to define intuition in terms of its numerous properties. Altogether, he discusses 20 different properties of intuition.[265] My dissertation is however limited to its main aspect, the *cognitive*. Necessarily, such a focus must influence on the succeeding discussion. In scrutinizing the databases then, back to their origin, we find a relative lack of scientific interest in intuition. If we use the PsychInfo service of the American Psychological Association, and search articles published in scientific journals between 1887 and 2003 for the key word *intuition* there are a mere 2 128 entries, while there are 239 000 entries for *analysis*. In the Philosophers Index there are only 78 articles on intuition from 1940-2001, the major bulk from 1990 and onwards. Hogarth, in his thorough exposition of intuition, writes that one reason may be that the concept has not been well defined, another that it covers too many phenomena.[266]

Before we continue with the more recent views on the issue, we should take note of a couple of old books on intuition. One written in 1882 has its focus on two schools of mind.[267] The author argues that one school is rooted in knowledge from observation and experience, and one is rooted in ideas, principles, and truths originating in native power or as seen in the inward light of the mind. "The first type of intelligence is linked to analysis and deductive knowing, and the latter to intuition and inductive knowing." Yet another, thorough inquiry is pursued by Diblee in 1929. He maintains that sensation is to feeling what intuition is to our

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[264] Ibid. My italics.
[265] Bastick, 1982, p. 6, 25. In 1978, Bastick searched for the word intuition in 5 relevant databases. Of the 2 692 000 articles and reports, only 24 were studies of intuition.
[266] Hogarth, 2001, p. 6. See also DiSessa, 1983.
[267] McCosh, 1882, p. 3-4.

thought. "Sensation has a definite physical basis, and acts mostly in full consciousness. Intuition grasps the material, the complex abstract propositions extra-consciously and presents it to thought as a *complete whole*, or according to some *preconceived pattern*. It constitutes a peculiar enlightenment in what each individual knows to be a specially, dark corner for himself. It is an inward vision whereby knowledge becomes unified."[268] Diblee argues that intuition as an intellectual function, is not only concerned with original presentations, or perceptions as Jung would say, but is continually penetrating conscious thought and being modified by it. "It is the reappearance of changed ideas and images, which affords the strongest proof of the reality of intuition."[269] This is a *connaissance rèflèchie*, a return of knowledge on itself, a synthesis to a second degree, resembling Bergson's counter analysis. This activity may be due to reserves of intellectual strength, a certain *logical honesty*, or it may be owing to greater *independence of instinctive influences*, he argues.

Katharine Wild

A book much referred to, is the one written by Wild, in 1938. She reviewed thirty writers on intuition, including Spinoza, Kant, Bergson, Croce, Jung, and Whitehead. She concluded that, common to most definitions of intuition is the idea of reaching a conclusion, *a synthesis*, a formulation, or a solution to a problem *without being aware* of the process which this conclusion or synthesis is reached. Synthesis is thus one item in the questionnaire. "There are *two kinds* of such immediate intuition. The first instance is where the objects are *universal*, or universally acknowledged when understood, and the second is where the object is enjoyed by only *one particular mind*."[270] This may correspond to the collective and personal unconsciousness, or level one and two intuitions. *Cause* or responsibility is given as examples of the first, and the beauty of a particular three blown by a particular wind in a particular light, is given as example of the second instance.

The first instance can be further subdivided into particular universal intuitions such as Kant's categorical imperative, and into what may be called general universal intuitions, such as Plato's goodness, Wild argues. Furthermore, "intuition gives us insight into *reality* as opposed to, or supplementing appearances, and it *differ in degree*, rather than kind. The result may be an infinitely progressing realization of variety in the creative possibilities of the universe. It is a *subconscious*, or *preconscious* working of the normal mind, and it brings with it a certain degree of *compulsion to action*. It is largely teleological in its motives and is the *minister of final causes*, thus it has in consequence a *prophetic aspect*. It is an endowment of specially gifted people and is the *crown of reason*. Intuition thus introduces *novelty* into the world."[271] The main function of intuition is therefore recognition of *values*, and it is intuition, rather than the discursive intellect, that connects man with a spiritual world, she argues.

Mario Bunge

In 1962 Bunge gives yet another systematic review of intuition. He applies a critical view on this ambiguous Wittgensteinian family concept. In his thorough investigation, he argues that Kant's pure intuition, Bergson's metaphysical intuition, and Husserl's intuition of essences, play no role in science. Moreover, he argues that all the intuitions of scientists are *normal* modes of perceiving and thinking. In the language by means of which we speak of science,

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[268] Diblee, 1929, p. 84-99. My italics.
[269] Ibid.
[270] Wild, 1938, p. 230-233.
[271] Ibid. My italics.

intuition designates, according to Bunge, first *modes of perception*. That is, "quick identification of a thing, event, or sign, clear understanding of the meaning, or mutual relations of a set of signs, and interpretation ability."[272] The latter is defined as the ease with which the correct interpretation of artificial signs is accomplished. *Secondly*, he mentions *imagination*. "This is a representation ability, or geometrical, spatial intuition. It is also a skill in forming metaphors, and in creative inventiveness and inspiration."

Thirdly, there is intuition as *valuation*, or sound judgment, phronesis, discernment, or insight. *Finally*, he elaborates on intuition as *reason*, that is, *catalytic inference, power of synthesis* and *common sense*. "Catalytic inference is a quick passage from some propositions to other propositions perhaps by skipping stages so rapidly that the premises and the intermediary processes are not noticed. But the premises and the intermediary steps, that have been skipped or forgotten, are so many that only a trained mind can arrive in this way at likely conclusions." *Power of synthesis* or global vision and synoptic grasp, is defined as "the ability to combine heterogeneous, or scattered elements into a unified or harmonious whole." However, only a highly logical mentality is capable of achieving the synthetic apperception of a logical relation or set of relations, he says. Such a skill is defined as intellectual intuition. *Common sense* is judgment founded upon ordinary knowledge according to Bunge.[273] In this account, we start to see an emphasis on rapid, automatic, effortless inference.

Malcolm Westcott

In 1968, the first attempt to measure individual differences in intuitive thinking in the laboratory was pursued by Westcott. He states that "*a conclusion based on intuition typically is characterized by less explicit information than is ordinarily required to reach that conclusion*."[274] As this rather simple definition is applied in the popular RAT tests as well, we should note that it is opposing the one of extraverted intuition given by Jung, as well as the third level of intuition. We will return to the Remote Associate Test below. We also note that the main difficulty in measuring intuition, when defined this way, is to create a situation in which individuals may attempt to reach conclusions, or solve problems in the presence of varying amounts of information. Furthermore, there must be a way of measuring how much information a given individual requires, and how much is normally required. Finally, there must be some conclusion or solution, which is consensually valid, Westcott argues.[275] One example is the clue January. If the subject asks for a second clue, the reply is February. The subject may now suggest intuitively that the fifth clue should be June. Another popular approach is to provide a series of pictures that includes more and more details. If the respondent is able to recognize the pictured object early in the sequence, it may indicate a well functioning intuition. Interestingly, Bartlett suggested much the same technique as a possible measure of intelligence. He indicates that: "there may be a direct relation between capacity to utilize minimal information (in terms of number of items) and high ranking intelligence."[276]

Westcott discovered that subjects *do* differ in the amount of explicit information they require before attempting solutions to problems and in the degree of success they have in reaching accurate solutions. These two characteristics were independent of each other. That is, success

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[272] Bunge, 1962, p. 67-91. See also Myers, 2002, and Wilder, 1967.
[273] Ibid.
[274] Westcott, 1968, p. 97-98. My italics.
[275] Ibid.
[276] Bartlett, 1958, p. 31.

was not related to the amount of information. Those individuals who were highly successful on the basis of less information than is usually required to arrive at an accurate conclusion were designated as intuitive problem solvers, while those who showed a propensity for acting on little information with poor results were called wild guessers. Two other categories of subjects were designated as cautious careful problem solvers and cautious careful failures. The former group demanded a great deal of information and was successful in using it, while the latter failed to use it adequately.[277]

The successful intuitive thinkers tended to have slightly higher mathematical aptitudes than the other groups. Their verbal aptitudes and their academic grades were not distinctive, but they tended to be slightly more visible to their instructors, and they were rated slightly higher in terms of their rapidity and accuracy of conceptualization, according to Westcott. More interesting were the characteristics of their attitude, which differed significantly from those of all the other groups. "They tend to be unconventional and comfortable in their unconventionality. They are confident and self-sufficient, and do not base their identities on membership in social groups. Their skills and investments in social interaction for its own sake are relatively low, and when they go along with a group it is not because of any particular value placed on social conformity."[278] These findings are in accordance with those of Jung's typology.

Westcott also states that, "in social situations the successful intuitive thinkers appear to maintain considerable control of affect, except under special conditions such as 'necessity' or duress. In non-social pursuits, they can become very affectively involved. Their investments appear to be primarily in *abstract* issues, either at the academic-intellectual level, or at the level of human values." This is in accordance with the philosophical account and Jung's *abstract intuition*. "In their pursuit of these concerns they *explore* uncertainties and entertain doubts far more than the other groups do, and they live with these doubts and uncertainties without fear. Thus, they enjoy taking risks, and are willing to expose themselves to criticism and challenge. They can accept or reject criticism as necessary, and they are willing to change in ways that they deem appropriate. There is resistance to control and order imposed from without, but in contrast, they maintain a high sense of morality, which is generated from *within*." Moreover, they describe themselves as independent, *foresighted*, confident, and spontaneous, according to Westcott.[279] This is a coherent picture, of an *autonomous*, self-determining individual. These findings will be important when we later turn to a specific discussion of intuition and rationality. In his thorough inquiry, Elster advocates the view that *autonomy* is required in order to have substantially rational desires.[280]

Roni Summers

In Summers' doctoral work from 1976, *A Phenomenological Approach to the Intuitive Experience*, the subjects were students taking the Exploring Intuition workshops for credit at University of California. Only one quality seemed to be consistently present throughout all the 56 written responses, this being increased *new awareness*.[281] This was determined subjectively as well as objectively. Those qualities, which seemed to be present most frequently, were first a very strong intensity to the experience, which was felt overall or

[277] Westcott, 1968, p. 119.
[278] Ibid. p. 140.
[279] Ibid. p. 137, 143. My italics.
[280] Elster, 1983, p. 20.
[281] Summers, 1976, p. 172. See also Chinen, 1985, Claxton, 1998, and Raidl, 2001.

totally *throughout the body*. There was also a sense of being guided, directed or guarded. The source of the intuition was experienced as *coming from within*, and the experience was *unexpected*. The intuition came into awareness *spontaneously and instantly*, and there was an increased awareness or *new insight* about themselves or others. There was also an experience of *clarity* about the awareness and less frequently a certainty about it. The intuition seemed right for the participants, or they sensed something or someone was not right. There was neither thoughts nor analysis at the time of the experience, or there was an experience of conflict between the analytical intellect and intuition. Summers thus offers the following definition: "An intuitive experience is a spontaneous, unexpected, intensely, clear inner awareness, which occurs without the aid of intellectual reasoning, and is experienced as right or fitting to the person."[282] Here we recognize the first level of intuition, only.

Frances Vaughan

Vaughan's book from 1979 offers a typology of ways in which intuition might manifest itself. She credits the development of this schema to a workshop on professional training in psychosynthesis that she had taken with R. Gerard. These levels of awareness include *physical, emotional, mental, and spiritual*. Awareness here refers to the levels at which the intuition is *consciously* perceived, and this is coherent with the Buddhist doctrine. Mental refers to images, ideas, and thoughts, or the sixth class of consciousness. The dream is a frequent vehicle of these kinds of intuition, and they may show up immediately after profound sleep. Her spiritual intuition resembles certain aspects of integral intuition, and she writes that here the knower becomes one with the known, and knows from inside, by identification with, rather than information about, what is known. Interestingly the etymology of intuition or *intueri* is to look at or *in-to*. In her definition she goes along with Jung and says that: "Intuition allows one to draw on that vast storehouse of unconscious knowledge that includes not only everything that one has experienced or learned, either consciously or subliminally, but also the infinite reservoir of the collective and universal consciousness, in which individual separateness and ego boundaries are transcended."[283] With Vaughan then and even more so with Bastick, an *emphasis on emotional involvement* is coming to the fore. Even though Jung defines feelings as a rational function, this emphasis strengthens the tendency to see intuition as irrational.

Tony Bastick

In 1982, Bastick wrote the massive 500 pages *Intuition*, which is a major contribution. The bibliography contains close to 700 references. His ambition is to define intuition in terms of its more common properties and to formalize any previously vague terms employed in its definition. In this, he is fairly successful. He identifies and discusses twenty properties related to several issues that he finds to be of special relevance.[284] First, he discusses intuitive knowledge and its *correctness*, indicating that *subjective consistency* makes intuition seem correct. This relates to logic of appropriateness, which we will return to later.[285] Intuition is

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[282] Ibid. p. 173-174.

[283] Vaughan, 1979, p. 4.

[284] Bastick, 1982, p. 25. The twenty properties are; quick, immediate, sudden appearance, emotional involvement, preconscious process, contrast with abstract reasoning, logic, or analytic thought, influenced by experience, understanding by feeling – emotive not tactile, associations with creativity, associations with egocentricity, intuition need not be correct, subjective certainty of correctness, recentring, empathy, kinesthetic or other, innate, instinctive knowledge or ability, preverbal concept, global knowledge, incomplete knowledge, hypnogogic reverie, sense of relations, dependent on environment, transfer and transposition.

[285] March, 1994, p. 58.

seen as a natural function most suitable to the immediate needs of the individual. "As it satisfies these immediate needs, the intuition may always be considered correct in the immediate situation." However, by other later or external criteria the intuition may be considered inappropriate or wrong, according to Bastick.[286] This is not in agreement with Jung who advocates that extraverted intuition seeks to discover what possibilities the objective situation holds in store, and resembles the hunch, gut feeling, or good nose for *objectively real* possibilities.[287] Neither does it resonate with the third level of integral intuition. The *confidence* and *certainty* that attends the intuitive product and guides the process, is due to a proportionate reduction in the mild *anxiety* that initiates the process. This can be measured in GSR, heart rate and respiration, he argues.[288] Moreover, he also argues in accordance with Baylor, that intuition is influenced by *experience*.

Secondly, he thus elaborates at some length, its dependence on *emotional involvement*, claiming that empathy and projection are essential to intuition. "The intuitive process is dependent upon the interaction of emotional states and cognitive processes. It is evident from the feeling of satisfaction and reductions in tensions that accompany an insight that emotional involvement plays a part in intuitive processes. A whole body unifying theory is needed to describe intuitive processes."[289] The latter conclusion, namely that a unifying theory is needed, is indeed in accordance with the Buddhist doctrine. Bastick goes on claiming that one main contrast between intuition and reason is that pure reason is considered to be independent of feelings, whereas intuition is dependent on our feelings at all stages. That is, "from the initial perception where feeling impressions of the information are created, through the intuitive processing where feelings may change, to the final intuition, which has its accompanying feeling of certainty."[290] Again, this contradicts Jung's theory, where thinking governed by feeling, is seen as different from intuition, and where feeling is defined as rational.[291] I prefer not to enter this difficult matter, as it will take us far beyond the scope of this thesis. It suffices to say that a mature, integral intuition may be aware of any level of consciousness, including feelings, or the second *skandha*, to use Buddhist terminology.

Thirdly, Bastick discusses the important phenomenon of *preconscious incubation*. Apparently, this is an issue of great relevance. We remember that Buddhist doctrine emphasizes that "whatever we have done or said or thought or experienced, a trace or residue of it remains there; nothing is absolutely lost."[292] Moreover, these seeds are *active* impressions, left like seeds in the soil, and when conditions are favorable, they sprout and produce fruits. We thus start to see the *origin* of new ideas, images, and flashes of insight that arise out of the mind itself. Bastick then, says that the incubation period is the name given to the time in which the intuition develops, the time between realizing the problem and arriving at an intuitive solution.[293] We might thus suggest that his view is extended to include the entire time span of the individual mind and being. Bastick also writes that the word incubation implies that the intuitive processing is going on out of awareness. More or less so, we could

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[286] Bastick, 1982, p. 322.
[287] Jung, 1971, p. 367, 369.
[288] Bastick, 1982, p. 170.
[289] Ibid. p. 133. See also Flyvbjerg, 1990, and Forgas, 1995.
[290] Ibid. p. 58-59.
[291] Jung, 1971, p. 482. "Thinking that is governed by feeling I do not regard as intuitive thinking, but as thinking dependent on feeling; it does not follow its own logical principle but is subordinated to the principle of feeling. In such thinking the laws of logic are only ostensibly present; in reality they are suspended in favor of the aims of feeling."
[292] Sangharakshita, 1998, p. 56. For a more recent contribution see Dorfman, et al. 1996.
[293] Bastick, 1982, p. 147.

add. An increasing number of people are now focusing in on the possible consequences of all the violence presented to us through the media channels. They speculate in a relation with the increase of violent behavior that we see in young children. "As a result of this hidden processing the intuition comes to light fully formed like the incubation process of an egg where the chick develops unseen and comes to light fully formed."[294] The incubation period may range from a short period to many years, and Bastick shows how the length of the incubation period varies when three emotional processes are combined.

Kaufman & Helstrup as well, claim that intuition is closely related to the phenomenon of incubation. However, this phenomenon is difficult to investigate scientifically. Intuition is by them, defined as the situation where we are confronted with a task and have a vague *sensing* or *gut feeling* of the correct answer, but we cannot give a conscious argument. It just feels *correct*. Is it then possible to make such a vague, implicit, and unconscious process accessible to experimental analysis? They refer to Bowers et al, who have tried. What they did was a Remote Associates Test. In brief, it is a test, where you have e.g. three words, that all may be related by a single word. Goat, white, moon, can all be related to cheese. The task is complicated by making dyads of triads, that is, two pairs with three words in each. Only one of the triads can be solved, and is called *coherent.* After only a few seconds, the respondents are interrupted, and asked which pair can be solved. The main finding in such an approach to intuition, is that it is possible to solve the puzzle, beyond what is to be expected.[295] In a creative way the RAT tests reveals the coherent, synthetic nature of intuition. Bowers thus defines it as "a preliminary perception of coherence (pattern, meaning, structure) that is at first not consciously represented, but which nevertheless guides thought and inquiry toward a hunch or hypothesis about the nature of the coherence in question."[296]

The pivotal question then, is this: what exactly is going on in the darkness of the incubation? Quite a few authors maintain that the subconscious is reasoning in the same way as the conscious mind.[297] One example is Simon's remark, that intuition and judgment – at least good judgment – are simply analyses frozen into habit, and into the capacity for *rapid* response through recognition.[298] He thus alludes to *experience* as rationale for intuition. This is the normal view. However, an example given by Baylor, may illustrate the profound difficulties we face.[299] It goes more or less like this: Consider first the experienced, expert physicist who makes a paradigmatic discovery in her field. On the other hand, there is the young boy, who is learning geometry and related proofs. He proceeds on his own and insightfully figures out a famous geometrical problem, even though he is a relative novice. Mozart is yet another case in point. Six years old, he composed his first symphony. Is it only experience that facilitates brand new insight? Is it required? Is it beneficial to approach a field with a naive view? How can both these types of intuition be accounted for? The *second level* of intuition relates to all the accumulated collective experience and knowledge. May an answer be found there?

This matter is not easily settled. Bastick makes the point that intuition cannot be considered a very *fast* unconscious inference, because then a *long* incubation process would not be

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[294] Ibid.
[295] Kaufman & Helstrup, 2000, p. 313-315.
[296] Policastro, 1995, p. 106.
[297] Simon, 1987, p. 57-64. See also Bastick, 1992, p. 147-148. He refers to e.g. Bartlett, 1968, Cartwright, 1955, Cobbs, 1952, and Bunge, 1962.
[298] Ibid. p. 57-64.
[299] Baylor, 2001, p. 238.

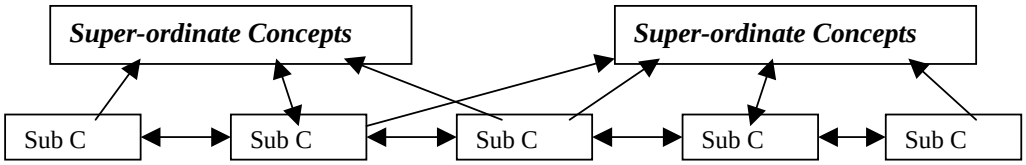
necessary. This is logical and opposes the view of intuition described in dual process theories. Why then is it sometimes immediate and fast and at other times very slow indeed? We have struggled with the acclaimed *immediacy* of intuition and suggested that it is a *result* of a *balanced and integral state of mind*, which is upholding the coherence of the first six senses or classes of consciousness on the one side, and class eight and nine on the other. It is thus their common ground with no body of its own, and it is in this sense it is an *immediate and singular synthesis*, as Plato, Kant, Bergson, and others, argue. The length of the incubation period then, may be dependent upon the balance of our mind as well as the quality and purity of the seeds stored in the unconscious. In this context, we can fully appreciate the contribution of Jung. His view is namely that "the unconscious is not just something, that lies there like a psychic *caput mortuum*, but *coexists* with us and is constantly undergoing transformations which are inwardly *connected* with the general run of *events*."[300] That is, events in the objective world of physical appearances and *doxa* to use Plato's terminology.

A Fourth issue, discussed by Bastick is the *global knowledge property* of intuition, which is emphasized by Fishbein as well.[301] The global aspect is better understood if we think in terms of the second level of intuition, and its reference to the universal laws of the collective unconscious. The intuitive process then, according to Bastick, "involves global perception of all the relevant information which comprises the whole information field for the intuitive process *comprising both external and internal stimuli*. Ideas come in a *completed* form."[302] Here he echoes Jung and his notions of introverted and extraverted intuition. If then, we allow intuition to comprise both internal and external stimuli it is only a short way to its mature *integral aspect*. This aspect is, to my knowledge *not properly explored theoretically before*. Thus, this thesis aims at initiating a discussion of the different levels of intuition. Bastick argues that analytic ideas are constructed by comparing two parts at a time. The global nature of the information used in the intuitive process is markedly different. "The total information being used at any time in the intuitive process is defined by its physiognomy, that is its associated feelings and ideas. Information may be contributed simultaneously through all modalities, speeding the process. Particularly non-verbal modalities are used, commonly spatial."[303] Bastick specifies two extreme cases of information content where the intuitive process is used, namely *complex*, or *very little* information. The former is characterized by a vast amount of duplicated, interrelated information. In the latter case, there is not only little information but also little time for processing.

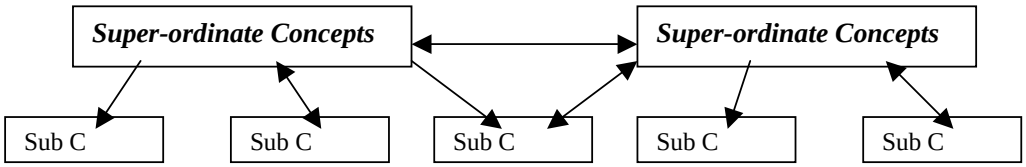
A fifth issue that he digs into is the *contrast between intuition and analysis*. It is one of the most noticed properties on intuition, he says, citing e.g. Kline, Baer, Poincarè, Berne, Hutchinson, Koestler, Allport, Clark, Giordana, Skinner, Board, and Bartlett.[304] "The analytic process may be considered as a step-by-step process comparing just two elements at a time. This contrasts with the intuitive process, which uses feedback feelings for the whole field of knowledge simultaneously. This intuitive parallel process results in, among other things, a marked difference in the speed of processing." Consecutive discrete binary and linear relations are thus characteristic of analytic thoughts and logical reasoning, according to Bastick. "Intuitive thought in contrast seems to use the whole field of knowledge. Associated ideas and feelings affect one another in a *non-linear* simultaneous feedback process."[305] This

[300] Jung, 1971, p. 401. My italics.
[301] Fischbein, 1987, p. 53.
[302] Bastick, 1982, p. 249. My italics.
[303] Ibid.
[304] Ibid. p. 51-52.
[305] Ibid. p. 52-53. My italics.

process is often preconscious. The intuitive type thus prefers *complexity* and *multidimensional* categorizing in contrast to the analytic type who prefers simplicity and symmetry, Bastick argues. Multidimensional categorizing resembles Kant's reference to the transcendental. Whether or not intuitive and analytic thought are two ends of one continuum is yet another controversial issue. Bastick emphasizes the work of Ausubel, who see them as two distinct modes. The first model accounts for the fact that linear processing occurs in analytic processes but not in intuitive. The highly analytic individual moves primarily within the subordinate concepts (Sub C) and to super-ordinate concepts, with referral back to subordinate concepts, thus expanding the subordinate concepts. Very little if any exchange is between super-ordinate concepts.[306]



The next model illustrates that highly intuitive individuals move freely from one super-ordinate concept to another with frequent referral primarily to, and less frequently from, subordinate exemplars. In other words, from universals to particulars, that is, from the intelligible world of pure reason to that which comes about of necessity, to use ancient Greek terminology. This view is consonant with the one suggested above, namely that Ideas, Forms, and Archetypes serve as super-ordinate anchors, or epigenetic rules, for the second and third level of intuition.



Efraim Fischbein

Fischbein delineates, in 1987, the following key characteristics of intuitive cognitions: self-evidence, intrinsic certainty, perseverance, coerciveness, theory status, extrapolative and implicit, as well as global & synthetic. He uses the word intuition as equivalent to intuitive knowledge, that is, not as a source, not as a method, but, rather, as a type of cognition. He also distinguishes between intuition and perception, and argues that intuitions refer to self-evident statements, which exceed the observable facts.[307] He thus differs from Jung, who defines intuition as the function that mediates perceptions in an unconscious way. Concerning first the *self-evident*, self-consistent, self-justifiable, or self-explanatory character of intuition, Fischbein anchors his argumentation in Descartes and Spinoza. He writes that: "If we affirm that the whole is bigger than each of its parts, that every number has a successor, or that two points determine a straight line, we feel that these statements are true by themselves without

[306] Ibid. p. 57-59.
[307] Fishbein, 1987, p. 14.

the need for any justification."[308] In consonance with one of the tests that Westcott used, he suggests that if one has three numbers 1, 2 and 3 one may find intuitively that the fourth proportional is 6. Six is to three, as two is to one. "Such a conclusion is self-evident and therefore certain."[309] Fishbein goes along with Summers and Bastick, and argues that it is the *feeling* of *certainty*, that remains a *criterion* for intuitive knowledge.

Regarding the *perseverance* and *coerciveness* of intuition, Fischbein claims that once established, intuitions are very robust. "We know that matter is composed of atoms which are in turn composed of extremely small particles moving at an enormous speed. Nevertheless, the intuitive representation of matter as being composed of moving particles is practically impossible."[310] Development of conceptual schemas mapping our intuitions may thus be instrumental. Research along this line of reason, is done by Clarke and Mackaness.[311] The suggested coercive effect on the individual's way of reasoning is very interesting. It relates to time and space as *a priori* Forms of intuition, as well as to the conditioning effect of Ideas and Archetypes, which represent "the laws governing the course of all things we can experience."[312] Intuitions thus impose themselves subjectively on the individual as *absolute*, *unique* representations or interpretations. Generally, other alternatives are excluded as unacceptable, according to Fischbein. "It is a basic difference between the relativity of a, somehow, conventional viewpoint – as exposed in a formal-logical dispute – and the apparent absoluteness of an intuitive acceptance."[313]

The *theory status* and the property of *extrapolativeness* are also easier understood when seen against the *laws* hidden in the collective unconscious. "The theoretical property of intuitions entails several aspects. An intuition is never confined only to stating the universality of a property or to the perception of a certain fact. In an intuition one generally grasps the *universality* of a principle, of a relation, of a law – of an invariant – through a *particular* reality."[314] Right here we can refer to the unique world argument of Plato, and recognize a similar point of view. An intuition then, is not a pure theory. It is a theory expressed in a particular representation using a model, according to Fischbein. In ancient Greek words, it is a copy of an original model, resembling an Idea. This relationship will be further illustrated when we later on suggest holography as a mechanism of how intuition works. An intuition then, always exceeds the data on hand. This is exemplified in the Westcott type of test, where the first clue is January, the second February, and the correct guess then is March. However, such an extrapolative guess is not sufficient to define an intuition, according to Fischbein. A feeling of *certainty* is also a necessary characteristic of an intuition. Otherwise, it is a mere guess. "It is this particular combination of incompleteness of information and intrinsic certitude that best characterize an intuition."[315]

Fischbein as well, emphasizes that intuition is a *global*, *unitary*, *synthetic* view, as opposed to analytical thinking which is discursive in its very nature. It is thus reminiscent of the concept of *Gestalt*. "One may plausibly connect the role of analogy in structuring an intuitive view with the fact that the meaning of a Gestalt is determined by its basic internal dependencies rather than by the discrete elements from which it is composed." As an example, he uses a

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[308] Ibid. p. 43.
[309] Ibid.
[310] Ibid. p. 47.
[311] Clarke & Mackaness, 2001.
[312] Jung, 1971, p. 401.
[313] Fischbein, 1987, p. 50.
[314] Ibid. My italics.
[315] Ibid. p. 51.

black-and-white photograph of a person, and argues that: "we recognize the person immediately, despite the fact that the absolute values of colors and sizes are different. One identifies the image by grasping the Gestalt, not by considering the details."[316] Fischbein stresses another point that resembles Jung's extraverted intuition, namely that such an *integrative*, *tacit* process is based on both subliminal and marginal clues. The subliminal clues are totally unobservable, while the marginal ones are observable from the corner of the eye. Finally, he touches upon the issue of more or less stable intuitions, suggesting that this is due to their structure. As one example of perfectly structured intuitions, he mentions the aggregate of space intuitions developed in early childhood. Again, this resonates with Kant's *a priori* Forms of intuition. The challenge then, is to be conscious of the *implicit* models that our intuitive reactions are surface expressions of.

Daniel Cappon

The final, thorough account on intuition that I will mention, is the one provided by Cappon, in 1994. As one of few, he focuses on both *input* and *output* skills, which to some degree resembles Jung's introverted and extraverted intuition. He defines the anatomy of intuition as "the genetically structured and stored capacity or innate ability for intuitive intelligence. In entropic terms, its potential (negative energy) is stored in the batteries of the collective memory vault, and discharged (positive energy) through words, numbers, drawings and actions."[317] In accordance with Jungian terminology he argues that the individual inherits various amounts of this potential, *builds it up and stores* its personally fashioned model, together with its information fuel, in the *personal unconscious* memory vault. Cappon is here in full agreement with our main line of argument, and his view resembles level one and two intuitions. His operational definition is a result of psychological and literary bibliographic research, as well as clinical observations of more than three thousand patients. It is divided into input and output skills, ranging from basic perceptual skills to higher ideational and symbolic ones.

Looking first at Cappon's input-skills, they are considered *latent*, or passive, as Jung would say. *Perceptual closure* on insufficient time or definition is exemplified by e.g. the recognition of an object exposed for 1/25 seconds and recognition of an object through a whiteout. *Perceptual recognition* is the skill you need to find things in a crowd. Associative & dissociative *perceptual discrimination* is exemplified by e.g. recognition of similar or dissimilar objects from successive exposures. Cappon as well, emphasize *cognitive synthesis* as a key feature, which we all use when we assemble jigsaw puzzles. The ability to know what one did not know one knew is yet another aspect of intuition, which he defines as *psychoosmosis*. "This is elicited for instance when puzzling out a word or symbol from a foreign language, or naming an object, and its use from the very ancient past."[318] The Remote Associates Test, that we have discussed earlier on, requires that the subject harness many of these input-skills. Finally, he mentions spontaneous or *passive imagination*, *instant memory recall*, and the ability to estimate *time flow*.

The *activated*, output-skills include *active imagination*, *foresight* and *hindsight*. The alpha and omega of the extension of foresight is the power to predict. "Foresight is not directly based on stimulus-response situations like the built-up instincts of animals. Rather it is based on *stored knowledge* and an innate, quick, cerebral 'calculation' of the chance an event will occur. This,

[316] Ibid. p. 53.
[317] Cappon, 1994, p. 15. See also Cappon, 1989.
[318] Ibid. p. 16.

then, is a foremost intuitive key to survival and success."[319] In this quote we recognize Jung and his view that "its prophetic foresight is explained by its relation to the archetypes, which represent the laws governing the course of all things we can experience."[320] Cappon also emphasizes *optimal timing intervention*, *the hunch*, choice of optimal method and future application, as well as *assortative & dissortative cognitive synthesis*. By the latter is meant e.g. matching a child's face to his or her face as an adult, and the ability to tell *who* did not belong in a group picture of a family, with one stranger in it.[321] It is a kind of perceptual inference. Finally, he relates intuition to the *meaning* of things. It provides answers to the question science never addresses, namely – Why? "Intuition instantly perceives the 'sacred' objects of universal inspiration that are meant to lend meaning and sometimes to inspire awe."[322] Thus, it is *teleological ideation*, such as understanding the meaning of *archetypes*, according to Cappon.

Daniel Kahneman & Amos Tversky

Before we continue with some of the latest contributions, we can take note of the early work of Kahneman, Slovic & Tversky, which has exercised a profound influence on the research on judgment and decision making. In their study of statistical intuitions, they use the term intuitive in three different senses. "First, a judgment is called intuitive if it is reached by an informal and unstructured mode of reasoning, without the use of analytic methods or deliberate calculation."[323] This is in flat contradiction to Simon's view that "intuition and judgment – at least good judgment – are simply *analyses frozen into habit*."[324] In suggesting that intuition is informal and unstructured, they echo Jung and his view of intuition as passive, undirected thinking. Though, it contrasts the view of Fischbein, who argues that stable intuitions are *well structured*. This is also the view of Smit, who argues that insofar as appearances have this *ordered* relation to each other, and constitute such grounds of cognition, they constitute empirical intuitions.[325]

As an example, Kahenman et al. refer to psychologists, and claim that they often follow an intuitive procedure in deciding the size of their samples, but adopt analytic procedures to test the statistical significance of their results. Secondly then, they suggest that: "a formal rule or a fact of nature is called intuitive if it is compatible with our lay model of the world." As an example they state that it is intuitively obvious that the probability of winning a lottery prize decrease with the number of tickets, but it is counterintuitive that there is a better than even chance that a group of 23 people will include a pair of individuals with the same birthday. Finally, "a rule or a procedure is said to be part of our repertoire of intuitions when we apply the rule or follow the procedure in our normal conduct."[326] It is a common sense, as Bunge pointed out. Here they use the rules of grammar as example.

In summarizing to date, we may say that what we have seen so far is a wavering *disagreement* in the conceptual development of a *psychological* notion of intuition. However, the tendency is towards one, which equals intuition with: *unconscious*, *irrational*, *implicit and tacit processing*. Polanyi's work is illustrative of this trend. He writes that: "in the structure of tacit

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[319] Ibid. p. 30. My italics.
[320] Jung, 1971, p. 401. My italics.
[321] Cappon, 1994, p. 16.
[322] Ibid. p. 38.
[323] Kahneman, Slovic & Tversky, 1985, p. 494.
[324] Simon, 1987, p. 63. My italics. See also Simon, 1997 and Henley, 1999.
[325] Smit, 2000, p. 265. For a further elaboration of his view, see the paragraph on Kant.
[326] Kahneman, Slovic & Tversky, 1985, p. 494.

knowledge we have found a mechanism which can produce discoveries by steps we cannot specify. This mechanism may then account for scientific intuition – such intuition is not the supreme immediate knowledge, called intuition by Leibniz or Spinoza or Husserl, but a work-a-day skill for scientific guessing with a chance of guessing right."[327] What Polanyi here is describing, is the first level of intuition, only. However, he does recognize *several levels* of intuition. So *contrary* to the situation in philosophical epistemology, intuition is in psychology, *unconscious*, *implicit* and *irrational*. Its immediate and direct access to the intelligible world of pure reason, exemplified by its *integral* awareness of *Ideas, Forms* and *Archetypes* is now only vaguely present. Its status as rational, intellectual thinking is evaporated.

Experimental psychology is yet another example of this trend. Osbeck refers to Bouthilet who attempted to define intuition operationally, as the capacity to make correct guesses without knowing why. Crutchfield is another case in point. He used the word intuitive to describe improved performance in solving *spatial* orientation puzzles with repeated performance, without awareness of the relevance of previous exposure.[328] One of Kant's *a priori* Forms is here still silently with us. Osbeck thus indicates that the phenomenon in question appears to reflect what was eventually described as *implicit* learning. That is, learning from experience *without awareness* of doing so.[329] Her view is corroborated by e.g. Lieberman who writes that implicit learning suggests a mechanism, whereby sequential associations can be learned *without* the learner ever being aware of the learning process or its ultimate product.[330]

Matthew Lieberman

Lieberman provides a social cognitive neuroscience approach, proposing that *implicit* learning processes are the cognitive *substrate* of social intuition. However, in direct opposition to Bastick, he distinguishes intuition from insight or the, *eureka* phenomenon. "Sudden insight also seems to rely on non-conscious processes, but when awareness is derived in insight, it is *not judgment, as is usually the case in intuition*."[331] Here he is opposing Jung as well, but is in agreement with Fischbein. Insight is rather a process, where one suddenly becomes aware of the logical relations between a problem and the answer, he argues. "In the case of intuition, usually there is no insight into the logical relations, but an impetus, judgment, hunch, or behavioral response. That said, intuition is the subjective experience of a mostly non-conscious process that is fast, a-logical, and inaccessible to consciousness that, dependent on exposure to the domain or problem space, is capable of accurately extracting probabilistic contingencies."[332] His hypothesis then, is supported by two arguments. First, he elaborates on the *conceptual correspondence* between implicit learning and social intuition, defined as *nonverbal* communication. Secondly, he reviews the relevant neuro-scientific data, and finds that the caudate and putamen in the basal ganglia are central components of *both* intuition and implicit learning. He thus establishes a rigorous empirical link.

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[327] Polanyi, 1969, p. 143-144. See also Polanyi, 1966, and De Bono, 1971.
[328] Crutchfield, 1960, in Osbeck 1999, p. 231.
[329] Osbeck, 1999, p. 231. She refers to Reber, 1967. For thorough reviews, see Lamberts & Shanks, 1997, Seger, 1994, Shirley, 1996, and Stadler & Frensch, 1998. See also Damasio, 1994, p. 188.
[330] Lieberman, 2000, p. 110. See also Nonaka & Konno, 1998, and Pribram, 1991.
[331] Ibid. My italics.
[332] Ibid. His research becomes even more interesting when aligned with the work of Bradley and Pribram, who use quantum holography to explain these implicit learning processes. See Pribram, 1971, 1991, 1998, Bradley, 1998, Gunter, 1987, El sawy, 1985, Glazer, 1987, 1998, and McKenzie, 1991.

Karl Pribram & The Organization of Memory

At this point in our inquiry, it may be of relevance to speculate a little bit about the organization of our memory. Pribram suggests that holographic-like processing operates in the brain with respect to sensory perception and memory, and he links it to intuition.[333] In a hologram, the whole is enfolded in every single part. This is claimed to be a key property of intuition.[334] A hologram thus has enormous storage capacity. This fact makes it conceivable that our mind has contained within its repositories all our accumulated personal experience and knowledge, as well as the entire ancestral memory, as envisioned by e.g. Jung.[335] The access key then, which may not be a mere speculation, is intuition.[336] Pribram writes: "It is no great leap to suggest that a holographic-like organization characterizes the network of cortical cells. The evidence abounds, and readily accounts for the capability of cortex to construct *perceptual images* and for the distributed nature of the brain's memory mechanism."[337] When one proceeds from the potential domain of energy and momentum to that of *space* and *time*, one is actualizing or unfolding the potential. When one proceeds in the reverse direction one *enfolds*, by virtue of the holographic Gabor function, space and time into the frequency domain.[338] Holography thus preserves space and time as *a priori* Forms of intuition, as Kant proposed.

Laszlo and Penrose locate Pribram's work in a modern context. "A strong early proponent of global (essentially quantum) large-scale coherent 'hologram' activity in the brain was Karl Pribram."[339] In advocating large scale, quantum coherent action in brain function, Penrose is embracing the principle of holography. It is of course beyond the scope of this thesis to discuss the details of quantum mechanics. However, a few remarks on its consequences should be made.[340] The perhaps most astonishing consequence is that "quantum mechanics *unifies* the idea of the field and its waves, and the particle, all into one."[341] It thus *transcends dualism*. This may be of relevance to our comprehension of integral intuition, which is claimed to be a *unified*, non-dual state of mind. Another pivotal consequence is that the quantum potential does not produce, in general, a vanishing interaction between two particles as the distance between those particles becomes very large. Thus two distant systems may still be strongly and directly connected. There is a *non-local* system involved. This is, of course, contrary to the implicit requirement of classical physics, where it is always assumed that where two systems are sufficiently far apart, they will behave independently. This is a necessary condition if the notion of *analysis* of a system into separately and independent existent constituent parts is to be carried out.[342] Again, this resonates very well with the long tradition of philosophers claiming the intuitive state of mind to be global, integral, singular,

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[333] Pribram, 1971, 1991, 1998. See also Pribram, in Gunter, 1987, p. 171, and Talbot, 1991.

[334] In Plato's exposition of intuition, the relation of whole to part and *original to image* figures prominently. See also Morgan, 1984, 1986, who relates holography to social change.

[335] This is not in opposition to the multi-layer theory of Atkinson & Shiffrin, 1968.

[336] Govinda, 1969, p. 74. The intuitive state of mind "represents the stabilizing and central point of balance, upholding the *coherence* of its contents, by being the center of reference." See Weisberg 1980.

[337] Pribram, in Gunter, 1987, p. 168, 171. My italics. Pribram as well, links holography to intuition.

[338] Ibid. p. 170. See McCraty et al. 2004, p. 29, for hard electrophysiological evidence of this process.

[339] Penrose, 1994, p. 368. Laszlo, 2003, p. 83. Beck & Eccles, 1992, p. 11357-61 represent the more notable exception from this view. However, they as well present a quantum mechanical model for the relationship of brain activity to conscious intentions. See also Lockwood, 1989.

[340] Feynman, 1995, p. 36, 117. The wave-particle duality is at the very heart of quantum physics and the brief explanation of it is this: "When the frequency is low, the field aspect of the phenomenon is more evident, or more useful as an approximate description in terms of everyday experiences. But as the frequency increases, the particle aspects of the phenomenon become evident."

[341] Ibid. p. 36.

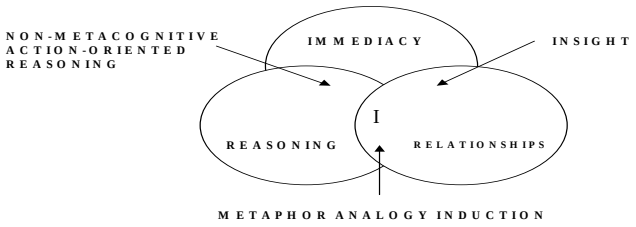
[342] Hiley, 1991, pp. 15-32.

synthetic, etc. In addition, it has implications for dual-process theories, where system two is seen as context-independent. This may thus be questioned.

Amy Baylor

Turning to *New Ideas in Psychology*, and to Baylor, we find her proposing two models that in a neat way synthesize many of the loose threads discovered in this paragraph. In the first model, intuition (I) is perceived as an *overlapping* of reasoning, immediacy, and the sensing of relationships, where the latter are influenced by individual knowledge structures. Certain aspects of it, is in accordance with the model suggested in the section on Jung. However, in writing that intuitive thinking is proceeding automatically, immediately interpreting the present relationship, it is made clear that she stops short at the first level of intuition.[343]

Figure 3.3.1 Baylor's Model of Intuition



The second model is u-shaped, and illustrates a number of important issues. Here *expertise* and availability of intuition are linked to immature and mature intuition. The interesting twist introduced by Baylor is primarily the curve itself. She refers to Choi who found that the mean reaction times for the second graders were *significantly higher* than those of the kindergartners, fourth, and sixth graders, when exposed to a Westcott type of test. That is, they were asked to identify an increasingly more complete picture as soon as possible. Given these results, and similar results discovered by Schon, she suggests that children initially have intuitive understanding, but the analytic approach as thought via school *conflicts* with the intuitive thinking process, causing them to make mistakes. A similar point is made by Ausubel et al.[344] Thus the curve bends downwards until they achieve more developed, schooled understanding. It enables them to answer correctly again, utilizing now what she calls higher order intuitive connections, given a corresponding increase in expertise. "Once a person attains more expert knowledge structures s/he develops the ability to figuratively 'see' different relationships and thus demonstrate mature intuition."[345] Hypothetically, the intricate issue of long or short periods of incubation may be partly explained by level of expertise. Accumulated knowledge and experience is thus one item in the questionnaire. Even though

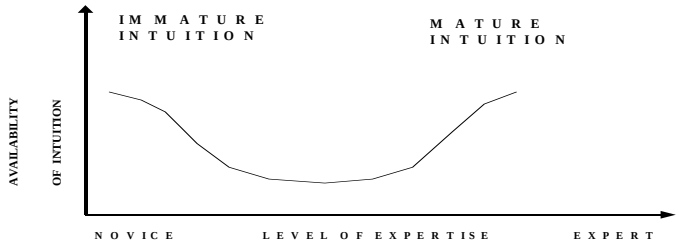
[343] Baylor, 2001, p. 238.

[344] Ausubel et al. 1978, p. 104-105. "Intuitive (semiabstract and often sub-verbal) concepts also exist – particularly in childhood, and afterward in the early unsophisticated stage of acquiring a new discipline."

[345] Baylor, 2001, p. 239-241. "I refer to the intermediate area of the curve as representing analytical/non-intuitional understanding." See also Hogarth, 2001, p. 268, and Abernathy, 1995.

the model presented by Baylor is limited to the first level of intuition, it might be applied to the second level as well.

Figure 3.3.2 Baylor's Model of Intuition



In concluding this section, we find that many of the authors emphasize aspects of intuition that are *more thoroughly comprehended when anchored in philosophical epistemology*. Examples include its global and coercive nature, its theory status, and the self-evident, intrinsic certainty. Thus, recently we have seen two books that offer comprehensive, interdisciplinary perspectives.[346] In ending then, we may say that the psychological notion of intuition refers mainly to the first level of intuition including the following key characteristics; perception of the personal unconscious, emotional involvement, preconscious incubation, uniqueness, absoluteness, subjective consistency, synthesis, unification, non-linearity, multidimensionality, perseverance, and both very fast and very slow processing. Dual process theories do not alter this conclusion, but provide valuable nuances.

3.4 Dual Process Theories

Philosophers define intuition as rational and superior to analytical thinking primarily because it is anchored in Ideas, Forms and Archetypes, which are perceived as *a priori* laws governing and conditioning all existence. Psychologists disagree and tend to equate intuition with rapid, automatic, and often biased processing. That is the case in dual process theories as well. In the chapter on intuition in philosophy we also reached the tentative conclusion that our mind is either dualistic in its functioning or it is not.[347] In the latter case, it is operating on the suggested third level of intuition. This distinction is in many ways with us in modern psychology and it is intrinsic to dual process theories. The key differences in the properties of these two processes as listed by Stanowich and West are presented in the table below.[348]

Figure 3.4.1 Dual Process Theories

[346] Davis-Floyd & Arvidson, 1997, and Ramsey & DePaul, 1998. Many of the papers in these volumes suggest that philosophical analysis of intuition may usefully inform cognitive theory.
[347] The Neoplatonists defined it as inferential or non-inferential.
[348] Stanowich & West, 2000, p. 658-659. See also Gilovich et al., 2002, p. 51, 379, 436.

Dual-Process Theories	***System 1***	***System 2***
Hammond 1996	Intuitive Cognition	Analytical Cognition
Reber 1993	Implicit Cognition	Explicit Cognition
Johnson-Laird 1983	Implicit Inferences	Explicit Inferences
Evans & Over 1996	Tacit Thought Processes	Explicit Thought Processes
Sloman 1996	Associative System	Rule-based System
Evans 1984, 1989	Heuristic Processing	Analytic Processing
Levinson 1995	Interactional Intelligence	Analytic Intelligence
Epstein 1994, 1996	Intuitive-Experiential System	Rational System
Pollock 1991	Quick & Inflexible Modules	Intellection
Klein 1998	Recognition-Primed Decisions	Rational Choice Strategy
Shiffrin & Schneider 1977	Automatic Processing	Controlled Processing
Posner & Snyder 1975	Automatic Activation	Conscious Processing System

System 1 then, is characterized as intuitive, holistic, largely unconscious, and relatively undemanding of computational capacity. "It conjoins properties of automatic and heuristic processing as these constructs have been variously discussed in the literature. This system has as its goal the ability to model other minds in order to read intention and to make rapid interactional moves based on those modeled intentions." *System 2* is characterized as analytical, controlled processing. "It encompasses the processes that have been studied by information processing theorists trying to uncover the computational components underlying intelligence."[349] As opposed to system 1, it is demanding of cognitive capacity. It is a relatively slow acquisition by cultural and formal tuition. Stanovich & West argue that system 1, on the other hand, is a relatively fast acquisition by biology, exposure, and personal experience. A general concern with the intuitive component of system 1 is its rather weak theoretical platform. This is reflected in Epstein's work, where face validity of the intuition scale is the sole means of validation. Hogarth doubts that it captures intuitive processing at a *general* level.[350]

According to Stanowich & West, an important difference between the two systems is that they tend to lead to different types of task construal. "Construals triggered by System 1 are highly contextual, personalized and socialized. They are driven by considerations of relevance and are aimed at inferring intention and meaning, by the use of conversational implication even in situations that are devoid of conversational features." The primacy of these mechanisms lead to what has been termed the *fundamental* computational *bias* in human cognition. It is a tendency toward automatic and radical contextualization of problems, they argue.[351]

More specifically, this bias includes the tendency to contextualize a problem with as much prior knowledge as is easily accessible, even though the problem is formal and the only solution is a content-free rule. It also includes the tendency to see design and pattern in situations that are random and devoid of pattern and design. Finally, it includes the tendency toward a narrative mode of thought, and toward enthymematical reasoning.[352] This bias then, is called fundamental, and primary, because System 1 is assumed to *permeate all of our thinking*.[353] In many ways this view resonates well with Jung and the philosophical account where Ideas, Forms, and Archetypes are seen as *the laws permeating* and "governing the

[349] Ibid. My italics. They refer to Levinson, 1995. See also Kahneman et al., 1985.
[350] Epstein et al., 1996, p. 392. Hogarth, 2001, p. 268.
[351] Ibid. p. 659. See also Hogarth, 2001, p. 268.
[352] Ibid. Enthymematical reasoning is defined as making assumptions not stated in a problem and then to reason from those assumptions.
[353] Ibid. p. 662.

course of all things we can experience."[354] However, System 1 resembles aspects of the first and second level of intuition, only.

System 2 on the other hand, de-contextualizes and de-personalizes problems. "This system is more adept at representing in terms of rules and underlying principles. It can deal with problems without social content and it is neither dominated by the goal of attributing intentionality, nor by the search for conversational relevance."[355]
Stanovich & West argue that System 2 ought to be given priority. This is due to its important function of abstracting complex situations into canonical representations that are *stripped of context*. This is, the same as the analytic *a priori* of Kant. "It is likely that one computational task of System 2 is to decouple contextual features automatically supplied by System 1, when they are potentially interfering."[356] The question we may pose is; how can we separate the subjective brain from *its* historical and biological *context?* Also, is it possible to conceive it as *separate* from its unconscious aspect, be it personal or *collective*? If such a borderline is illusionary, the distinction between System 1 and 2 may be as well. Much the same concern is voiced by Bargh & Ferguson when they ask; *what controls controlled processes*?[357] Stanovich & West recognize this problem and write that the override function of System 2 might only be needed in a *tiny minority* of important information processing situations, and that in most cases the two systems will act *in concert*. The issue of context is indeed a crucial one. Here it suffices to say that an object or subject devoid of its context necessarily tells us only half the story. It thus eludes a proper rational explanation.
In discussing the two types of task construal Stanovich & West focus in on *evolutionary* and *normative* rationality. The biases introduced by System 1 heuristic processing may well be universal – because the computational biases inherent in this system are ubiquitous and shared by *all* humans, they argue. "However, it does not necessarily follow that, *errors* on tasks from the heuristics and biases literature will be universal. This is because, for some individuals, System 2 processes operating in parallel will have the computational power to override the response primed by System 1."[358] Furthermore, they hypothesize that the features of System 1 are designed to very closely track increases in the reproduction probability of genes. System 2, "while also clearly an evolutionary product, is also primarily a control system focused on the interests of the whole person. It is the primary maximizer of an individual's personal utility. Maximizing the latter will occasionally result in sacrificing genetic fitness."[359] Thus they argue that because System 2 is more attuned to normative rationality than is System 1, it will seek to fulfill the individual's goals in the minority of cases where those goals conflict with the responses triggered by System 1. This rather cryptic trade-off between personal utility and genetic fitness is not elaborated by Stanovich & West and several authors oppose them on this issue.[360]

Being aware of this intricate issue, they stress that "in the vast majority of mundane situations, the evolutionary rationality embodied in System 1 processes will *also* serve the goals of normative rationality. Our automatic, System 1 processes for accurately navigating around

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[354] Jung, 1971, p. 401.
[355] Stanowich & West, 2000, p. 659. See also March, 1994, p. 57.
[356] Ibid. p. 662. They refer to Navon, 1989.
[357] Bargh & Ferguson, 2000, p. 938. In yet other words, we may question whether or not *analyzing* a distorted dual mind will take us any closer to 'truth'. See also Sternberg, 1994.
[358] Stanowich & West, 2000, p. 660-661.
[359] Ibid.
[360] Oberauer, 2000, p. 692, Newstead, 2000, p. 690, in Stanowich & West, 2000. S&W refer to Dawkin 1976, who see evolutionary adaptation as the optimization process of the genes, whereas normative rationality concerns utility maximization for the so-called vehicle, which houses the genes.

objects in the natural world were adaptive in an evolutionary sense, and they likewise serve our personal goals as we carry out our lives in the modern world."[361] Interestingly, Stanovich & West argue that one way to view the difference between evolutionary and normative rationality is that they are *not really* different types of rationality. Rather, "they are terms for characterizing optimization procedures operating at the *sub-personal* and *personal* levels, respectively."[362]

In applying these notions, we are reminded that Jung anchors his criterion of analytical judgment in the *personal ego*. I suggested that a valid criterion for intuitive judgment is to be found in the *self*, which includes both the personal *and* the *sub-personal* domain. This is also in accordance with the philosophical account. Thus, we may have come full circle. However, the appealing promise of the third level of intuition is of a unifying and integral consciousness. It is the result of a thorough and simultaneous induction and deduction, perceiving the *a priori* and the *a posteriori*, the personal and sub-personal as one. In summarizing then, I agree with March and suggest that both systems serve the fulfillment of an identity, and both are therefore intrinsically subjective.[363] Perhaps neither one provides *the* rationale for a normative theory of rationality. And perhaps normative rationality is ontologically dependent on intuition, which will be advocated in the next chapter.

Efficacy of Analytical vs. Intuitive Thinking in Expert Judgment

As this thesis focuses on analytical and intuitive thinking in strategic decisions, it is of interest to look at *efficacy*. We will return to this issue in the succeeding chapter on intuition in strategy. Here I limit myself to a discussion of a particularly interesting study undertaken by Hammond, Hamm, Grassia and Pearson.[364] Corresponding to the increased concern with unconscious or implicit phenomenon within cognitive psychology, experimental interest in intuitive sources of judgment has increased. Hammond et al. write that intuition is frequently assumed to be the basis for judgments made rapidly and easily, without awareness of the inferences supporting them. Eisenhardt & Zbaracki state that: "studying intuition is a way to create a more realistic view of how strategic decision makers actually think."[365]

Performance based on intuitive judgments of the correct solution to a problem, are typically compared with some established scientific procedure for arriving at a solution. Much of the research of this nature, particularly in earlier studies, focuses on the shortcomings of intuition in comparison with analytical processing.[366] This is also the case with the well-known study: *Clinical versus Actuarial Judgment*, by Dawes, Faust, and Meehl. In considering factors underlying the greater accuracy of actuarial methods, they emphasize that the mathematical features of actuarial methods "ensure that variables contribute to conclusions based on their actual predictive power and relation to the criterion in interest."[367] They also warn that clinical judgments produce *self*-fulfilling prophecies. Or as Kahneman and Tversky write: "The

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[361] Ibid. p. 661.
[362] Ibid.
[363] March, 1994, p. 61.
[364] Hammond, et al. 1997, p. 144-174.
[365] Eisenhardt & Zbaracki, 1992, p. 33. See also Lieberman, 2000, p. 109, Baylor, 2001, p. 237-243, Bargh & Ferguson, 2000, March, 1994, p. 262, Markley, 1988, p. 85, Schooler, et al., 1999, p. 280, Simon, 1997, p. 129, Eisenberg, 1984, p. 85, Mintzberg, 1994, p. 303, Hill, 1988, p. 137, Buckingham, 2000, p. 990, Hamm, 1988, p. 78, Eisenhardt, 1999, p. 65, Andersen, 2000.
[366] See the work of Slovic, Fischhoff, Lichtenstein, Kahneman, Tversky.
[367] Dawes, Faust, and Meehl, 1985, p. 1671.

prevalent tendency to underweight or ignore distributional information is perhaps the major error of intuitive prediction."[368]

In this type of research, the rationality of a person's intuitive judgment under uncertainty is usually compared with analytically derived answers produced by a formal model such as Bayes's theorem, a multiple regression equation, or other rules from the conventional probability calculus.[369] *A key point* addressed by Hammond et al., is that such comparisons are *indirect*: they compare a person's intuitive efforts with person-*independent* operations. That is, they compare a person's intuitive processes and judgment with those of an analytically derived rule or equation put forward as *a standard of rationality*. Such a comparison *cannot* provide a test of whether analytical cognition is inferior or superior to intuitive cognition, and under what conditions.

Indirect comparisons are undeniably important, but they are necessarily restricted in *three* ways, as Hammond et al. argue. "First, because indirect comparisons evaluate intuition with respect to a standard of rationality, researchers must choose one standard from the many offered. However, agreement on which standard of rationality is correct, has never been achieved. The choice of any standard, therefore, is subject to dispute, and any conclusion that subjects have failed to achieve the standard chosen are sure to be criticized by those who prefer a different standard."[370] The difficulties in comparing intuitive and analytical judgments are thus left unresolved. This argument is indeed a pivotal one, and it serves to legitimate the relevance of both the theoretical and empirical part of my work. It is further elaborated in the next chapter on intuition and rationality.

Along the same line of reason a second argument is developed. They point to the fact that indirect comparisons, "cannot fail to show that analytical cognition is equal or superior to intuitive cognition because analytical models, however chosen, provide *a ceiling* for performance."[371] It is thus not surprising, they argue, that studies find that few persons' intuitive efforts achieve the standard, and none exceed it. Finally, "when indirect comparisons are made, the analytical models are always provided with all the correct (and only the correct) substantive information each model requires."[372] They note that in journals, such models are usually executed without error. "In *practice*, however, the analytical cognition of persons, in contrast to analytical computation by formal models, is vulnerable to substantive failures (insufficient information, incorrect information, incorrect substantive theory) and to procedural failures (incorrect assignment of numbers to the symbols of the equation, computational errors, use of an incorrect model, insufficient time)."[373] Yet another obstacle is the conceptual problems, elaborated in this thesis. Despite a long history of dispute then, these concerns are usually not addressed when the efficacy of intuitive and analytical cognition is compared. Because the research of Hammond et al. is the first scientific effort to compare them directly, their results are pioneering.

Indirect comparisons may indeed be valuable, but the restrictions described by Hammond et al., prevent them from informing us about *the relative efficacy* of the intuitive and analytical

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[368] Kahneman, et al. 1985, p. 416.
[369] Hammond, et al. 1997, p. 144. They refer to Einhorn, 1981, Jungerman, 1983, Kahneman, Sovic & Tversky, 1985, and Pitz, 1984.
[370] Ibid. p. 144, 171.
[371] Ibid.
[372] Ibid. They refer to Kahneman & Tversky, 1982, and Wright & Murphy, 1984.
[373] Ibid.

cognition of strategists.[374] Direct comparisons on the other hand, will reveal the efficacy of these modes of cognition in terms of empirical achievement or correctness. Comparisons of relative efficacy, however, require the presence of an empirical criterion with which judgments are compared, rather than a standard of rationality. The comparison undertaken in the empirical part of my thesis is *direct*, and anchors the relative efficacy, in empirical decision quality criteria. It is the strategist that can and should define these criteria, which may differ from case to case. When a set of criteria is available, direct comparisons enable us to address the age-old question: does a person's intuitive or analytical cognition produce the more empirically favorable and accurate answer?

Before we look at their main findings, we should take note of the definitions applied. They argue that cognitive processes can be arranged on a *continuum* that runs from intuition to analysis, and that any point on such a continuum interact in a *predictable* way with various task conditions located on a similar continuum.[375] Their list of task conditions is included below, *as it is of relevance to the explorative and exploitative decision making contexts applied in my empirical study*. They also say that the task properties *induce* intuitive or analytical cognition in order to avoid implying that the relation between task properties and cognitive properties is inevitable or fully deterministic.

Figure 3.4.2 Task Conditions Inducing Intuitive and Analytical Cognition

Cognitive Processes	**Intuition**	**Analysis**
Cognitive control	Low	High
Rate of data processing	Rapid	Slow
Conscious awareness	Low	High
Organizing principle	Weighted average	Task specific
Errors	Normally distributed	Few, but large
Confidence	High in answer, low in method	Low in answer, high in method

Task Conditions	***Intuition-inducing state of task characteristics***	***Analysis-inducing state of task characteristics***
Number of cues	Large > 5	Small
Measurement of cues	Perceptual measurement	Objective reliable measure
Distribution of cue values	Continuous	Discrete
Redundancy among cues	High redundancy	Low redundancy
Decomposition of task	Low	High
Degree of certainty in task	Low certainty	High certainty
Relation between cue and criterion	Linear	Non-linear
Weighting of cues in environmental model	Equal	Unequal
Availability of organizing principle	Unavailable	Available
Display of cues	Simultaneous display	Sequential display
Time period	Brief	Long

When *direct* comparisons were made of the efficacy of 21 expert highway engineers' use of intuition and analysis, it was found that not only can intuitive cognition perform as well as analytical cognition, but it can outperform it as well. Secondly, they found that analytical cognition is *more likely* than intuitive cognition to produce *extreme errors*. This latter result is in agreement with research done by Peters et al. who found that the analytic approach to problem solving produces precise answers more often, but the distribution of errors is quite wide. In contrast to this, intuition is less frequently precise, but *more consistently close* to the correct answer.[376] Hammond et al. found that the greater the correspondence between task properties and cognitive properties, the greater the subject's achievement. "This result

[374] Ibid.
[375] Ibid. p. 146-149.
[376] Peters, 1974, p. 125-131. See also Weigelt, 1988.

indicates the task circumstances for which each form of cognition is likely to be most efficacious and therefore appropriate."[377]

Here we should note that a strategic decision making situation is typically characterized by more intuition-inducing task characteristics. It is a point of some importance for the analysis of my empirical findings. The latter conclusion of Hammond et al. is the more controversial because it *contradicts* the predominating argument that intuition produces biased incorrect judgments, and thus should be replaced by analytical methods. "In our view, the contradiction is not an artifact. It occurs for two reasons: (a) the tendency to use multiple definitions of intuition and (b) the reliance on indirect comparisons, between persons and equations, for example, rather than on direct comparisons of intuition and analysis within persons."[378] A suggestion for further research is hence to focus in on conceptual development and direct comparison, which *is* the ambition in this thesis.

In concluding this brief discussion of dual-process theories I agree with Bargh & Ferguson who argue that conscious and non-conscious processes presumably act *in concert*, and that both System 1 and 2 are *automatic*, and determined processes. Furthermore, they emphasize that previously, automaticity has been taken as evidence that the cognition is *environmentally* determined. This is questioned and they recommend that future research should aim at discovery and delineation of *the mechanisms that control controlled processes*.[379] Throughout this thesis, I have indicated that the direction to look is towards the personal and collective unconscious. That is, towards the rational and intelligible world of Ideas, Forms, and Archetypes, which represent the *a priori* laws "governing the course of all things we can experience", to quote Jung.[380] Moreover, the claim is that it is intuition that provides insight into how this domain is *integral* to individual consciousness, causing it to work in a more *or* less dual and determined manner.

3.5 Conclusion

Philosophers define rational intuition as superior to discursive thinking. In modern psychology, the situation is more or less reversed. Here the tendency is towards one, which equals intuition with preconscious incubation, emotional involvement, subjective consistency, automatic, rapid, biased and effortless processing. It is rather obvious from this psychological account that the reference to the philosophers' intelligible world of pure reason has more or less disappeared in the great black void of the personal unconscious and in the issue of normative rationality. There is hardly any discussion of the universal Ideas, Forms, Archetypes and laws that may govern it. In this chapter, I have painstakingly and at great length aimed at delineation of how this Copernican reversal in our history of epistemology has taken place. The fragmentation that is sneaking in causes us to wonder how intuition relates to rationality. This issue is not easily settled but will be further elaborated in the next chapter. There it is argued that intuition is the ontological foundation for any theory of normative rationality.

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[377] Hammond et al. 1997, p. 172.
[378] Ibid.
[379] Bargh & Ferguson, 2000, p. 939-941.
[380] Jung, 1971, p. 400-401. My italics.

4 INTUITION AND RATIONALITY

4.1 Introduction

How intuition is defined in philosophical and psychological theory is explored in the previous chapters, thus we have addressed the first research question. A second concern is how intuition relates to rationality. In recapitulating our main findings, we face the puzzling fact that philosophers define intuition as rational while psychologists tend not to. *Why*? In order to answer this question I do three things. First, I look into the issue of rationality. What is rationality *per se*? Apparently, there is no brief or elegant answer. Rather, there is a multitude of perspectives and this state of affairs is characteristic of the classical theories of normative rationality as well. Secondly, it is argued with Seung, that intuition is the ontological foundation for any normative theory of rationality. That is, in his examination of three well-known forms of rationality; formal and instrumental rationality, and Rawls's ideal constructivism, the impossibility of constructing a normative system of rationality without using some normative intuitions, is demonstrated. Thus, it is argued that our normative view of rationality may be usefully informed by intuition. Consequently, I then further refine my sketch of the required theory of intuition. Criteria for rational judgment are also discussed and a supplementary version of reflective equilibrium, that is *intuitive equilibrium*, is suggested as proper frame of reference.

4.2 What is Rationality?

It is, according to Dawes, the potential outcomes, their probabilities, and their values to the decision maker, at the time the decision is made, that lead us to judge a particular choice to be wise or foolish.[381] But what is rationality *per se*? This notion as well, is thoroughly elusive. Numerous entities are rational or irrational: beliefs, preferences, choices or decisions, actions, behavioral patterns, persons, and even institutions. According to Elster, who distinguishes more than 20 senses of rationality, the connotations of the term range from the formal notions of efficiency and consistency to the substantive notions of autonomy or self-determination, leaving us quite confused.[382] March writes that in many of its uses, rational is approximately equivalent to intelligent or successful, and it describes actions that have desirable outcomes.[383] That is, it serves the best interests of the person making the decision in terms of his or her current assets, which include "physiological and psychological capacities, as well as social relationships and feelings."[384] Heterogeneous meanings of rationality are thus characteristic of the literature, and a brief review does not provide us with a proper definition.[385]

Elster elaborates on individual and collective rationality. His *thin* theory of individual rationality leaves unexamined the beliefs and the desires that form the reasons for the action, whose rationality we are assessing, with the exception that they are stipulated not to be logically inconsistent. *Consistency* within the desire-, and belief system, and between these

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[381] Dawes, 1988, p. 7.
[382] Elster, 1983, p. 1. See also Elster, in Fløystad, 1982, p. 111-127.
[383] March, 1994, p. 1-2. See also Simon, 1997, p. 89, and Parson, 2000, p. 310.
[384] Dawes, 1988, p. 8.
[385] Ibid., Bazerman, 1998, March, 1994, Elster, 1983, 1986, Plous, 1993, Beach, 1997.

systems and the action for which they are reasons, is what rationality in this sense is all about.[386] This thin theory aligns with Føllesdal's first kind of rationality.[387] However, Elster feels that acting rationally means something more than acting consistently on beliefs, and desires that are consistent. His suggestion is that we look at: the way in which our beliefs and desires are shaped. "A belief may be consistent and even true, a desire consistent and even conformable to morals, and yet we may hesitate to call them rational if they have been shaped by irrelevant causal factors, by a *blind psychic* causality operating behind the back of the person."[388] Rather, they should be well founded and supported by the available evidence, to quote Føllesdal.[389]

The difficulty of course, is to delineate the causal *origin*, and what sort of psychic causal history our beliefs, desires and values have, as well as what exactly would qualify as the right sort of history. That is, we would like to extend our *perception of the unconscious*, this being *a key attribute of intuition*. On these crucial issues, he has relatively little to say, but more to say about the wrong sorts that distort rationality. In brief, they include four drives or cognitive defects. First, there is adaptive preference formation, which is the often unconscious - adjustment of wants to possibilities, contrary to the deliberate adaptation favored by character planners. Secondly, there is preference change by framing, which occurs when the relative attractiveness of options changes, because the choice situation is reframed in a way that rationally should make no difference. Thirdly, wishful thinking which is the shaping of beliefs by wants, and finally, inferential errors or unfounded judgments stemming from defects in the cognitive apparatus.[390]

To say that *truth* is necessary for rational beliefs, and *ethical goodness* for rational desires, is to require too much in Elster's opinion. Rather, he argues in accordance with Føllesdal, that substantively rational beliefs, or subjective probabilities, are those, which are grounded in the available evidence. That is, "the positive characterization of rational beliefs can be made in terms of the notion of judgment, defined as the capacity to *synthesize vast and diffuse information* that more or less clearly bears on the problem at hand, in such a way that no element or set of elements is given undue importance."[391] In its emphasis on a *context-rich synthesis*, this definition shares intrinsic similarities with the one of intuition and reasoning system one. Apparently, it is opposed to the one of the 'rational' reasoning system two with its emphasis on abstraction of complex situations into "canonical representations *stripped of context*."[392] However, Elster does not specify *what qualifies as evidence*, and this is indeed an intricate issue epistemologically speaking.[393] We need only remind ourselves of the Ideas and *inner objects* elaborated by Plato Jung.[394] Their reality cannot be dismissed. I shall come back to this later.

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[386] Elster, 1983, p. 1.
[387] Føllesdal, 1982, p. 304-305.
[388] Elster, 1983, p. 15.
[389] Føllesdal, 1982, p. 304-305.
[390] Elster, 1983, p. 25.
[391] Ibid. p. 16. My italics.
[392] Stanovich & West, 2000, p. 662.
[393] Popper, 1989, p. 35, 174-175. On a side note, we may here refer to the accepted Copenhagen interpretation of quantum mechanics, which in brief states that; "*objective reality has evaporated.*"
[394] Jung, 1971, p. 398. "Introverted intuition is directed to the inner object, a term that might justly be applied to the contents of the unconscious. The relation of inner objects to consciousness is entirely *analogous* to that of outer objects, though their reality is not physical but psychic." The enduring tension between *Naturwissenschaft* and *Geistwissenschaft* may further illustrate this distinction.

Føllesdal moves this issue somewhat further along when arguing that our beliefs may go well beyond the available evidence, as they do in the case of the more theoretical parts of scientific theories. "But there should be no other competing theories that would be better supported by the available evidence." Furthermore: "The specification of the criteria of well-foundedness would recapitulate *epistemology* and scientific methodology."[395] To some extent, we have covered the pivotal issue of epistemology. The philosophical account makes it reasonably clear that we are justified in claiming intuition to be a relevant component. When Føllesdal then arrives at the other tricky part, namely specification of the phrase *available evidence*, he leaves the reader solely on his own. That is, he does not elaborate the issue.

So where are we then? I have argued that *the evidence* required for our beliefs, desires, and values to be *well founded* necessarily must include knowledge of our own *psyche* and self. Unfortunately, the self is more or less unconscious and thus not easily accessible.[396] Moreover, this whole business of valid criteria is further complicated by our concern for *what* beliefs we should hold, *given* a certain amount of evidence, and to what extent it is rational to actively search for *additional evidence* before we allow our beliefs to settle.[397] In the case of the pure scientist he may very well go on collecting data forever, as *truth* is the ultimate goal of his enterprise, causing him to postpone belief formation. The demand for optimal amounts of evidence leads to an infinite regress and this is the general argument for *satisfactory* levels of evidence.

Concerning substantially rational *desires* or preferences, Elster suggests that *autonomy* is for desires what *synthetic* judgment is for belief. Autonomous desires are desires that have been deliberately chosen, acquired or modified – either by an act of will or by a process of character planning. This, he argues, is the ideal of self-determination underlying the Stoic, the Buddhist and the Spinozistic philosophies. Thus, he as well devotes an entire chapter of his book *The Multiple Self*, to Buddhism.[398] In recapitulating Buddhist doctrine, we are justified in stating that the intuitive mind or *manas* is a key on the path to knowledge of the self and thus to *autonomy*.[399] Bergson emphasizes a similar point.[400] Implicit then, in Elster's view is that rationality requires profound self-awareness, and knowing the answer to questions like; who you are and what the meaning and purpose of your life is. Ideally, we would like to have awareness of, and *consistency* between our unconscious values and preferences and those that we are conscious of. Such self-awareness is rare so we may end up questioning the entire idea of rationality. In addition, it is indeed impossible to have perfect knowledge about the future and about consequences following from each alternative thus, it is hard to *choose* among alternatives. Moreover, if we did have such enlightened self-awareness would it not be *subjective*?

In discussing well founded values, Føllesdal's makes the important point that when we say a person is rational we tend to focus almost exclusively on the *consistency* and *well-foundedness* of his or her beliefs and do not take his *values* or *ideals* into account, even though the former may be contingent upon the latter. "This disregard of a person's values when we judge his rationality probably reflects the widespread tendency to regard question of ultimate values as beyond the realm of rational justification." In yet other words, "It is often

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395 Føllesdal, 1982, p. 305. My italics.
396 Elster, 1985, p. 257. As indicated previously, the self may itself ultimately be an illusion.
397 Ibid.
398 Elster, 1983, p. 1, 21. Elster, 1986, p. 28, 233-263.
399 Govinda, 1969, p. 73-75.
400 Bergson, 1949, p. 24-25.

claimed that while one may choose means towards an end in a more or less rational way, there is no notion of rationality that applies to the evaluation of ends, or values."[401]

So, what is his solution to this dilemma? The most promising approach to it is according to Føllesdal, to acquire well-founded values through the method of *reflective equilibrium*. Thus, we will take further note of it later. Here it suffices to say that the method of reflective equilibrium may fall victim to at least two types of critique. The ultimate job of reflective equilibrium is to say which cognitive states are justified and which are not. It is thoroughly embedded in the tradition of analytic epistemology. I have voiced the concern that such epistemology may be ontologically dependent on intuition. In the next paragraph, this argument is made explicit. Secondly, Stich makes the argument that if primitive tribesmen or pre-modern scientists or our own descendants think in ways that are quite different from the ways we think, few of us would be inclined to suggest that all of these are equally good. Some ways of going about the business of belief revision are better than others. "But just what is it that makes one system of cognitive processes better than another, and how are we to tell which system of reasoning is best?" In yet other words, profound *cognitive diversity* pose serious challenges to reflective equilibrium.[402]

Because of these problems and uncertainties, most modern theories of rational choice involve assumptions. They can be distinguished with respect to four dimensions: knowledge, actors, preferences, and decision rule.[403] We ask; *what is assumed* with respect to; information decision makers have about the state of the world and about other actors, preferences by which consequences are evaluated, number of decision makers, and the decision *rule* by which decision makers choose an alternative or utility preference? Similarly, Elster tries very hard to develop notions of proper judgment and autonomy but concludes that they will have to be understood as *mere residuals* after we have eliminated the influence of distorted drives or cognitive defects.[404] Likewise, in discussing rationality of *action* Føllesdal argues that: "Rationality always has to do with what the agent ought to choose, given his or her limited perspectives on the situation, with a limited amount of information, limited imagination and time for considering different alternatives, and not a question of choosing from within a vast set of alternatives that lie there ready for one's inspection." He thus concludes that rationality as well-foundedness of belief, values and action is clearly a normative notion not a descriptive one, and adds, "most of us are not very rational in this sense most of the time."[405] We may thus feel, rightly, that this is not good enough, being left with a limited, normative definition of rationality that is a simple negation of a long list of distortions and modifications, which also fails to be descriptive. A question that perhaps can facilitate further inquiry is thus the following: *What is the ontological foundation of our normative theories of rationality*?

In summarizing this paragraph, then, we may admit that we do not have proper conceptual elegance or agreement on the issue of rationality *per se*. Rather, there is a multitude of perspectives, and this is the state of affairs in classical theories of normative rationality as well. They are discussed in the next paragraph. However, we may indicate that rationality is related to *synthesis* and *autonomy*, and that it is facilitated by intuitive awareness of our psyche and self.

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[401] Føllesdal, 1982, p. 306-308. See also, Løwendahl & Wenstøp, 2003, p. 111-112.
[402] Stich, In DePaul & Ramsey, 1998, p. 95.
[403] March, 1994, p. 7.
[404] Elster, 1983, p. 24. See also Diecidue, 2001.
[405] Føllesdal, 1982, p. 305-306. Regarding rationality of action, he finds the rational model of choice, described in the previous chapter to be the best framework currently available.

4.3 Intuition as Ontological Foundation for Normative Rationality

Strategic thinking and decision-making are intrinsically related to the issue of rationality. In the next chapter, it is indicated that human responses often deviate from the performance deemed normative according to various models of decision-making and rational judgment. This gap then, between the normative and the descriptive can be interpreted as indicating systematic irrationalities in human decision making. However, Stanovich and West who thoroughly and brilliantly summarize the debate, suggest four alternative explanations that preserve the assumption that human behavior and cognition *is* largely rational.[406] They posit that the gap is due to performance errors, computational limitations, *the wrong norm being applied* by the experimenter, and different construal of the task by the subject.

In this paragraph, I go along with Stanovich & West and work on their third interpretation, namely, that the wrong norm is applied. In order to vindicate my position I will argue with Seung, *that intuition is the ontological foundation for any normative theory of rationality.* That is, in his examination of three well-known forms of rationality; formal and instrumental rationality, and Rawls's ideal constructivism, the impossibility of constructing a normative system of rationality without using some normative intuitions, is demonstrated. Thus, I maintain that our normative view of rationality could be usefully informed by intuition. In applying this rationale, I then consequently further refine my sketch of the required supplementary theory of intuition.

By constructivism, we may refer to the thesis; that normative propositions and standards are *constructed* by human beings. This thesis is opposed to intuitionism, the thesis that normative propositions and standards are *discovered by intuition*.[407] Seung argues that though the three forms of rationality are different from each other, they are motivated by a common concern, namely normative scepticism, which stems from distrust in the normative ideas delivered by our intuitive understanding. Let us then start by looking briefly at *formal* rationality or constructivism. According to Seung, Kant's categorical imperative may be considered the fountainhead of formal rationality. It is a doctrine revived by Hare & Gewirth. "Its method is to derive normative rules and standards from the principle of rationality *without appealing to substantive ideas*, which are given by normative intuition."[408] Seung argues that whether formal constructivism is implemented in terms of the formal rules of thought or the logical property of moral language, its ultimate concern is to circumvent normative scepticism by refusing to rely on normative intuitions. According to Seung, the best example of a purely formal procedure can be found in R. M. Hare's work:

"To him all moral judgments are *prescriptive*. That is not to say they are pure commands, but rather, that they are supported by reasons. He tries to anchor those reasons in the connection between description and evaluation. …. Furthermore, to make a moral statement is to make it on principle. Hare maintains that principles are created by our actions and decisions. And they do not stay the same after being created and adopted. Our decisions and principles constantly interact with each other. They mutually revise each other. Hare also says that moral judgments can only be verified by reference to a standard or set of principles which we have by our own decision accepted and made our own. …. He also follows Sartre's lead in accepting the Kantian requirement of

[406] Stanovich & West, 2000, p. 645, 649.
[407] Seung, 1993, p. x, 61.
[408] Ibid. My italics.

universalizability. That is, a prescription is not moral unless it can be universalised, and a moral prescription is valid only if it can be derived from a principle that can be universally accepted."[409]

To some extent we find the same approach in March's work. He suggests that we treat decision making as a way of creating preferences and identities, *at the same time* as preferences and identities are treated as a basis for decisions and their justification.[410] Seung inquires into *how* Hare's prescriptive method controls for the *diversity* of empirical content and maintains the universality of its prescriptions but is not convinced that it works. Essentially there are four elements in Hare's imaginary test of universalizability and they are logic, facts, inclinations, and imagination. The universal prescriptivity is derived from the logical properties of moral language. Facts and inclinations can be empirically ascertained and from these three factors we can always derive right moral prescriptions as long as we have sound imagination, Hare maintains.

Seungs critique is focused in the question: *How* can we tell whether a principle can be universalised? "To be sure, *prescriptivity* and *universalizability* alone cannot make moral judgments; they have to presuppose empirical content that is, the speaker's aims and situation. But empirical content is likely to generate the *diversity and multiplicity of prescriptions*, thereby making it impossible for Hare's method to produce universal prescriptions that can be accepted by everybody."[411] This is the most critical question for Hare's theory according to Seung. His program can thus succeed only if he can find a way to overcome the *relativity* of perspectives. Apparently, moral prescriptions made by formal procedures are incurable *agent-relative*. Different agents favour different prescriptions. But their differences may be *negotiable*. They can perhaps be resolved by agreement.[412] This is the hope that has inspired certain advocates of instrumental rationality.

We may say that *instrumental* rationality or constructivism began with Hobbes's theory of social contract. His conception of instrumental rationality was reaffirmed in Hume's thesis that *reason can only be the slave of the passions*. "To be a slave is to be an *instrument*. Reason can perform only the instrumental function of devising a system of rules and standards for the fulfilment of our passions because it is *incapable* of having *its own norms* and *values*."[413] This is the heart of instrumental constructivism, according to Seung. David Gauthier, who stipulates two conditions in his contractual approach, has recently elaborated it. First, the agents are supposed to be *nontuistic*. That is, they take no interest in each other, nor are they affected by mutual feelings of love or hatred. Second, they are *equally* rational, but their rationality is restricted to the maximization of individual *utilities*.

Seung goes on to describe the two types of rational choice recognized by Gauthier, namely straightforward and constrained maximization. The former is the maximization of individual utility with no constraints whatsoever. It resembles the principle of rational choice in the world of perfect competition. In a free market there is no need for constraints. "The unconstrained operation of free markets produces optimal results for everybody concerned. But when markets fail, the individually rational choices produce collectively sub-optimal results. Such a situation is characterized as the Prisoner's dilemma."[414] A society whose

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[409] Ibid. p. 72-73.
[410] March, 1994, p. 262.
[411] Seung, 1993, p. 74.
[412] Ibid. p. 96.
[413] Ibid. My italics.
[414] Ibid.

members all seek nothing but individual interests is perhaps destined to collapse into competitive chaos.

Straightforward maximization thus has to be replaced by *constrained maximization*. Gauthier identifies those constraints as *morals*. By morality he means not any particular moral code or convention, but any set of impartial constraints on the pursuit of *individual* interest. The idea of fairness or impartiality is here the essence of morality.[415] Seung asks: In the world of subjective values and nontuistic people, what kind of agreement can be accepted as fair and impartial? Gauthier has tried to answer this question "with his theory of rational bargains. This is his derivation project, where instrumental rationality is converted into instrumental justice."[416] How does Gauthier perceive justice then? Justice is a compromise between our weakness and our strength. If we are strong, we do not need it, and if we are weak we cannot get it. Justice is a necessary 'evil' for those living in the world of equal power, where none of them has the power to dominate the others. It has only instrumental value. No one wants to seek it for its own sake.[417]

Gauthier admits that such a view of justice and morality can subvert moral order as a cooperative adventure for mutual advantage. He thus tries to find a way "to cope with the menace of nontuistic people and its instrumental justice, through the astounding claim that it is not the justice of real people."[418] *Instrumental* justice is the justice of the economic man. He is like a pig, in his search for maximization of utility. Opposed to this is the ordinary man who applies *essential* justice, which is anchored in critical rationality. Critical rationality is recognized as reflective, and identified with autonomy. In his critique of Gauthier, Seung emphasizes that autonomy is defined with the notion 'critical reflection' and critical reflection with autonomy, thus it is circular. Moreover, we can critically reflect upon, and examine our own preferences only by appealing to objective values. In yet other words, Gauthier begins with the subjectivity of values and preferences. His acceptance of nontuism as his premise follows from the subjectivity of values and preferences. However, neither essential justice nor essential rationality can be *constructed* from subjective preferences. They presuppose objective values and standards, which in turn cannot be accounted for without accepting the intuition of those values and standards.[419] Seung thus concludes that in many constructivist projects *substantive intuitive ideas are introduced under the guise of formal requirements*.

Turning then to Rawls's *ideal* constructivism, we find that in one important respect, it differs from formal and instrumental rationality. He does not believe that normative rationality or constructivism can get anywhere by totally rejecting normative intuitions. "Though he does not derive his two principles of justice directly from intuitive ideas, he acknowledges his use of intuitions in setting up the constructivist procedure in the original position. He says that the social ideals of liberty and equality are the ultimate source for the constitutive constraints on the original position… Unlike formal and instrumental constructivism, ideal constructivism is meant not to avoid, but only to tame and control our intuitive ideas and normative scepticism."[420] What intuitive ideas then should be the basis for constructing the principles of justice, Seung asks. For Rawls, there is no determinate answer, and it is a most difficult problem for any theory of justice. His foremost methodological problem is thus how to cope

[415] Ibid. p. 97.
[416] Ibid. p. 118.
[417] Ibid. p. 110.
[418] Ibid. p. 111.
[419] Ibid. p. 118.
[420] Ibid. p. ii.

with the indeterminacy of intuitions. Rawls writes; "*No doubt, any conception of justice will have to rely on intuition to some degree*."[421]

Having made plausible the argument, that any normative theory of rationality is ontologically dependent on some normative intuition the question thus arises: *What is the nature of normative intuition?* Part of the answer may be found in existing theory, elaborated in previous chapters. A brief recapitulation would include the theory and methods of Plato, Kant, Bergson and Jung, as well as the three levels of intuition.

Table 4.3.1 Theory on Intuition – A Tentative Framework

Methods of;	Rational Intuition	Discursive Thinking
Plato	Dialogue	Dianoia
Kant	Synthetic	Analytic
Bergson	Metaphysical Science	Physical Science

	Personal Unconscious	*Collective Unconscious*
Introverted Intuition	Level One	Level Two
Extraverted Intuition	Level One	Little or no Awareness
Integral Intuition	Level Three	Level Three

4.4 Normative Intuition

There are many forms of normative intuitionism. However, we may limit our discussion to the transcendent and the immanent. They resemble the conceptual distinctions worked out earlier on and capture the main tradition. That is, transcendent intuition equals Plato's and Kant's rational intuition, and immanent intuition shares many properties with Jung's view. This paragraph is thus to be read as an extension of earlier chapters, where three levels of intuition were discerned. Seung argues that immanent intuition is the intuition of positive or prevailing normative standards and values in any given society, while transcendent intuition transcends all particular societies. As such, immanent intuition is both normative and descriptive.

"Immanent intuition is a part of our daily life; every day we recognize the positive norms of our society and govern our life in accordance with them except for the rare occasions on which their authority appears to be suspect. These positive norms constitute not only the order of our society, but also the selfhood of its members. Hence, our intuition of those positive norms belongs to our nature as social beings. Our linguistic and moral intuitions belong to what is generally known as commonsense intuition, and our common sense should be regarded as an essential feature of our nature."[422]

Loss of confidence in immanent intuition leads to normative subjectivism and skepticism. Such a loss can take place on an individual or a collective level Seung writes. He makes the interesting observation that it has induced massive cultural upheaval on two occasions in the West: in Renaissance Europe and in Sophistic Athens. "On both occasions, distrust of natural or positive intuition created a normative crisis for the whole culture."[423] Under such circumstances, there are only two ways to overcome the normative chaos Seung argues. One

[421] Ibid. p. 8. My italics.
[422] Ibid. p. iii. See also, Gilovich, 2002, p. 13
[423] Ibid. p. iv. See also Forrester, 1975 and Kauffman, 1993.

of them is the positivistic appeal to the power that can sustain a social order and the other is the idealistic appeal to transcendental norms, which requires transcendental intuition. "In ancient Athens, Socrates and Plato proposed transcendental intuitionism against the positivism of Thrasymachus and Callicles. In Renaissance Europe, the positivism of Machiavelli and his heirs was countered by rational intuitionism."[424] The critical thinkers of modern Europe distrusted both positivism and idealism according to Seung. "They could not endorse positivism on normative grounds (Might is right); they could not accept idealism on epistemic grounds (How can we know there are transcendental ideals?). Since they could embrace neither, they had to devise their own procedures for constructing normative standards. Thus began the modern tradition of normative constructivism."[425]

In the previous paragraph, it was indicated that *ideal* constructivism is the only viable form of constructivism. It does rest on certain normative ideals, *thus we cannot avoid questioning their origin*. They can come from only two sources. They must originate either in transcendental norms or the immanent positive norms and values of our culture. Transcendental normative idealism is *identical to early Platonism*. More specifically, it can be related to mathematical Platonism and intuitionism, in which the heaven contains the complete edifice of mathematics from arithmetic and geometry to calculus and topology. Among the many scientists who subscribe to such ontology, Penrose is perhaps the more acclaimed one. "To me the world of perfect forms is primary (as was Plato's own belief) – its existence being almost a logical necessity – and both the other two worlds are its shadows."[426] However, the later Plato emphasized what we may call the bedrock version, where the Ideas, values and virtues are *immanent* in that which comes about of Necessity.[427] That is, they are Forms and Archetypes, innate and inherent in any mental and material form, dressed in the specific clothing of Kant's *Time-Space* continuum.[428] The challenge posed to the philosopher, is for her to intuit them.

We started out looking briefly into Platonic epistemology, which is echoed by many of the main contributors to European philosophy. Here Socratic dialogue figures prominently. Thus, if we leave out Kant and Bergson's method of intuition and scrutinize dialogue, we must admit that what Socrates is seeking is a *conceptual* definition that spells out the essential property or *eidos* of all instances of certain values and virtues like courage, temperance, wisdom or the good. However, in the *Meno* we are made aware of a paradox, namely that we cannot seek to define something *unless* we *already* have some *idea* of it. In order then, to clarify a main point we should carefully examine *how normative intuition is discovered, not constructed*. Consider first the fact that in the early dialogues, we find three examples and definitions of courage and seven of temperance but unfortunately, none of them qualifies as an *eidetic* or essential definition. Wittgenstein's critique is thus that these examples share no *eidos* but only a family resemblance. How does Plato address this intricate subject? Seung suggests that his account on intuition evolves and matures with his later work, most notably in the *Republic* and *Timaeus*, and that eventually it *differs* somewhat from the approach of Socrates.

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[424] Ibid. See also Levinas, 1973.
[425] Ibid.
[426] Penrose, 1994, p. 417. The other two worlds are here the material and mental. See also, Popper, 1989, p. 189, 206, Bohm, 1981, p. 53, Fischbein 1994, Parson 1995, 2000, and Cheyne, 1997.
[427] Cornford, 1937. See also Feferman, 2000, and Thompson, 1998.
[428] Kemp Smith, 1999, p. 447. "For Plato Ideas are the archetypes of the things themselves, and not, like the categories, merely keys to possible experiences." See also Majer, 1995 and McDowell, 1998.

Let us see how this goes about. First, in *Meno*, he tries to account for intuitive knowledge through his doctrine of *recollection*. By interrogating a slave boy, Socrates elicits some basic propositions about squares and their diagonals. Since the boy had never been taught geometry in this life, Socrates argues that he must have known it in his previous life. Thus, he is now only recollecting what he has known all along. This argument is vindicated by Jung, who in numerous cases discovered ancient mythological themes in the dreams and paintings of people who had no education, nor acquaintance with such symbolism.[429] Baylor and Ausubel argue along the same line of reason.[430] However, the question of how this knowledge arrived there in the first place is still with us. Seung makes the insightful argument that the theory of recollection and *innate ideas* cannot deliver what Plato wants for his theory of Forms, namely their *independent* and *a priori* existence. "Although the doctrine of innatism assures that innate ideas are independent of *sense perception*, it cannot guarantee that those ideas are *objectively* real. … The doctrine of innatism would make the existence of Platonic Forms *dependent* on the *empirical* existence of human minds. The realism of Platonic Forms would be replaced by the *subjective* idealism of human minds."[431] This critique, it seems, may be less severe if our mind is also a non-local, spiritual matter, capable of transcending ego boundaries.

Plato's next step is introduced in the *Republic*. Here he engages his interlocutors in the definition of justice, and discredits the proposed definitions one after another. The inquiry then takes an unexpected turn. It moves on to the issue of how to construct an ideal state. That is, he starts not with the *single* individual, but with the *whole* republic. In the ideal state all participants benefit reciprocally by division of labor based on *natural aptitudes and virtues*, by cooperation, and by exchange of goods and services. In such a context, justice arises. "You remember how, when we first began to establish our commonwealth and several times since, we have laid down, as a universal principle, that everyone ought to perform the one function in the community for which his nature best suited him. Well, I believe that that principle, or some form of it, is justice."[432]

This view of justice is not presented as a result of a laborious attempt at *conceptual* definition. Rather, it is a *synoptic* view. What is good for the individual also facilitates and is facilitated by the state of affairs in the whole republic. The additional subtle and pivotal point is thus that: "All this time [justice] has been under our very noses from the start, and we never saw it. We have been as absurd as a person who hunts for something he has all the time got in his hand."[433] That is, in *dialoguing* they exercise a philosophic virtue, which is *good*, because they *are to be* philosophers. In yet other words, in discovering and pursuing what they as individual souls, *can be good at*, they are acting rational and just.[434]

The final step in Plato's stroll along the unpaved road of intuition is to be found in the *Timaeus*. The unique world argument, which I did discuss, illustrates the synoptic view of normative intuition even more explicitly. The roaring ambition is here to construct a model not of an ideal state but of an ideal world. We note that the reasoning is identical. To recapitulate; "What was the living creature in whose likeness he framed the world? We must

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[429] Jung, 1968, p. 42-45. "Our mind has its history, just as our body has its history… A study of the structure of the unconscious collective mind would reveal the same discoveries as you make in comparative anatomy…. Though a child is not born conscious, his mind is not a *tabula rasa*."
[430] Baylor, 2001, p. 238. Ausubel et al. 1978, p. 104-105. The reader may refer to chapter three.
[431] Seung, 1993, p. 188. My italics.
[432] Cornford, 1955, 427C-434D, p. 124.
[433] Ibid.
[434] Ibid. 502C-509C, p. 207.

not suppose that it was any creature that ranks only as a species, for no copy of that which is incomplete can ever be good. Let us rather say that the world is like, above all things, to that Living Creature of which all other living creatures, severally and in their families, are *parts*. For that *embraces and contains within itself* all the intelligible living creatures, just as this world contains ourselves and all other creatures that have been formed as things visible."[435] Again, it so to speak dawns upon us, that we are one humankind one world, not two. In addition, such a non-dual, synoptic view is not at all alien to diversity and proper individualization. On the contrary, its objectivity is embedded in subjectivity and this is required in order to uncover the hidden Ideas and mechanisms instrumental to our individual growth and fulfillment.

The recent work of Damasio et al. *Unity of Knowledge* may be seen as a step in the same direction. They write that the key to bridge building is the discovery of epigenetic rules, that is hereditary regularities in mental development.[436] What are the epigenetic rules if not the Ideas, Forms and Archetypes of the collective unconsciousness? The heuristics made explicit and conscious. After all, humans share 99 percent of the same gene pool. Velmans work on consciousness and *reflexive monism* should also be mentioned. Drawing on recent scientific discoveries, he provides an understanding of how consciousness relates to the brain that is neither dualist nor reductionist. The precise manner in which entities, events and processes are translated into experiences depends according to him on the location in *time* and *space* of the observer and the exact mix of perceptual, cognitive affective, social, cultural and historical influences, which enter into the construction of a given experience. In this sense, each conscious construction is private, subjective and unique. "In this vision, there is *one* universe (the *thing itself*) with relatively differentiated parts in the form of conscious beings like ourselves, each with a unique, conscious view of the larger universe of which it is a part. In so far as we are parts of the larger universe that in turn experience the larger universe, we participate in a reflexive process whereby the universe experiences itself."[437] In summarizing then, on normative intuition, we may refer to the rather lengthy discussions provided earlier on which culminated in discernment of three levels of intuition. Thus, here it suffices to quote Bergson who defined it as *integral experience*.[438]

Reflections on Intuitive Equilibrium

Before we draw to an end we may reflect a little more on criteria for rational judgment and for assessing cognitive processes. Throughout this chapter, we have seen that a central issue is the rationality of ideas and values and their role as formal requirements in normative theories of rational justification. Føllesdal makes the important point that when we say a person is rational we tend to focus almost exclusively on the rationality of his or her beliefs and do not take his values or ideals into account. "This disregard of a person's values when we judge his rationality probably reflects the widespread tendency to regard question of ultimate values as beyond the realm of rational justification." In yet other words; "It is often claimed that while one may choose means towards an end in a more or less rational way, there is no notion of rationality that applies to the evaluation of ends, or values."[439] This then is the focus of the current section, and I suggest we coin the notion *intuitive equilibrium*, which may buy us some new land. Let us start by listening to Føllesdal's solution to the dilemma. The most

[435] Cornford, 1937, 30C-31B, p. 39-40. My italics.
[436] E. Wilson, in Damasio et al., 2001, p. 12. See also Wilson, 1998, and Damasio, 1994.
[437] Velmans, 2000, p. 233, 235. See also Laszlo, 1995, p. 130, and 2003, p. 83-133.
[438] Bergson, 1949, p. 62.
[439] Føllesdal, 1982, p. 306-308.

promising approach to it is according to him the method of *reflective equilibrium*. It is the end stage in Rawls ideal constructivism, which ultimately has to rely on intuition to some degree, according to him-self.[440] It is hard to find anyone who expresses the notion of reflective equilibrium more eloquently than Goodman does:

> "How do we justify a *de*duction? Plainly by showing that it conforms with the general rules of deductive inference. An argument that so conforms is justified or valid, even if its conclusion happens to be false. An argument that violates a rule is fallacious even if its conclusion happens to be true. …. Analogously, the basic task in justifying an inductive inference is to show that it conforms to the general rules of *in*duction. …. Yet of course, the rules themselves must ultimately be justified. …. But how is the validity of the rules to be determined? … Principles of deductive inference are justified by their conformity with accepted deductive practice. Their validity depends upon accordance with the particular deductive inferences we actually make and sanction. If a rule yields unacceptable inferences, we drop it as invalid. Justification of general rules thus derives from judgments rejecting or accepting particular deductive inferences. A rule is amended if it yields an inference we are unwilling to accept; an inference is rejected if it violates a rule we are unwilling to amend. The process of justification is the delicate one of making mutual adjustments between rules and accepted inferences; and in the agreement thus achieved lies the only justification needed for either. All this applies equally well to induction."[441]

As indicated earlier on there are some problems with this approach and thus with Føllesdal's definition of rationality. The ultimate job of reflective equilibrium is to say *which* cognitive states are justified and which are not. It is thoroughly embedded in the tradition of analytic epistemology. I have voiced the concern that such epistemology may be ontologically dependent on intuition. It is thus legitimate and necessary to inquire into the nature of intuition and how to justify it. Is it possible then, that reflective equilibrium as a criterion for assessing rational cognitive processes could be refined so that it better captures intuition? When we look closer at the passage above there are thus two points that demand a bit of interpretation.[442]

First, Goodman claims to be explaining what justifies deductive and inductive *inferences*. In using the term *inference*, he is implicitly referring to analytical cognitive processes *and not* intuitive ones. If we accept the claim that there are cognitive diversity in the world we can ask; What is it that makes one system of cognitive process better than another and how are we to tell which system of reasoning is best? After all inferential and non-inferential thinking, that is *nous* and *noesis*, has been with us all the way from the Platonic-Aristotelian tradition to our present dual-process theories. Consciously or not, Goodman sidesteps this thorny issue. For a start, I thus suggest that *intuitive equilibrium* can complete the picture somewhat. In intuitive equilibrium the deduction of rational, transcendental intuition, and the induction of empirical, immanent intuition is akin to reflexive monism, and it may move us towards a integral, synoptic, non-dual state of mind. The distinction between rational and empirical intuition was elaborated in the section on Kant.

A second point that needs some elaboration is *why* a particular set of inferential rules is justified *if* it passes the reflective equilibrium test. This critical question applies equally well to non-inferential rules. One sort of answer is that if a set of rules passes the test this counts as good *evidence*.[443] Right here we are reminded that neither Føllesdal nor Elster provide a profound account on *what* exactly qualifies as evidence. This is indeed the crux of the matter. I have argued with Jung that; "our age, and its most eminent representatives know and

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[440] Rawls, in Seung, 1993, p. 8.
[441] Goodman, 1965, p. 66-67.
[442] Stich, in DePaul, 1998, p. 98.
[443] Ibid.

acknowledge only the extraverted type of thinking."[444] It is conditioned primarily by objective data transmitted by sense perception. In intuitive equilibrium good evidence is not limited to the outer objects but embraces the inner objects, a term that might justly be applied to the contents of the unconscious and the psyche. According to Jung, the relation of inner objects to consciousness is entirely *analogous* to that of outer objects though their reality is not physical but psychic.[445]

In the recent work of Gilovich, Griffin and Kahneman they allude to the same rationale: "The material essence of some aspects of contagion has a basis in fact; the spiritual essence does not, according to current doctrine, but we must be humble about things like this. 'Action at a distance,' a hallmark of magical thinking in the past, is a scientifically accepted aspect of modern physics, and "mind over matter," another such hallmark, is now recognized in areas such as psychoneuroimmuniology."[446] In concluding this paragraph then, we can refer to etymology, which teaches us that the root of the word rationality is the Latin word *ratio*, which essentially is the relative value, relationship or proportion between *two* or more things. If the rules pass an intuitive equilibrium test, we may thus say that it counts as *good evidence* because the reality taken into consideration is integral. In other words, the end result may be a *tighter consistency* between Plato's *episteme* and *doxa*, Kant's *a priori* and *a posteriori*, and Bergson's physics and metaphysics.

4.5 Conclusion

How does intuition relate to rationality? In order to answer this research question I did three things. First, the issue of rationality was addressed. Apparently, there are heterogeneous meanings of rationality and this is the state of affairs in classical theories of normative rationality as well. However, we may indicate that rationality is related to synthesis and autonomy and that it is facilitated by intuition of our psyche and self. Secondly, it was argued that intuition is the ontological foundation for any normative theory of rationality. That is, in examination of three well-known forms of rationality; formal and instrumental rationality, and Rawls's ideal constructivism, the impossibility of constructing a normative system of rationality without using some normative intuitions was demonstrated. Thus, consequently I tried to complete my sketch of the required, supplementary theory of intuition. In concluding this chapter then, we may quote Seung, who expresses a main point:

"Without Platonic Forms, we would be prisoners of our positive norms and share with the denizens of the Platonic Cave a fate of benighted existence. The syndrome of the Platonic Cave need not be limited to the tribal consciousness of a primitive society; it is equally present in the positivistic consciousness of our scientific world. For the positivistic consciousness is governed as much as the tribal consciousness by its own provincial norms and standards. Positivism has its own cave, the cave of an exclusively materialistic universe, and this cave is so deep and dark that it allows no view of any other dimension of reality."[447]

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[444] Jung, 1971, p. 342-343.
[445] Ibid. p. 398, 453.
[446] Gilovich, et al. 2002, p. 216.
[447] Seung, 1993, p. 210.

5 INTUITION IN STRATEGY

5.1 Introduction

This chapter starts with a definition of strategy. Apparently, strategy is a unified perception revealing a unique and consistent set of activities, propelling the company into what it is to be. It is context-rich in the sense that it is anchored in both internal and external analysis. When key aspects of strategy are compared with the ones that define intuition, we discover intrinsic similarities. In the second paragraph strategic decision-making and bounded rationality are discussed. March's work on logic of consequence and appropriateness resembles aspects of the distinction between analytical and intuitive cognition as well as the one between system one and two, elaborated in dual process theories. In addition, a descriptive line of argument is presented, which is not controversial namely that strategic decision makers do rely on oversimplified rules-of-thumb and a mixture of analysis and intuition. Eisenhardt & Zbaracki's view thus captures a key point; "studying intuition is a way to create a more realistic view of how strategic decision makers actually think."[448] With few exceptions, the literature thus emphasizes awareness of search heuristics and biases as the proper way to rational decisions.

Having established the relevance of my inquiry, the third paragraph focus in on *strategic thinking*. While the notion of strategic thinking has been increasingly used in the literature over the past two decades, it has up to the 1990's been applied mainly in generic terms, and thus without a specific meaning.[449] Only recently has management research come to identify a more fine-grade understanding of the notion. Mintzberg's work is illustrative of a growing line of research efforts where the term is not merely a catchall for all sorts of notions about strategic management.[450] Rather, he approaches strategic thinking as a particular way of thinking with specific characteristics. He claims that strategic planning is an *analytical* process with the aim to program already identified strategies. The result is a plan. Strategic thinking on the other hand is a process of synthesis, based on *intuition*, where the outcome is an integrated perspective of the enterprise. A vision of the whole as Porter put it.[451] This duality then, of strategic thinking as both analytic and intuitive, is made explicit by De Wit & Meyer.[452] In their comprehensive coverage of the strategy field they ask; what is the fundamental nature of strategic thought processes? They emphasize analytical and intuitive cognition, this distinction being the main one throughout my thesis. Thus right here it may prove its worth. Certain implications are discussed.

5.2 Strategy Defined

[448] Eisenhardt & Zbaracki, 1992, p. 33.
[449] Porter, 1980, 1985. The Generic strategies of Porter can never delineate what is *unique* to the individual firm.
[450] Mintzberg, 1994, p. 273-274, 291. See also Hamel & Prahalad, 1994, Porter, 1998, Fredrickson 1986, and McGinnis 1987.
[451] Porter, 1998, p. 68. See also Porter, 1990, 1994, 1998.
[452] De Wit & Meyer, 1998, p. 70-75.

Before we turn to strategic thinking and decision-making we ought to define *strategy*. There are a number of connotations attached to this concept as well. However, in this case the history is much briefer.[453] If we try to delineate main dimensions of this concept, we may start with the definition given by Andrews. He states that: "The essence of the definition of strategy is pattern. … It is the *unity, coherence*, and *internal consistency* of a company's strategic decisions that position the company in its environment and give the firm its identity, its power to mobilize its strengths, and its likelihood of success in the marketplace."[454] It thus defines the range of business the company is to pursue, the kind of economic and human organization it is or intends to be, and the nature of the economic and non-economic contribution it intends to make to its shareholders, employees, customers and communities.[455] For Mintzberg the situation is similar. "Strategy is a pattern, that is, consistency in behavior over time."[456] Quinn adds that: "A strategy is the pattern or plan that *integrates* an organization's major goals, policies and action sequences into a *cohesive* whole. A well-formulated strategy helps to marshal and allocate an organization's resources into a *unique* and viable posture based on its relative internal competencies and shortcomings, *anticipated* changes in the environment and contingent moves by intelligent opponents."[457]

Porter stresses that operational effectiveness is not strategy. "While operational effectiveness is about achieving excellence in individual activities, or functions, strategy is about *combining* activities. Strategy is the creation of a unique and valuable position, involving a different set of activities."[458] Another essential part of strategy is thus choosing what not to do. Porter's view then, is that strategy is about creating *fit* among a company's activities. The success of a strategy depends on doing many things well – not just a few – and *integrating* among them. It is a *vision of the whole*.[459] A quick glance at some recent contributions confirms the classical definitions. In De Wit & Myers work, it is suggested that strategy is: "A *coherent, unifying*, and *integrative* pattern of decisions."[460] They add that this definition has historical validity because strategy is a matter of record – it *emerges* from what the firm actually does.

In these definitions we find part of the rationale applied by Mintzberg, when he argues that strategic planning is an *analytical* process with the aim to program already identified strategies. The result is a plan. Strategic thinking on the other hand is a process of *synthesis* based on *intuition*, where the outcome is an *integrated* perspective of the enterprise.[461] In agreement with Mintzberg, Hamel & Prahalad focus in on *how to think*. They write that the challenge is to develop great *foresight* into entirely new competitive *space*. And, "foresight is not the product of perspicuity, but of unconventional, out-of-the-box thinking. It is a view of strategy that recognizes the need for more than an incremental, annual planning rain dance."[462] In other words, they as well highlight the role of intuition. We may thus say that definitions of strategy emphasize a *coherent, unified* perception that reveal a unique and consistent set of activities, propelling the company into what it is to be. It is *context-rich* in

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[453] Rumelt et al., 1995, p. 11. In reviewing the history of strategic management, they find that a *holistic* view has always been valued.
[454] Andrews, 1987, p. 14-15. My italics. See also Andrews, 1965.
[455] Ibid. p. 13.
[456] Mintzberg, 1994, p. 23.
[457] Quinn, et al. 1998, p. 5. My italics. See also Quinn, 1980, 1988, and Chakravarthy, 1992.
[458] Porter, 1998, p. 55, 60.
[459] Ibid. p. 59, 64, 68.
[460] De Wit & Myer, 1998, p. 29. My italics. See also Grant, 1998.
[461] Mintzberg, 1994, p. 108.
[462] Hamel & Prahalad, 1996, p. xi, xviii.

the sense that it is anchored in both internal and external analysis. When these key aspects of strategy and strategic thinking are compared with the ones that define intuition and analysis we find that:

Strategic Thinking	*Intuition*	*Analysis*
Synthesis	Synthesis	Analysis
Integration	Integration	Separation
Unification	Unification	Fragmentation
Pattern	Pattern	Pieces
Whole precedes the part	Whole precedes the part	Parts precedes the whole

5.3 Strategic Decision Making

The Rational Decision-Making Model

Our context calls for a brief look at strategic decision-making. Concerning first the implicit cognitive *limitations* of the so-called rational decision-making model, several empirical studies have been conducted.[463] Cyert and March's work demonstrated that goals can be inconsistent across people and time, that search routines are often local, and that standard operating procedures guide much of organizational behaviour.[464] Similarly, Simon argued convincingly that decision-makers are not infallible rational-analytic machines. According to him actual behaviour falls short of objective rationality in at least three ways:

"Rationality requires a complete knowledge and anticipation of the consequences that will follow on each choice. In fact, knowledge of consequences is always fragmentary. Since these consequences lie in the future, imagination must supply the lack of experienced feeling in attaching value to them. But values can be only imperfectly anticipated. Rationality requires a choice among all possible alternative behaviours. In actual behaviour, only a very few of all these possible alternatives ever come to mind."[465]

The work of Eisenhardt and Zbaracki is along the same line of reason. They refer to Allison who challenged the rational model as a descriptive theory, by arguing that actions made yesterday best predict actions that are made today.[466] They also discuss The Cuban Missile Crises and the related decision making process. Here few alternative courses of action were considered simultaneously. Instead, participants raised objections to a current alternative. In order to avoid high risk, the decision makers often selected alternatives that even they did not expect to succeed. Instead of the rational process of goal definition, followed by alternative generation and choice, the observation was made, that goals and choices were discovered nearly simultaneously through social processes. Eisenhardt and Zbaracki conclude their investigation by stating that; "these and other studies indicate the limitations of each step of the rational model. Goals are unclear and shift over time. People often search for information and alternatives haphazardly and opportunistically. Analysis of alternatives may be limited and decisions often reflect the use of standard operating procedures rather than systematic analysis."[467]

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[463] Eisenhardt, & Zbaracki, 1992, p. 18. The authors refer to Cyert and March, 1963, Carter, 1971, Anderson, 1983, and Pinfield, 1986.
[464] Cyert and March, 1963. See also Cyert & Simon, 1983.
[465] Simon, 1997, p. 93-94. See also Goldstein & Hogarth, 1997.
[466] Eisenhardt & Zbaracki, 1992, p. 18-20.
[467] Ibid. p. 20. They refer to Anderson, 1983, p. 201-222. See also Nutt, 1993, 1998 and Hogarth, 1987.

After observing strategic decision-making processes in ten large corporations, Quinn described them as characterized by fragmentation, constant evolution, and intuition as well as analysis. According to him, effective top managers blend formal-analytical techniques with more behavioural oriented elements of strategic decision-making and produce "cohesive step-by-step movement towards ends, which initially are broadly conceived, but which are then constantly refined and reshaped as new information appears."[468] Thus, bounded rationality and search heuristics surfaced as interesting fields of study. Fifteen years after the publication of Simons' work, Kahneman and Tversky continued what March and Simon had begun. They provided critical information about specific systematic biases that influence judgment. Concerning the role of intuition they write:

"Any significant activity of forecasting involves a large component of judgement, intuition, and educated guesswork. Intuitions play an important part, even where the forecasts are obtained by a mathematical model or simulation. Intuitive judgments enter in the choice of the variables that are considered in such models, the impact factors that are assigned to them, and the initial values that are assumed to hold. The critical role of intuition in all varieties of forecasting calls for an analysis of the factors that limit the accuracy of expert judgements, and for the development of procedures designed to improve the quality of these judgments."[469]

Hence, for Kahnemann and Tversky the problem is not whether to accept intuitive predictions at face value or reject them, but rather how they can be de-biased and improved. They would like them more explicit. They also state that most predictions and forecasts contain an *irreducible* intuitive component.[470] In this latter view, Seung agrees. He argues in favor of intuitionism as ontological foundation for *any* constructivism, as elaborated in the chapter on intuition and rationality. In its most basic form then, the rational model of choice follows the everyday assumption that human behavior has some purpose. In research on decision-making, this translates into a common model of rational action, sometimes referred to as the synoptic or comprehensive model of decision.[471] Usually, these six steps characterize it:[472]

1 Define the problem. Managers often err by defining the problem in terms of a proposed solution, missing the big problem, or diagnosing the problems in terms of its symptoms.
2 Identify the criteria. Most decisions require the decision maker to accomplish more than one objective. In buying a car, we may want to maximize fuel economy, minimize costs, maximize comfort, and so on.
3 Weight the criteria. Rational decision makers will know the relative value that they put on each of the criteria that were identified.
4 Generate alternatives. An inappropriate amount of search time is often spent seeking and identifying possible alternative courses of action. An optimal search continues only until the cost of search outweighs the value of the added information.
5 Rate each alternative on each criterion. How will each of the alternative solutions score on each of the defined criteria?
6 Compute the optimal decision. For each alternative, compute the sum of weighted ratings.

According to the second step in this model, actors enter decision situations with known objectives. These objectives determine the value of the possible consequences of an action. The original debate thus involved the heroic nature of cognitive assumptions. Eventually the validity of the classic economic actor was challenged. Simon, for instance, rejected the Hobbesian notion of consistent, value-maximizing calculation in human behavior. "We will use the term *decision premises* to refer to the facts and values that enter into this decision-

[468] Quinn, 1980.
[469] Kahneman, Slovic, Tversky, 1985, p. 414.
[470] Ibid. p. 421.
[471] Eisenhardt & Zbaracki, 1992, p. 18.
[472] Bazerman, 1998, p. 3-4.

fabricating process, a process that involves fact-finding, design, analysis, reasoning, negotiating, all seasoned with large quantities of 'intuition' and even guessing."[473] Later variations accepted the rational model, but rearranged the pieces to allow for repetition and variety.[474] One example is Mintzberg et al. who generated a model of the structure of apparently unstructured strategic decisions. Three basic phases, the identification, development and selection phase, represent the core of the model.[475] Here the phases have no sequential relationship as in the classical rational model of choice.

Eisenhardt and Zbaracki refer to the Bradford group, which examined 150 widely varying strategic decision processes in the UK. They found that the linearity of the decision process is highly variable. The amount of cycling and the shape of the process correlated with how complex and political the decision was. "Decision processes thus seems to vary depending upon decision characteristics as executives apparently bypass or revisit different aspects of the choice over time."[476] Incarnations that are more recent have transformed the rational vs. boundedly rational dichotomy into a *continuum*, probing whether and when decision-making is rational.[477] According to Eisenhardt & Zbaracki, the normative question of where the optimal point on the continuum is to be found has challenged a number of researchers. They indicate that the most prevalent argument is that more complex or turbulent environments require less rationality.[478] In my research, quite a few respondents said that in exploration of brand new terrain they put more emphasis on analysis than usual due to higher risk. However, the general reply was the opposite because; "there were hardly any data to analyze."
The same authors thus argue that the original debate, which shaped this view, whether decision makers are rational or boundedly rational, is no longer very controversial. Empirical research reveals cognitive limits to the so-called rational model. "Decision makers sacrifice instead of optimize, rarely engage in comprehensive search, and discover their goals in the process of searching."[479] The empirical research referred to, suggests that many decisions do follow the basic phases of problem identification, development and selection, but that they cycle through the various stages, frequently repeating, often going deeper, and always following different paths in fits and starts. Furthermore, the complexity of the problem and the conflict among decision-makers often influence the shape of the decision path. Moreover, it appears that there is no single theory of bounded rationality, but rather many variations, they argue.[480] In summarizing, we might say that research demonstrates that human responses deviate from the performance deemed normative according to various models of decision-making and rational judgment.

Logic of Consequence & Appropriateness

March stresses a crucial point, when he says that theories of bounded rationality and heuristics tend to take preferences and identities as *given*. This is oversimplification and is thus questioned by March.[481] He suggests that we instead should treat decision making as a way of

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[473] Simon, 1997, p. 24-25. See also Zey, 1992, 1998, and Whitecotton, 1998.
[474] Eisenhardt & Zbaracki, 1992, p. 18. The authors here refer to Mintzberg et al., 1976, Nutt, 1984, and Hickson et al., 1986.
[475] Mintzberg, et al., 1976, p. 246-275. See also Langley et al. 1995, p. 268 and Greenhalgh, 2002.
[476] Eisenhardt & Zbaracki, 1992, p. 21. See also Eneroth, 1990, Fletcher, 1990 and Goldberg, 1983.
[477] Ibid. They refer to Fredrickson, 1984, Fredrickson & Mitchell, 1984, Dean & Sharfman, 1992.
[478] Ibid. The authors also refer to Dess, 1987, Priem, 1990, Miller, 1987, Fredrickson & Iaquinto.
[479] Ibid. p. 22.
[480] Ibid.
[481] March, 1994, p. 262. He thus calls for a technology of foolishness. It is discussed below.

creating preferences and identities, at the same time as preferences and identities are treated as a basis for decisions and their justification. Of special relevance are his two decision-making logics. Logic of consequence emphasizes *given* preferences and expected consequences, while logic of appropriateness focus on *rules* that are *appropriate* to the *situation* and the *identity* of the decision maker or organization.[482] In logic of appropriateness decision makers are supposed to ask what kind of situation is this, how is it to be interpreted and recognized, what kind of person am I and what does a person such as I do in a situation such as this? We may perhaps say that logic of consequence stresses explicit thought processes while logic of appropriateness is more aligned with implicit thought processes. Thus, the former relates to reasoning system 2 and the latter to system 1 as described by Stanovich and West.[483] My empirical study addresses the question; what sort of decision-making logic is applied by strategists in exploration of completely new situations contrasted with the more familiar situations?

Rules and identities are so obvious, that they are more likely regarded as context for behavior, than interesting phenomena in their own right. Not only do decision makers take them for granted, so also do observers. They are largely *implicit*. March thus concludes that within an ideology of choice any detectable willfulness is exalted, no matter how circumscribed by rules. "The stories told in history and journalism tend to glorify strategies of rational maneuver within the rules. They tend to ignore the rich processes by which identities and rules are created, maintained, interpreted, changed, and ignored."[484] In contrast to this view, students of rule following tend to regard the `rational` model of choice as simply one version of rule following, *associated with the specific identity* of some decision makers. Within such conceptions it is *identities* and rule following that is fundamental, and 'rationality', or controlled, explicit thought processes, which is *derivative*, March argues. "Among the many aspects of meaning that are shaped within decision making processes, few are more important than the understanding individuals have of their preferences and their identities."[485] Thus the Myers Briggs Type Indicator® will be applied in the empirical study. It indicates individual traits and preferences.

In order then, to use decision making as a *conscious* basis for constructing the self, March suggests that decision-makers have to combine logic of consequence and appropriateness with a technology of foolishness. He argues that a technology of foolishness will make the greatest sense in situations where there has been an over-learning of the virtues of rationality. As one of five elements in this technology, March suggests that we treat *intuition as real*. "It is not clear what intuition is. …. Perhaps it is some inexplicable way of consulting memories or ideas that are inaccessible to standard theories of thought. Whatever intuition is, a belief in intuition strengthens the case for actions that are otherwise indefensible."[486]

Secondly, he suggests that we treat the *self as a hypothesis*. This because conventional thinking about decision-making allows doubts about everything except the one thing about which there is often the greatest doubt – the self. Moreover, we should treat memory as an enemy, treat experience as a theory, and treat hypocrisy as a transition. Learning is based on a series of conclusions about history that people have invented to understand experience. Interpretations of history, and thus experience, can be changed retrospectively. In yet other

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[482] My data indicate that top managers rely more heavily on logic of appropriateness.
[483] Stanovich & West, 2000, p. 645.
[484] March, 1994, p. 59. See also Thommessen & Wetlesen, 1996, p. 218-219.
[485] Ibid. p. 261, 59.
[486] Ibid. p. 262. See also Cohen, 1972, Birgerstam, 2002, Bougon, 1992, and Bowers, 1995.

words, we need to learn how to unlearn.[487] By changing the interpretation of history now, decision makers can revise what they learned earlier and *reconstruct self-conceptions*. Memories accumulate experience and permit learning. However, the ability to forget may also facilitate such reconstruction and in this way, our decision engineering work is improved.

March makes yet another point that should be mentioned briefly. He argues that adaptive processes, by refining exploitation more rapidly than exploration, are likely to become effective in the short run but *self-destructive* in the long run.[488] In rational models of choice, the balance between exploration and exploitation is discussed classically in terms of a theory of rational search. That is, an optimal search continues only until the cost of search outweighs the value of the added information. Similarly, in organizational learning, the problem of balancing exploration and exploitation is exhibited in distinctions between refinement of an existing technology and invention of a new one.[489] Thus, intuition may play a pivotal role in that it perceives and foresees *new possibilities*.[490] It is therefore of interest to investigate whether or not intuition is more emphasized in exploration of new ideas and technology, than in exploitation of familiar terrain, as hypothesized by Miller & Ireland.[491] Exploration is typically characterized by: search, variation, risk taking, experimentation, play, flexibility, discovery, and innovation. Exploitation, on the other hand captures refinement, choice, production, efficiency, selection, implementation, and execution.[492] In the former situation, strategists will often have limited previous experience and knowledge, while in the latter the opposite is the case.

Research on Intuition in Management

In reviewing the literature on intuition in management we do not find much empirical research done. The only international survey is by Parikh, Alden and Lank. They present a somewhat limited conceptual framework, but conduct a comprehensive global survey of more than 1300 practicing managers in nine countries.[493] Norway was not included. One critical finding is that intuition is perceived as playing a major role in the professional lives of the responding managers, with 56 percent using both intuition and logic/reasoning in almost equal measure, and a further 7,5 per cent stating that they use more of intuition. Furthermore, almost 80 per cent believe that intuition has relevance in corporate strategy and planning.[494]

These findings correspond with those of Eisenhardt who concludes that decision-makers are rational in some ways but not in others. She claims that such behaviour is the most effective.[495] Woolhouse & Bayne, Fredrickson, Langley et al., Agor, Bennet & Anthony, Cosier, Brockmann & Simmonds, Khatri & Ng, Isenberg, Stauffer, and Hayashi, are other authors who advocate that the executive's approach is simultaneously rational and intuitive.[496]

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[487] Hedberg, 1981. Janis, 1972.
[488] March, 1991, p. 71. See also March, 1978, and the work of Argyris, 1974, 1978, 1985.
[489] Ibid. p. 72.
[490] Jung, 1971, p. 401.
[491] Miller & Ireland, 2000, p. 19. See also Miller & Burke, 1999.
[492] March, 1991, p. 71. See also March, 1994, p. 237. And March, 1978, 1988.
[493] Parikh, et. al., 1994, p. 25-41. My sample is restricted to top managers.
[494] Ibid. p. 81. See also Johnson, 1987, Rowan, 1986, Schon, 1983, and Senge, 1989.
[495] Eisenhardt, 1989. See also Eisenhardt & Zbaracki, 1992, p. 22, and Johannessen, 1999.
[496] Fredrickson, 1985, p. 821, Langley, 1995, p. 267, Woolhouse & Bayne, 2000, p. 157, Agor, 1986, p. 49, 1984, 1989, Stauffer, 1999, p. Cosier, 1982, p. 275, Isenberg, 1984, p. 81, Khatri & Ng, 2000, p. 57, Brockmann, & Simmonds, 1997, p. 454, Bennet & Anthony, 2001, p. 185, Hayashi, 2001, p. 59.

Papadakis and Barwise, in a study of 151 firms on *timing and intuition* in strategic decision making, found that in addition to organizational centralization, the CEO's cognitive ability, use of intuition and tolerance for risk, were associated positively with speedy SDM. They also looked into the capability of firms to use a wide range of decision models simultaneously. The research indicated that those who could do this had better performance.[497]

If we look at little closer at the research of Parikh et al. we find that they asked the respondents to describe intuition. 23 percent described it as a decision/perception without recourse to logical or rational methods. 17 percent described it as inherent perception, inexplicable comprehension, a feeling that comes from within. 17 percent described it as integration of previous experience, processing of accumulated information. 12 percent described it as gut feeling, 9 percent as a decision/solution to a problem, without complete data or facts, and another 7 percent as a sixth sense. 7 percent described it as a spontaneous perception or vision, 6 percent as insight, 6 percent, as a subconscious process, and another 6 percent described it as instinct.[498]

In a recent study, Burke and Miller interviewed 60 experienced professionals holding significant positions in major organizations across various industries in the U.S.[499] Their findings revealed that 56 percent understood intuitive decisions to be based on *previous experiences*, together with emotional inputs. When asked whether they always, often, sometimes, seldom, or rarely used intuition in the workplace, 47 percent answered often. Participants reported employing intuition when decisions needed to be made quickly or unexpectedly because potential costs were associated with delays. Other participants responded that they used intuition when uncertainty pervaded such novel situations as a first-time restructuring or reorganization and in some financial issues, such as formulating budgets, estimating prices, and selecting investments.[500] We may thus indicate that in most cases, managers define intuition along the lines we have suggested for the first level of intuition, which relates primarily to the *personal* unconscious.

The aim of Clarke & Mackaness is to develop and test propositions about the structure and content of management intuition from the literature, using qualitative in-depth case studies to construct cognitive maps of their decision schemas. They cite different authors who have proposed that managers use intuition when faced with insufficient facts and complex alternatives, and to simplify a given decision situation. However, their study suggests that senior managers *do not* appear to use more complex and more coherent decision schemas than less senior executives. Rather, there is some suggestion that it is the content, not the structure of their cognitive maps that are different. Senior managers seem to opt to use simpler cognitive explanations, putting greater reliance on key constructs and a higher proportion of *non-factual* information. Analogues, or comparable exemplars, play an important part in this process. "Intuition seems, therefore, to come more into play as a means of *going beyond* the rational data and information, by using *experience* to cut through to the *essence* of a situation, helping make *sense* of it, and as a *test* of its validity."[501] They thus indicate that when viewed in this way, we begin to see how cognitive and intuitive constructs might interplay within the decision schema of an individual manager, and why quantitative analysis may not be integral to the decision-making in the way that one might presuppose.

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[497] Papadakis & Barwise, 1998, p. 96, and 1997, p. 269-270. See also Bakken & Gilljam, 2003.
[498] Parikh, 1994, p. 165. See also Pattakos, 1996, and Pehrson, 1997.
[499] Burke & Miller, 1999, p. 91. See also Ohmae, 1982, Bennet, 1997, Ims, 1987 and Keen, 1996.
[500] Ibid. p. 92-94.
[501] Clarke & Mackaness, 2001, p. 166. See also the work of Neisser, 1976, p. 108.

The rationale for studying intuition in strategy is thus its salience not only for the field of strategy, but for the field of decision making as well. The proposed contribution of my research is thus to demonstrate that by better understanding intuition and its application, more rational, effective, and efficient strategic thinking and decision-making could result.

5.4 Strategic Thinking

Metaphors of strategy as learning and evolutionary adaptation implicitly suggest that successful firms are simply those that adapt quickly to changing environmental demands. That is, one is much more likely to hear senior managers call for quicker response time than for higher-quality strategic thinking and decision-making. However, we may have reached the limits of incremental improvements. Getting a product to market a few weeks earlier, responding to customer inquiries a little bit faster, squeezing another penny out of cost, ratcheting quality up one more notch, capturing another point of market share, tweaking the organizational one additional time, these are the obsessions of managers today, according to Porter, Hamel and Prahalad.[502] If there is little to gain from further increase in operational efficiency, how then should we proceed further? We might need to explore and cultivate the potential of those resources and activities that are time-bound to a lesser extent. The mind appears to be the single most important asset in this respect. Thus, in this thesis, it is argued that strategic thinking and decision-making might benefit from exploration and proper use of intuition.[503]

High-level managers in large companies first articulated the need for explicit strategic thinking. For example, Alfred Sloan, the chief executive of General Motors from 1923 to 1946, devised a successful strategy based on the perceived strengths and weaknesses of his company's critical competitor, the Ford Motor Company, and wrote it up after he retired. In the 1930s, Chester Barnard, a senior executive with New Jersey Bell, argued that; "The action which is the essence of organization, or the coordination of action which is the function of the executive, relates to the *synthesis* of physical, biological, and social factors."[504] World War II supplied a vital stimulus to strategic thinking in business as well as military domains, because it sharpened the problem of allocating scarce resources across the entire economy.[505]

However, while the notion of *strategic thinking* has been increasingly used in the literature over the past two decades, it has up to the 1990's been applied mainly in generic terms, and thus without a specific meaning.[506] Only recently has management research come to identify more a more fine-grade understanding of the notion. Mintzberg's work is illustrative of a growing line of research efforts where the term is not merely a catchall for all sorts of notions about strategic management.[507] Rather, he approaches strategic thinking as a particular way of

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[502] Hamel & Prahalad, 1996, p. x. Porter, 1998, p. 43, 59. See also Stacey, 1992 and Stalk, 1990.
[503] A point made by several authors; Hamel & Prahalad, 1994, p. 6, Mintzberg, 1994, p. 329, Eisenhardt & Zbaracki, 1992, p. 18, Kreiner, 1999, Watson, 2002 and Lai, 1999.
[504] Barnard, 1938, p. 290. "Through a period of years, as a matter of interest, I have endeavored, without any success, to find out what the intellectual processes were and what we can possibly mean by *intuition*. My initial interest in the subject was quite practical. Without casting any aspersions, it was an interest in discovering why it is that people who had scientific training so frequently had no sense."
[505] Ghemawat, 1999, p. 3. See also Novicevic, et al., 2002, p. 992-1001, and Chandler, 1962.
[506] Porter, 1980, 1985. Generic strategies can never delineate what is *unique* to the individual firm.
[507] Mintzberg, 1994, p. 323. See also Hamel & Prahalad, 1994, Porter, 1998, Fredrickson 1986, and McGinnis

thinking with specific characteristics. He claims that strategic planning is an *analytical* process with the aim to program already identified strategies. The result is a plan. Strategic thinking on the other hand is a process of synthesis, based on *intuition*, where the outcome is an integrated perspective of the enterprise. A vision of the whole as Porter put it.[508]

Liedtka as well, defines strategic thinking as a particular way of thinking.[509] She includes five specific elements; it incorporates a *whole system* perspective, is intent-focused, involves thinking in *time*, and space we might add, is hypothesis-driven, and is intelligently opportunistic. Having these competencies is what characterizes the individual strategic thinker. Masifern and Vila emphasize that strategic thinking, as *structure* of *meaning*, is presented as both the medium of social cognitive action and its product. They suggest that it is more a *state of mind*, than just another planning process. "We conceive of strategic thinking as a set of ideas, principles, policies, concrete rules, and operational approaches which shape the way managers think about their role and guide their daily actions."[510] They argue that this *set of ideas* and rules is more malleable than corporate ideology or organizational identity, which have a more permanent character. In this account, we recognize many of the connotations attached to intuition.

Other authors are focusing on the consequences of strategic thinking rather than on the characteristics of a strategic thinker. Takur & Calingo is one example, and they suggest that strategic thinking is the conceptual *glue* that holds the organization together. "Strategic thinking can be imagined as the strand of rope on a string of pearls. The strand holds all the beads without being visible itself."[511] This approach does have some similarities to the one presented by I. Nonaka and N. Konno. They introduce the concept of *ba*, or shared *space*.[512] As opposed to information, which is tangible and resides in media and networks, knowledge is intangible and embedded in shared spaces, it is argued. Despite this, I have limited my research to include only the individual strategic thinker. They ground the concept in an existentialist framework, where the key platform of knowledge creation is the `phenomenal` place. Such a place can emerge in individuals, working groups, project teams, informal circles, temporary meetings, e-mail groups, etc. A *ba* thus *unifies* the physical space, the virtual space, and the mental spaces, a pivotal point being its *non-local* features. A *ba* may thus resemble aspects of the quantum holonomic model of intuition mentioned in the previous chapter.

Shimuzi refers to Japanese executives and defines insight as 'intuitive sensibility' an ability to grasp instantly an understanding of the whole structure of new information. That is, a sixth sense or *kan* which, in contrast to the sequential steps of logical thinking, entails the fitting together of memory fragments that had until then been mere accumulation of various connected information.[513] Eisenhardt & Zbaracki elaborate on strategic thinking and explicitly state that; "studying intuition is a way to create a more realistic view of how strategic decision makers *actually* think."[514] They also write that executives who attend to real-time information are actually developing their intuition. Aided by intuition they can react quickly and accurately to changing stimuli. Their conclusion is that future research could profitably

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1987.

[508] Porter, 1998, p. 68. See also Porter, 1990, and 1994.

[509] Liedtka, 1988.

[510] Masifern & Vila, 1998, p. 20.

[511] Takur & Calingo, 1992, p. 48. In Masifern & Vila, 1998, p. 20.

[512] Nonaka & Konno, 1998, p. 40-41. See also Nonaka & Konno, 1995, and Hutchins, 1991.

[513] In Langley et al., 1995, p. 268. See also Hellgren, 1993.

[514] Eisenhardt & Zbaracki, 1992, p. 33.

examine how intuition develops, how intuition can be separated from superstitious learning, and how intuition reinforces and relates to insight and heuristics. A question that has been among the most important themes of strategy research over the last ten years is according to them: What is it that characterizes decision-makers? Still, there is little knowledge about the specific link between top management and strategic decisions.[515] The empirical part of my research addresses this issue.

In his work *The Rise and Fall of Strategic Planning*, Mintzberg discusses the fundamental fallacies of strategic planning.[516] In familiarizing with them, we may improve our understanding of strategic thinking. He describes three basic fallacies of the planning process, namely that discontinuities can be predicted, that strategists can be detached from the operations of the organization, and that the process of strategy-making itself can be formalized. Concerning first *the fallacy of predetermination*, it is argued that planning assumes predetermination in a number of respects. The prediction of the environment through forecasting, or the predict-and-prepare approach is given as example. "Almost everything written about planning stresses the importance of accurate forecasting."[517] He goes on, referring to a number of authors, all of whom support his thesis; that forecasting is *notoriously inaccurate*.[518]

One more argument is given. Because planning, in the absence of ability to control the environment must rely on forecasting, and because forecasting amounts to extrapolation of known states, or existing trends, planning and analysis typically work best under conditions of *relative stability*. Strategy itself is associated with this same condition of stability. Thus, strategy and planning may sometimes fit naturally together. However, while strategy may be associated with conditions of stability, *strategy making* is generally associated with *times of change*. Here we are reminded of Bergson's argument; that in applying fixed concepts, analytical thinking is bound to misunderstand motion and change. Mintzberg elaborates on this point, by emphasizing that strategies do not exist as tangible entities, and that they are abstract concepts in the minds of people. "The best of them seem to be *gestalt* in nature, and tightly integrated."[519] Serious change in strategy thus generally means shift in gestalt. The core of his argument is therefore that major changes in strategy, both within the mind and outside, is associated with *discontinuity*, the very thing that planning and analysis is least able to handle.

Secondly, the *fallacy of detachment* is investigated. Mintzberg vividly describes a situation of calculated chaos, which managers tend to work in. They do so not because they are disorganized, or do not know how to make use of their secretaries to screen interruptions, or fail to recognize the importance of reflective planning. They do so, for quite the opposite reason, it is claimed. They know that only by *interacting* with the dynamic *context*, they are able to develop proper strategies. "If they cannot, the problem is not an absence of formal planning, but of managerial ability, or of detachment of managers from context."[520] The key assumption that thinking can be separated from action and context is thus dismissed because "thinking must certainly precede action, but it must also follow action, close behind, or else

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[515] Papadakis and Barwise, 1998, p. 275.
[516] Mintzberg, 1994.
[517] Ibid. p. 228.
[518] Ibid. p. 229-230. Makridakis, Wheelwright, and McGee, 1983, Makridakis, and Wheelwright, 1989, Hogarth, 1981, Pant and Starbuck, 1990.
[519] Ibid. p. 240. Fischbein, 1987, p. 53, argues that intuition is reminiscent of the concept of *Gestalt*.
[520] Ibid. p. 244.

run the risk of impeding it!"[521] Formal planning poses the danger of distancing that connection and therefore discouraging action. Eisenhardt supports this view and argues that successful strategy emerges by building collective intuition through frequent meetings and real-time metrics that enhance a managements team's ability to see threats and opportunities sooner and more accurately.[522]

These arguments may be of some relevance to dual-process theories, where system two is seen as *rational* and context-*independent*. Mintzberg also writes that managers and planners detached from the operating details cannot be properly informed by so-called hard data only. This point is made by Malan & Kriger as well, who stress the importance of "detecting nuances and fine-grade variation within the organization."[523] Detachment is possible only if the information needed can be provided conveniently. The messy world of random noise, gossip, tacit inference, impression, and fact must then be reduced to firm data, hardened and aggregated so that they can be supplied regularly in digestible form. This is of course most difficult. Mintzberg argues that hard information is often limited in scope, lacking richness and often failing to encompass important non-economic and non-quantitative factors. Much hard information is also unreliable, to aggregated, and arrives too late for effective use in strategy making, he says.

Closer to the core of planning's grand fallacy Mintzberg finds the fallacy, that the strategy formation process *can be formalized*, or in yet other words, that exploration and innovation can be institutionalized.[524] The prime assumption behind this is that systems can detect discontinuities, comprehend stakeholders, provide creativity, and program intuition. "We believe there is something fundamentally wrong with formalization applied to processes like strategy making, which constitutes the grand fallacy. It has to do with reductionism, or the analytical nature of planning."[525] More specifically, he argues that formalization is achieved through decomposition, in which a process is reduced to a procedure, a series of steps, each of which is specified. Breaking the whole down into parts is essentially analytical. The word analysis itself comes from a Greek root meaning to subdivide. "The formal system could certainly process more information this way. They could consolidate it, aggregate it, and move it about. But they could never *internalize* it, *comprehend* it, and *synthesize* it. Analysis was never up to the job set for it."[526] That is why, he asserts, the strategy formation process has failed so often and so dramatically.

The grand fallacy then, as perceived by Mintzberg, is that because analysis is not synthesis, strategic planning is not strategy formation. "Analysis may precede and support synthesis, by defining the parts that can be combined into wholes. Analysis may follow and elaborate synthesis, by decomposing and formalizing its consequences. But analysis cannot substitute for synthesis. No amount of elaboration will ever enable formal procedures to forecast discontinuities, to inform managers who are detached from their operations, to create novel

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[521] Ibid. p. 293.
[522] Eisenhardt, 1999, p. 72.
[523] Malan & Kriger, 1998. See also Weick, 1995.
[524] A similar point is made by De Wit & Meyer, 1998, p. 7.
[525] Mintzberg, 1994, p. 294, 298. *Business Week*, 1983:56. He refers to Jelinek and Schoonhoven, 1990, McKenney and Keen, 1974, Roger Sperry, 1974.
[526] Ibid. p. 299. My italics. Here he refers to i.e. the conspicuous failure of massive urban renewal, the non-democratic non-planning of the French government, the dramatic rejection of planning at General Electric, and the PPBS burlesque.

strategies."[527] He thus concludes that strategy cannot be planned because planning is about analysis and *strategy is about intuitive synthesis*.

In expressing these arguments, which are somewhat new and controversial in the management literature, we become curious to learn how Mintzberg defines intuition. Perhaps this is the weaker part of his work. The reason should be obvious; it is indeed a most difficult subject. He indicates that intuition exists as a distinct process of thought, different from rational analysis, by referring i.e. to Ornstein and the work on brain hemispheres.[528] Here the left hemisphere is the base for linear, sequential, explicit, analytic thinking, and the right hemisphere is specialized for simultaneous, holistic, relational, synthetic, implicit, intuitive thinking. Mintzberg's main point is thus that while these two hemisphere activities might productively combine, they *do not* blend into one, nor can they easily substitute for each other. In flat contradiction to this view is Simon's remark that intuition and judgment – at least good judgment – are simply *analyses frozen into habit*, and into the capacity for rapid response through recognition.[529]

Simon's famous example of chess grandmasters is interesting in many ways. It shows that these players can look at the twentieth position in a grand-masters chess match for five seconds and then reproduce it almost perfectly. Experts and novices cannot do that, and no one can do it for pieces randomly placed on the board. The conclusion being that it is the familiarity and *experience* with these patterns that enables the grandmasters to know what constitute good and bad moves from such patterns.[530] Simon thus argues that the essence of intuition lies in the organization of knowledge for quick identification, that is, arranged in terms of recognizable chunks, and not in its rendering for inspired design. More specifically, he writes that; "these processes can be explained *without* postulating mechanisms at subconscious levels that are different from those that are partly verbalized. Much of the iceberg is, indeed, below the surface and inaccessible to verbalization, but its concealed bulk is made of the same ice as the part we can see …. . The secret of problem solving is that there is no secret. It is accomplished through complex structures of familiar simple elements."[531]

This duality then, of strategic thinking as both analytic and intuitive, is made explicit by De Wit & Meyer. In their comprehensive coverage of the strategy field they ask; what is the fundamental nature of strategic thought processes? "A whole spectrum of views exists, without any coherent clusters or schools of thought identifiable."[532] However, they focus in on what they call the generative and the rational thinking perspective. This distinction reflects the one elaborated throughout my thesis, thus right here it may prove its worth.

	Rational Thinking	*Generative Thinking*
Cognitive Style	Analytical	Intuitive
Emphasis on	Logic over creativity	Creativity over logic
Direction of Reasoning	Vertical	Lateral
Nature of Reasoning	Computational	Imaginative
Value Placed on	Consistency & Rigor	Unorthodoxy & Vision
Assumption About Reality	Objective, Partially Knowable	Subjective, Partially Creatable

[527] Ibid. p. 321.
[528] Ibid. p. 306. R. Ornstein, 1972. Damasio, 1994, elaborates on this issue.
[529] Simon, 1987, p. 63. See also Frantz, 2003, p. 265-275.
[530] Dawes, 1988, p. 6.
[531] Simon, 1977, p. 69.
[532] De Wit & Meyer, 1998, p. 70-75.

Decisions Based on	Calculation	Judgment
Metaphor	Strategy as Science	Strategy as Art
Reasoning Follows	Formal, fixed rules	Informal, variable rules
Reasoning Hindered by	Incomplete information	Adherence to Current Ideas

Concerning the role of intuition they write that in general it can be understood as the opposite of formal analysis. "Intuition is informal and synthetic. Informal means that it is largely unconscious and based on assumptions, variables and causal relationships not explicitly identifiable by those doing the thinking. Synthetic means that the thinker does not aim at unravelling phenomena into their constituent parts, but rather maintains a more holistic view of reality."[533] Interestingly, they point out that intuition is not necessarily irrational. "If intuition is viewed as a set of unconscious and un-codified decision rules largely derived from experience, intuitive judgments can be quite logical."[534] To support this view, they refer to Simon. They also claim that unconscious does not mean illogical and thus that most proponents of the rational perspective do not dismiss intuition out of hand. This is so, even though intuitive judgments are difficult to verify and infamously unreliable.[535]

Implications

Apparently, intuition is recognized as a mode of cognition that is of special relevance in strategic thinking and decision-making. Thus, we may wonder what possible implications there are, and how we best can benefit from intuition. Let us start by considering the *cost*, *speed*, and *accuracy* of using analysis versus intuition. Analysis would seem to be slower and costlier. This because a team often has to be assembled, and it has to study all kinds of data before it can draw a conclusion. For better or for worse, the decisions aided by intuition are available immediately. However, that considers only the *operating* cost. The *investment* cost of intuition, as emphasized by Mintzberg, is far higher.[536] Earlier on, it was indicated that this is due to the assumption that one cannot be intuitive, unless one has intimate knowledge of the subject in question.[537] Intimate knowledge of the subject in question, necessarily, takes years to develop. Analysis on the other hand, is rather easy to undertake, clever analysts can with little effort, get their hands on good, hard data.

Analysis, when done correctly, with the right kind of data, gives answers that are *accurate* and correct. Intuition, when applied to problems with which it can deal, tends to be only approximately correct, according to the study conducted by Hammond et al. and Peters et al.[538] In other words, the analytic approach to problem solving produces the precise answer more often, but its distribution of errors is quite wide. In contrast to this, intuition is less frequently precise, but *more consistently close* to the correct answer. Part of the reason, may be that to intuition, a bizarre answer is *out of context* and thus reconsidered. Peters et al. thus described analysis as equivalent to the switching of trains on a track, involving a set of discrete and well-defined choices. Correct decisions all along the way will lead to the right destination, while one simple error, anywhere can take the train to a completely different place. Analysis may be sub-optimal, in trading off breadth for depth, and because it does not

[533] Ibid. p. 72.
[534] Ibid.
[535] Ibid. Here they refer to Hogarth, 1980, and Schwenk, 1984.
[536] Mintzberg, 1994, p. 325.
[537] Baylor, 2001.
[538] Hammond et al. 1997, p. 172. Peters et al., 1974, in Mintzberg, 1994, p. 327.

seem to encourage *creativity*. It is often a convergent process, in search of *a* solution, and often a deductive one, oriented more to decomposition than to design. It often suffers from premature closure, and leads to marginal rather than radical innovation. Intuition on the other hand, can lead either to dramatic forms of innovation, or none at all, Mintzberg argues.[539] Strategic decision-making usually includes high *risk*. Portfolio theory thus teaches us that we are better off being equipped with *several modes of thinking*. However, it requires investments.

Finally, it may be suggested that to benefit the most from intuition, a shift from purely external or objective reality approach, to internal locus of control is required. In doing so, the *responsibility*, in success as well as in failure, is to be anchored within the organization. An example may clarify what is meant here. If the organization is in a strategic group where competition is fierce and rude, where customers are disloyal and profit is meager, the question to be raised is *why your* organization faces these problems. In scrutinizing the ethical standard and the application of power, it is likely that we will find some answers within the organization. What we want to have is a unification of the external and internal analysis, an *integral* SWOT analysis.[540]

Concerning more specific guidelines on how to apply intuition in strategic thinking, the following procedure may prove useful. Its backbone is developed by Kahneman et al.[541] Step one is the selection of a *reference class*, so that the case can be anchored meaningfully. A good thing would be to know i.e. class average and variability, thus the second step is *assessment of the distribution* for the reference class. Step three is the *intuitive estimation*. The expert usually has a considerable amount of knowledge and experience relevant to the particular case. On this basis, an intuitive estimate should be made. In this stage, we may benefit considerably from different techniques that foster and facilitate intuition. Worth mentioning is i.e. dialogue, meditation, and neuro-linguistic programming. Then the intuitive estimate may be corrected. It can be done, by adjusting it towards the average of the reference class, using the correlation coefficient.[542] In step five the expert is supposed to evaluate whether or not the information available permits accurate prediction. This can be most difficult. One way to approach it is to reflect upon own skills, compared with those of others, who also work with predictions. To these five steps, we might add March's technology of foolishness, which we did discuss.[543]

To conclude this paragraph we may say that even though intuition is recognized as pivotal in both strategic thinking and decision making, theory is so to speak non-existent. Another point I have alluded to is thus that; in extensive application of analysis we are running into March's exploitation trap. That is, if analysis is the only mode of cognition explored theoretically and empirically, it may in the longer run, prove dysfunctional to the field of strategy. The current work aims at bridging the gap.

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[539] Mintzberg, 1994, p. 325-329.
[540] Andrews, 1987, p. 35-51. SWOT = Strengths, Weaknesses, Opportunities, Threats.
[541] Kahneman et al. 1985, p. 417-421.
[542] Ibid. p. 420. "If the intuitive estimate was non-regressive, then under fairly general conditions the distance between the intuitive estimate and the average of the class should be reduced by a factor of *p*, where *p* is the correlation coefficient."
[543] March, 1994, p. 262.

5.5 Conclusion

This chapter first introduced a definition of strategy. Apparently, strategy is a unified perception revealing a unique and consistent set of activities, propelling the company into what it is to be. It is context-rich in the sense that it is anchored in both internal and external analysis. When these key aspects of strategy are compared with the ones that define intuition, we discovered intrinsic similarities. In the second paragraph strategic decision-making and bounded rationality were discussed. March's work on logic of consequence and appropriateness resembles the distinction between analytical and intuitive cognition as well as dual process theories. A descriptive line of argument was presented, which is not controversial namely that strategic decision makers do rely on oversimplified rules-of-thumb and a mixture of analysis and intuition. The rationale for studying intuition in strategy is thus its salience not only for the field of strategy, but for the field of decision making as well.

Having established the relevance of my inquiry the third paragraph focused in on *strategic thinking*. Mintzberg's work is illustrative of a growing line of research efforts where the term is not merely a catchall for all sorts of notions about strategic management.[544] Rather, he approaches strategic thinking as a particular way of thinking with specific characteristics. He claims that strategic planning is an *analytical* process with the aim to program already identified strategies. The result is a plan. Strategic thinking on the other hand is a process of synthesis, based on *intuition*, where the outcome is an integrated perspective of the enterprise. A vision of the whole as Porter put it.[545] This duality then, of strategic thinking as both analytic and intuitive, is made explicit by De Wit & Meyer. In their comprehensive coverage of the strategy field they ask; what is the fundamental nature of strategic thought processes? They emphasize analytical and intuitive cognition, without providing any theory on intuition. This distinction is the main one throughout my thesis and right here it may prove its worth.

With this chapter, I draw to an end on the first research question and objective. How intuition is defined in philosophical, psychological and management theory is elaborated. In strategic thinking and decision-making, intuition is recognized as a cognitive style of utmost importance but theory is so to speak, non-existent. Thus, conceptual clarification was required. The proposed contribution of this research is that by better understanding intuition and it's application, more rational, effective, and efficient strategic thinking and decision-making could result. Being equipped with the theoretical and historical inquiry the next objective and question of concern is how top managers define intuition, its pro's & con's and what emphasis they put on analysis versus intuition. This is the focus of the succeeding empirical study.

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[544] Mintzberg, 1994, p. 273-274, 291. See also Hamel & Prahalad, 1994, Porter, 1998, Fredrickson 1986, and McGinnis 1987.
[545] Porter, 1998, p. 68.

6 RESEARCH METHOD

6.1 Research Problem, Objectives and Questions

The research problem was elaborated in the previous chapter. In brief, the problem is that even though intuition is recognized as imperative in strategic thinking management literature is surprisingly silent on the issue. Theory construction is thus the primary research objective and I come at it from two angles. One is a rather thorough *cross-disciplinary theoretical inquiry* aiming at clarification of *the concept intuition* and the other is an *exploratory empirical study*. Concepts are the most critical element in any theorizing because they guide what is captured.[546] As the literature on the issue is rather scarce and fragmented, an historical and hermeneutic approach appeared sensible. The issue of concern was how intuition is defined in philosophical, psychological and management theory. *What is intuition?* It is a question intriguing philosophers and psychologists alike, from the very origin of their traditions. Usually intuitive thinking is contrasted with discursive or analytical thinking, and this was my take on it as well. The ambition was not to uncover and discuss the numerous weaknesses of intuition. That is already properly done by a number of excellent researchers. Rather, the intent was to *explore the notion* and in this way, I hoped to delineate main aspects and valid dimensions, which could facilitate the empirical research.

The other strand of work is the exploratory empirical study. It is three-fold. First, I did interview 105 Norwegian top managers from the private sector about *how they perceive intuition and its role in strategic thinking*. Interpreting their replies, applying the philosophical, psychological and management theory lenses may facilitate further refinement of the concept. Secondly they completed the Myers Briggs Type Indictor®, which indicate *whether or not they have a personality preference for intuition* in perception and judgment. Finally I tested certain tentative and preliminary aspects of the concept, considered relevant in this managerial context. I did this by personal interviewing, in which the same 105 respondents were asked to both score and rank the items of an intuition and analysis scale, in two different self-chosen decisions. That is, they were asked to evaluate their emphasis on intuition and analysis and the corresponding decision quality. Given the research problem the empirical study may thus also contribute to our knowledge of *how top managers think about their intuitive and analytical thinking in strategic decision-making, this being the secondary research objective.*

The four research questions are then:

1 How is intuition conceived in philosophical, psychological and management theory, and how is it related to normative rationality?

2 How are intuition and its role in strategic thinking perceived by Norwegian top managers?

3 Do Norwegian top managers have a personality preference for intuition as indicated by Myers Briggs Type Indicator®?

4 Is intuition more or less emphasized than analysis, in strategic thinking and decisions?

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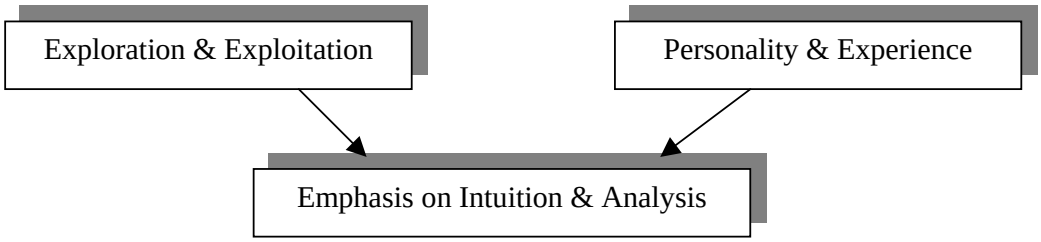
[546] Ghauri et al. 1995, p. 17. See also Burns, 2000, Elster, 1989, Troye, 1994.

6.2 Research Model, Variables and Questionnaire Items

Many variables might influence the thinking and decision making of top managers. For instance, the decision making process may involve many people.[547] However, I have sidestepped this issue and focus in on the individual strategic thinker as *unit of analysis*. The theoretical review has indicated that *decision situations*, *personality* and *experience* may be relevant variables in explaining emphasis on intuition and analysis. The tentative research model with main variables to be explored is illustrated and discussed below.

Figure 6.2.1 Research Model & Variables



The Strategic Decision Making Context
Before we turn to a presentation of the suggested independent and dependent variables a few words about the research context is required. In the previous chapter, it was argued that the very nature of strategic thinking might explain why top managers are inclined to emphasize intuition. Apparently, strategic thinking is a *unified perception* of a unique and consistent set of internal and external activities, well aligned with intuition. In Mintzberg's elaboration of strategic thinking it is concluded that strategy cannot be planned because planning is about analysis and strategy is about intuitive synthesis. Exploring the concept of intuition in only this particular research context is therefore a very limited and biased approach. Testing of the tentative constructs measuring intuition, in a different context could of course give other results. It is thus *a suggestion for further research*.

In the previous chapter, I also argued with March that in rational models of strategic thinking and choice the balance between *exploration* of new terrain and technology and *exploitation* of familiar situations is discussed classically in terms of a theory of rational search. That is, an optimal search continues only until the cost of search outweighs the value of the added information. Similarly, in organizational learning, the problem of balancing exploration and exploitation is exhibited in distinctions between refinement of an existing technology and invention of a new one.[548] There are numerous modes of strategic thinking and decision making. However, in my research *some of the variation is covered* by having the respondents evaluate their emphasis on intuition and analysis in both exploration and exploitation that is, in *new* and *old* decision situations. Miller & Ireland's hypothesis that intuition is more prevalent in exploration is thus investigated.[549] More specifically then, we have a *situation* variable, defined by exploration and exploitation.

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[547] Nonaka & Konno, 1998. They introduce the concept *ba* or shared space.
[548] March, 1991.
[549] Miller & Ireland, 2000, p. 19. See also Sharfman, 1998.

Variables
In this research *decision situation*, *personality* and *experience* are considered independent variables while emphasis on *analysis* and *intuition* are dependent ones. Causal relations in the true sense of the word are very hard to detect. This is especially so as long as my dependent variables and belonging theory are still not properly validated.[550] To a large degree, the current work is thus *exploratory*, taking place in the context of discovery. The focus is primarily on *the role and emphasis on intuition and analysis* in strategic thinking and decision making.

Personality
Philosophy, psychology and more lately management disciplines, all give attention to consciousness, cognition and intuition. These issues are to some extent discussed and anchored in personality type and trait theory. The work of for example Jung and Westcott indicates that intuitive types share distinct personality characteristics.[551] Several instruments have been developed that seek to reveal our traits and preferences in perception, judgment and decision making. The assumption that there is an intimate, causal relation between personality and decision making behavior is indeed a controversial one.[552] One serious problem is whether the traits, as measured by personality tests, are consistent across contexts. If the traits are not consistent across contexts, we may not predict behavior. This and other related issues are discussed in the next chapter. A major challenge in my research was to find a valid and reliable instrument that can delineate to what extent individuals prefer intuition and analysis in their perception and judgment. It could not be too time-consuming as the respondents were to fill it out during the personal interview. The table below lists some of the reviewed instruments measuring cognition and problem solving strategies.[553]

Table 6.2.2 Instruments Measuring Cognition and Problem Solving Strategies

Instrument	***Measure***
Kolb's Competency Circle, 1976	Learning Styles
Kirton's Adaptor and Innovator, 1987	Problem Solving Strategies
Bass's Multifactor Leadership Questionnaire, 1989	Transactional & Transformational Leadership
Kaufmann's Assimilator-Explorer Styles, 1991	Problem Solving Strategies
Martinsen's Managerial Behavior, 1999	Managerial Behavior
Myers Briggs Type Indicator, 1985	Psychological Types

Kolb's instrument is primarily developed for identifying individual learning styles and is anchored in the work of Dewey, Piaget and Lewin.[554] Here it is suggested that a learning process goes through four stages; concrete experience, reflective observations, abstract conceptualization and active experimentation. Kolb thus suggests that we can identify four types of learning styles: accommodators, divergers, assimilators, and convergers. In statistical

[550] Thus, I do not introduce control variables. They are more useful when an explicit causal link is hypothesized.
[551] Wetcott, 1968, p. 140, Jung, 1971.
[552] Bass & Stogdill, 1990, p. 87, 563-658. "It is reasonable to conclude that personality traits differentiate leaders from followers, successful from unsuccessful leaders, and high-level from low-level leaders." "Though, above and beyond personal attributes of consequence, the situation can make a difference." See also Terkelsen, 1999, p. 67 and March, 1994, p. 59.
[553] Kvålshaugen, 2001, p. 53. See also Kolb, 1984.
[554] Ibid. p. 55. Kvålshaugen refers to Dewey, 1958, Piaget, 1969, and Lewin, 1951. See also Dewey, 1947.

analysis the circle, scales generated by this instrument are somewhat difficult to handle and there is no clear link to intuition. Kirton's instrument is useful for measuring mental processes related to creativity, problem solving and decision making.[555] The adaptor is characterized by precision, efficiency, prudence, discipline, conformity, and a methodical approach. The innovator is characterized by being undisciplined, with emphasis on thinking, and approaching tasks from unsuspected angles. The instrument is in many ways comparable with Kaufman and Martinsen's instruments. Here the assimilator corresponds to the adaptor and the explorer to the innovator. The Multifactor Leadership Questionnaire is based on Burn's distinction between transactional and transformational leadership and is further developed by Bass. A transactional leader is recognized as operating within the existing system or culture, prefers risk avoidance and pays attention to time constraints and efficiency. A transformational leader on the other hand seeks new ways of working, seeks opportunities in the face of risk, prefers effective answers to efficient ones and is less likely to support status quo.[556] Regarding the more well known tests like: Costa & McCrae's NEO-PI, Cattell's 16PF, Eysenck's EPQ and Wiggins' circumplex model, they do not address intuition as a specific trait or function, and they are in general time-consuming, including as many as 181 items in NEO-PI.[557]

The MBTI surfaced as the more promising instrument in this context. It is an instrument, which seeks "to make the theory of psychological types described by Jung understandable and usable in people's lives."[558] As Jung is one of a few psychologists who have provided a theory on intuition, MBTI serves my main purpose well. For Jung intuition is a cognitive event which occurs and which must be accounted for. It is one of four psychological functions, present in all individuals. These four functions attain different degrees of ascendancy during the life of each individual, and in combination with three levels of consciousness and two general orienting attitudes, determine to a great extent each individual's characteristic behavior. The four mental functions, which are the basis of MBTI and Jungian typology, are *thinking, feeling, sensation and intuition*.[559] I have covered these functions in the section on Jung. Discussion of the MBTI and its psychometrical properties are postponed to the next chapter.[560]

Experience Levels

The theoretical inquiry provided arguments for why *experience* is supposed to be another relevant independent variable. It is reflected in for example Jung's definition of intuition as a function that mediates perceptions of personal and collective unconscious experience. The work of Simon, Baylor, and Cappon are other examples.[561] Experience is accounted for in two ways in the empirical study. First, the top managers are asked to evaluate their emphasis on intuition in an exploratory strategic decision situation in which they had *no previous experience*, and in an exploitative situation familiar to them. Secondly, a number of questions reveal their professional experience in the industry, in the company, in other industries, and

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[555] Ibid. p. 56. She refers to Kirton, 1989.
[556] Ibid.
[557] Cloninger, 1996, p. 87-104.
[558] Briggs, 1998, p. xvii. Briggs & McCaulley, 1985, 1995, Epstein, 1979, Bayne, 1995, Cloninger, 1996, p. 101.
[559] Jung, 1968, p. 33. His model is thus a cross, where thinking & feeling and intuition & sensation are opposites.
[560] Cohen, 1996, p. 658-659.
[561] Jung, 1971, p. 453, Baylor, 2001, p. 238, Simon, 1987, p. 63, Cappon, 1994, p. 15.

with strategy. The experience measures will be correlated with the scores and ranks of intuition and analysis.

Certain *demographical classes* may also turn out to be relevant. Questions on level and type of education, gender, work position, industry type, and number of employees are included. Some statistics from my sample are presented in the tables below.

Table 6.2.3 Demographical Classes; Education, Gender, Number of Industries & Firms, Work Positions

Education	Business	Engineering	Others	Total
Undergraduate Level	35	22	17	74
Graduate Level	12	2	14	28
Doctoral Level	3	0	0	3

N	Females	Males	Industries	Firms	Average Number of Employees
105	13	92	22	34	3325

CEO	Finance	Marketing	Strategy	HR	IT	Production	Others
28	8	11	3	8	2	19	26

Analysis & Intuition

Emphasis on *analysis* and *intuition* in strategic thinking and decision making are the primary dependent variables. They are measured by self-report measures. The construct validity is especially difficult with intuition. It is beyond the scope of this thesis to establish a valid scale on intuition. It might be impossible due to its subtle and elusive character. However, the laborious theoretical inquiry may provide us with *conceptual clarification*, facilitating construction of my questionnaire, which is presented on the next page. The tables below summarize key findings. This is not an exhaustive nor a complete list, but indeed a tentative one. In addition, quite a few relevant aspects of intuition are kept off the list, as they have no obvious opposing analytical aspect. They include Plato's *Ideas*, Kant's Forms *time* and *space*, Bergson's *duration*, Jung's *archetypes*, as well as *vision, foresight, hindsight, insight, meaning, possibilities, self-evidence, intrinsic certainty* and *novelty*.[562] See previous chapters for detailed argumentation and rationale.

Table 6.2.4 The Concepts Intuition and Analysis in Philosophy and Psychology

Intuition	***Analysis***	***In Philosophy***
Non-inferential	Inferential	Greek
*Grasps all at once **	*Grasps objects piecemeal*	Greek * Items in cursive are emphasized in my questionnaire
Infallible	Fallible	Greek
Balanced	Unbalanced	Buddhism
Non-discriminating	Discriminating	Buddhism
Coherent	*Incoherent*	Buddhism, Baumann, 2002, Bastick, 1982, Kaufman, 2000
Non-dual	Dual	Buddhism
Multi-dimensional	Three-dimensional	Buddhism, Bastick, 1982
Representation in it	*Representation under it*	Kant, 1724
Immediate	Mediate	Kant, 1724, Baylor, 2001
Direct	Indirect	Kant, 1724, Davis-Floyd & Arvidson, 1997
Given	Derived	Kant, 1724, Jung 1971
Non-discursive	Discursive	Kant, 1724, Greek
Singular	General	Kant, 1724
Whole precedes the part	*Parts precedes the whole*	Kant, 1724
Multiplicity in unity	Unity in multiplicity	Kant, 1724
Metaphysical Science	Physical Science	Bergson, 1949

[562] Cappon, 1994, p. 16, Fischbein, 1987, p. 14. See Hodkinson, 2003, for a discussion of the validity issue.

Spirit	Matter	Bergson, 1949
Qualitative	Quantitative	Bergson, 1949
Synthesis	*Analysis*	Bergson, Diblee, Wild, Bunge, Fischbein, Cappon, Mintzberg, Arvidson
Complete	Incomplete	Bergson, 1949, Diblee, 1929, Bastick, 1982
Absolute	Relative	Bergson, 1949
Simple	Complex	Bergson, 1949
Original	Copy	Bergson, 1949, Diblee, 1929
Real	Symbolic	Bergson, 1949, Wild, 1938
Unification	*Fragmentation*	Bergson, 1949, Diblee, 1929, Fischbein, 1987
Integrates	*Separates*	Bergson, 1949, Buddhism, Fischbein, 1987, Arvidson, 1997
Dynamic	Static	Bergson, 1949, Cappon, 1994

Intuition	***Analysis***	***In Psychology & Management***
Non-judgmental	Judgmental	Jung, 1971
Beyond Rationality	Rational	Jung, 1971, Bergson, 1949
Whole	*Separated*	Jung, 1971, Diblee, 1929, Bastick, 1982, Fischbein, 1987, Arvidson, 1997
Self/Soul	Ego/Personality	Jung, 1971
Tacit	*Explicit*	Polanyi, 1969, Fischbein, 1987, Evans & Over 1996
Implicit	*Explicit*	Reber 1993, Johnson-Laird 1983, Fischbein, 1987, Osbeck, 1999
Associative System	Rule-based System	Sloman 1996
Heuristic Processing	Analytic Processing	Evans 1984, 1989
Interactional Intelligence	Analytic Intelligence	Levinson 1995
Experiential System	Rational System	Epstein 1994, 1996
Quick & Inflexible	Intellection	Pollock 1991
Recognition-Primed	Rational Choice Strategy	Klein 1998
Automatic Processing	*Controlled Processing*	Shiffrin & Schneider 1977, Kahneman, Gilovich, Griffin, 2002

The Questionnaire Items

When choosing which items from the list to apply in this particular managerial context, pilot testing was instrumental. Moreover, Epstein's work and Parikh's research on 1300 managers' definition on intuition proved useful, and experts were consulted for further validation.[563] As a rule, I picked aspects of intuition and analysis that the authorities above agree are central. The suggested second and third levels of intuition are assumed to be of little or no familiarity to top managers, thus the items chosen do primarily reflect the first level. The items in *cursive* were emphasized and built in to the eleven questions of the interview-guide presented below. The first four address analysis and the remaining seven, intuition. During the interview, they are mixed according to a fixed pattern. The respondents describe two strategic decisions, one characterized by exploration and one by exploitation, and then they reply to the eleven questions in both decisions. In each question, the respondents are asked: to *score their emphasis* on a Likert scale from one to seven. Finally, they *rank* the items in accordance with their emphasis. The entire interview guide is included in the appendix.

Table 6.2.5 The 11 Interview Questions on Analysis & Intuition

1	*A controlled study* and break down of explicit data, using quantitative models.	Kahnemann, Shiffrin & Schneider
2	*Evaluation of alternatives*, in terms of their consequences for preferences.	March
3	*Dividing the whole* situation into sub-areas, dissecting & scrutinizing them.	Bergson, Fischbein
4	*Analysis* of facts, figures, reports, data and evidence.	Evans, Levinson
5	Correct *timing* (knowing when to take the right step in the marketplace).	Kant, Bergson, Cappon
6	Perception of *cycles* (foreseeing emerging trends, patterns and recurring events).	Jung, Bergson Cappon, Mintzberg
7	Perception of the *larger picture* (a holistic view and apprehension of the situation).	Cappon, Bastick, Fischbein
8	*Synthesis* (The ability to perceive many factors and variables as a coherent whole).	Bergson, Mintzberg, Bunge, Wild
9	*Gut feeling* rooted in the sum of implicit and unconscious knowledge, insight and previous exp.	Epstein, Bastick, Vaughan, Jung
10	Perception of *possibilities* (the innate idea).	Jung
11	*Intuition*	

[563] Epstein, et al., 1996, p. 394, Parikh, et al., 1994, p. 165. Former CEO Per Grøholt and Professor Jon Wetlesen at UIO were consulted.

6.3 The Sample

Probability and non-probability sampling represent two distinct approaches to sampling. "Although researchers can make accurate estimates of the population's parameters only with probability samples, social scientists do use non-probability samples. They employ this option for reasons of convenience and economy, which under certain circumstances (e.g., exploratory research), may outweigh the advantages of using probability sampling."[564] In my exploratory research, I have relied on aspects of several non-probability sampling techniques, including, *quota*, *convenience*, and *purposive* sampling. The chief aim of a quota sample is to select a sample with characteristics proportional to those of the population. For instance, I assumed that in the *population* of Norwegian top managers from the private sector, there are approximately ten percent women, and this was taken into consideration. Access to top managers time are strenuous work and often won by indirect routes. Usually I had to send a written request to the person in charge of human resource management or to the CEO's secretary. From the initial request 2-3 months often passed before the interview took place, and a full year went by upon completing the interviewing. In a few companies, this process was facilitated by personal acquaintances. Consequently, elements of convenience influenced on the sampling.

In purposive sampling units are selected subjectively, utilizing own judgment, in an attempt to obtain a sample that appears to be representative of the population. More specifically, I used statistics from Dun & Bradstreet revealing the distribution of different industry sectors with regard to number of firms, employees, sales, and financial structure.[565] These data guided the sampling and are presented in an appendix. A chief concern when choosing which companies to contact was to secure a proper variety and ratio of industries and firms. Thus, I have all the main sectors represented except agriculture, and I tried to include individual companies representative of the industry, and in this way aligning the sample with the population. Secondly, gender and occupation types for the respondents were taken into consideration. Not all the respondents were CEO's. Some were in charge of finances, some of marketing, some of human resource, etc. It was more difficult to take into consideration differences in age, experience, and geographical location of the companies. Elements of subjective judgment thus characterize the sample, which includes 34 companies and 22 industries. A detailed presentation of the sample is included in an appendix.

Since some of the 105 top managers come from the same companies and industries there is a potential problem that they cannot be regarded as independent observation units.[566] We may assume that company and industry differences explain variation in their thinking. To check for that, I have performed a Kruskal-Wallis test on each of the questions asked to see if there are significant differences between the industries, and again between the companies. If not, it is reasonable to assume that there are no disturbing company and industry effects. The Kruskal Wallis test is a non-parametric equivalent to a one-way analysis of variance. It is better suited for small group sizes, like I have. It assumes that the underlying variable has a continuous distribution and requires only an ordinal level of measurement. The test indicates with two exceptions no significant industry or company effects. In addition, as the sample increased I discovered only minor changes. However, as the p-values for question 4, *analysis*,

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[564] Nachmias, 1996, p. 184.
[565] The data are from 2001 and are provided by colleague Eskil Goldeng at BI.
[566] Yet another concern is that many respondents are from the same company. However, with two exceptions they did not describe the same decision.

are all in the range of 0,04 to 0,120 we may indicate that here the replies are influenced by both industry and company characteristics.

Table 6.3.1 Kruskal Wallis Test with p-values for the 11 Questions on Analysis and Intuition

Analysis	Question 1	Question 2	Question 3	Question 4
Company Effects in Exploration (A)	0,26	0,27	0,20	0,07
Company Effects in Exploitation (B)	0,28	0.23	0,70	0,12
Industry Effects in Exploration (A)	0,11	0,36	0,19	0,12
Industry Effects in Exploitation (B)	0,17	0,32	0,82	**0,04**

Intuition	Question 5	Question 6	Question 7	Question 8	Question 9	Question 10	Question 11
Comp. Eff. A	0,59	0,28	0,21	0,23	0,09	0,29	**0,04**
Comp. Eff. B	0,48	0,35	0,53	0,90	0,84	0,36	0,25
Indust. Eff. A	0,31	0,28	0,61	0,36	0,33	0,24	0,16
Indust. Eff. B	0,25	0,17	0,59	0,90	0,78	0,41	0,26

6.4 Data Collection Procedure

Given the research objectives and variables, the next step was to construct a design enabling me to answer the four research questions within the given constraints of time and budget. Ghauri et al. suggest that we distinguish between three main classes of design in business studies: the *exploratory*, the *descriptive* and the *causal*. In the former, the understanding of the problem is unstructured, while in the latter two it is structured.[567] I have argued that intuition is not yet well understood, hence an inductive and *exploratory* design seems sensible. Proper deductive work is premature. A distinction is also often made between two strategies: theory before research or research before theory.[568] In my case, the theoretical inquiry might be seen as both a separate contribution, and as a prerequisite for the empirical study. Obviously more theory could be reviewed and more data could be collected. However, the design chosen also intends to combine theory and empirical data into a coherent effort at developing *conceptual clarification*. I look for their mutual resonance.

Concerning the data collection four general approaches was considered: survey research, qualitative research, observational methods, and secondary data analysis. Each of these has subgroups and certain unique advantages but also some inherent limitations. For example, if I was to observe behavior directly, the reason behind might be hidden, which is easier elucidated in an interview. However, the verbal reports given to me by the top-managers may not resonate perfectly with their actual strategic thinking. In contrast to large impersonal surveys, qualitative research attempts to understand behavior and institutions by getting to know the persons involved and their thinking, values, rituals, symbols, beliefs, and emotions. It is normally carried out in natural settings, in order to learn firsthand about the issue investigated.[569] As my respondents described two strategic decisions made by themselves, a qualitative element is introduced. More specifically then, I conducted personal *interviews* with 105 top managers. The research objective, questions, and constraints are such that this approach appears to be the more feasible one. Observational methods are presumably not

[567] Ghauri, et al. 1995, p. 27. See also Elfring, 1996.
[568] Ibid. p. 16.
[569] Nachmias, 1996, p. 281. See also Strauss, 1987, and Yin, 1994.

suitable means for delineating how strategic thinking evolves. Strategic thinking is often an intuitive, introvert, and time consuming process, not easily conveyable, to observation nor to secondary data analysis.

Mail questionnaires, telephone interviews, and personal interviews are the three main methods of gathering data with surveys.[570] There are a number of reasons why I preferred the personal interview, *including a very high response rate* (100%), more, fuller, and recorded information, as well as flexibility in the questioning process, all improving the validity of the research. It also facilitated MBTI replies and ranking of the eleven questionnaire items. Due to the flexibility, the interviews could range from highly structured to non-structured allowing me to gather both *quantitative* and qualitative data, required in triangulation. Additionally, it allowed me to determine who answered the questions, where the interview was conducted and in which order the questions were answered. Disadvantages included higher cost, as it is indeed time consuming to personally interview 105 top managers. Even though the interview guide was applied rigidly and without exceptions, non-verbal cues may have influenced on the answering of the respondents. Thus, one more interviewer could have been instrumental. Finally, lack of anonymity is sometimes an issue causing the respondents to withhold information. However, in this study I could promise individual anonymity.[571]

In the construction of my questionnaire the *content*, *structure*, *format*, and *sequence* of the questions were taken into consideration. The questionnaire should translate the research objective into questions providing proper data, and seven versions of it were made before the interviewing could start. Double-barreled, threatening, and leading questions were avoided. The structure of questions, are either closed- or open-ended. For the most part my respondents replied to closed-ended questions with a belonging Likert scale or set of answering alternatives. However, a few open-ended questions allowed for free and thorough elaboration of the answer. The sequence of the questions may affect the type of response given. Ideally, the MBTI should have been distributed either well in advance of the interview or at a later point in time. At the outset, I did try to accomplish this, but experienced that it did not work. After nearly two months, the human resource manager who was my contact in the first company resigned in having his colleagues fill it out and return it. Thus, I ended up having the respondents filling it out at the end of the interview, a task they completed in approximately 10-15 minutes. Possibly, their previous reflections during the interview, on own thought processes and perceptions facilitated more self-aware and precise replies.

Yet another concern, regarding the sequence of the questions, is that the question about how they define intuition and its role in strategic thinking is located *after* the eleven questions inquiring into their emphasis on intuition and analysis. Thus, their definitions may be influenced by the previous questions. The main reason why I did this is that their *memory* of the two actual decisions then is properly activated, anchoring their definitions and replies in their *real-life* strategic decision, thus utilizing a main strength of the personal interview. When we in the next chapter look at their answers we see that, with few exceptions, the words they use in defining intuition, are not synonymous with those applied in the questionnaire. This concern may thus not be critical. And the alternative, of having the opposite sequence introduces similar problems.

A related issue was whether fixed, predefined cases should be used in the interview. Predefined cases were perceived as especially relevant in the beginning of the project, when

[570] Ibid. p. 204.
[571] Ibid. p. 226, 239, 244-245.

the intention was to include only one or two industries in the sample. In this way, much variation could be eliminated. However, the research objective and questions are such that a design where the respondents can elaborate on *their own real-life decisions* was favored. Also, the theoretical review indicated that it is personality, experience, and strategic thinking *per se*, not company or industry effects that may explain emphasis on intuition and analysis, *if* a casual explanation was to be pursued. At this point I may again repeat that the nature of my inquiry is such that up-front I resigned from making such claims.

6.5 Validity Issues

Having described the details of the research method, the final issue is its validity and reliability. Certain statistical tests are instrumental in this respect and they are performed in chapter eight. Four criteria of validity are especially relevant in the current research, namely construct, content, internal- and external validity. The historical inquiry of intuition provides a preliminary and tentative rationale for the *construct validity* of the seven items in the suggested scale. I will return to reliability and the construct validity in chapter eight. There are two common varieties of *content validity*. The face validity rests on my subjective assessment of the instrument's appropriateness. In applying the interview-guide more than 100 times a feeling for its appropriateness developed. In addition, I still have long conversations with several experts on the issue.[572] The other element in content validity is sampling validity. It necessitates familiarity with all the items of the content population. In yet other words: Are my seven tentative items on intuition *representative* of intuition *per se*? This question is not an easy one to answer, but again the *cross-disciplinary* theoretical inquiry is purposive.

The validity of the study is also dependent on the level of measurement and possible measurement errors. In order to attain an interval level the respondents would have to specify exactly how much more or less emphasis they did put on for example timing versus gut feeling, in a decision taking place perhaps one year ago. Such preciseness would be rather illusionary, thus an *ordinal* level is applied. Concerning the risk of measurement errors three types were taken into considerations. First, the scores and ranks obtained may have been influenced by the ability of the respondent to comprehend the *meaning* of the question. One respondent, who had previous experience with questionnaire work, indicated that this was difficult. On the other hand, quite a few respondents commented that all the items were highly relevant. In order to avoid these possible problems the instrument was pilot-tested on eight subjects. And in asking the questions, I carefully applied only the exact wording. Moreover, one thing is what they say they emphasized in their thinking, what they actually did when making their decisions may be a different story. Self-report measures are often dubious due to memory problems and a misconceived self-perception.

Secondly, there may be errors resulting from differences in temporary conditions, such as health or mood affecting the responses to my questions. On rare occasions, I felt that the respondent became irritated due to the fairly long interview. This problem disappeared as the time spent sunk from one hour to approximately 50 minutes, an effect of me being acquainted with the questionnaire and the interview situation. Thirdly, differences in the time and setting in which the interviewing took place may have contributed to measurement errors. However,

[572] Professor Jon Wetlesen at UIO and former CEO Per Grøholt were consulted.

all interviewing were done at the office of the respondents and I tried to play my role in a similar way each time.[573]

Comparison allows us to demonstrate correlation. In the classic experimental design, we compare a group that is exposed to the independent variable with one that is not. In many types of design however, the comparison is made within the same group, before and after the independent variable is introduced. The former approach reveals more information. For example, we would like to know if an experimental group and a control group of top managers differ in their emphasis on analysis and intuition with increasing experience, different strategic situations and MBTI profiles. This requires some form of control or manipulation of the independent variables: situation, personality and experience. In my setting, this was difficult, but it is a suggestion for further research.

In order then to establish proper *internal validity* I would have liked to ensure that changes in the independent variables did in fact cause the dependent variables to change. In this I have failed, but my focus has not been on possible causal relations between the variables, but primarily on the emphasis and role of analysis and intuition in strategic thinking. A related issue is that practical concerns sometimes prevent a *random* selection of respondents and hence that possible biases are introduced. If so, it will be difficult to separate selection effects from the effects of the independent variable. This problem is of special concern in cases where the individuals themselves decide whether to participate.[574] *With two exceptions, all the top managers I contacted volunteered to participate in the interview, thus the non-response error is minimal*. We may thus say that one of the pitfalls that jeopardize internal validity is avoided.

The fourth criterion, *external validity*, concerns the extent to which my research findings can be generalized to larger populations and applied to different social settings and times. To ensure the external validity of my study, the characteristics of the top managers should reflect the characteristics of the population. Although randomization contributes to the internal validity of a study, it does not necessarily ensure that the sample is representative of the population of interest. "Results that prove to be internally valid might be specific to the group selected for the particular study. This possibility becomes likely in situations where it is difficult to recruit cases to the study."[575] Again, the minimal non-response error may be important. However, my non-probability sampling lack the control we like to see in order to secure a representative sample. In order to counterbalance this problem The Myers Briggs Type Indicator® was applied, which might improve the external validity somewhat. It is an issue we will return to in the next chapter. In summarizing then on the validity issue it can be indicated that the internal validity is rather weak, while the construct, content and external validity is somewhat better off. As we now turn to the analysis of the findings, different statistical tests will shed more light on the validity and reliability issues.

[573] Nachmias, 1996, p. 165.
[574] Ibid. p. 107.
[575] Ibid. p. 113.

7 THE EMPIRICAL STUDY & FINDINGS PART I

7.1 Introduction

The preceding and more laborious theoretical part of this inquiry addressed the primary research objective and the first out of four research questions: How is intuition conceived in philosophical, psychological and management theory and how does it relate to rationality? Having explored the concept theoretically I now turn to the empirical counterpart, which has three main elements, addressing the remaining three research questions. First, the 105 top managers were interviewed about; *how they perceive intuition and its role in strategic thinking*, this being my second research question. It is elaborated in the succeeding sections 7.2 and 7.3. Interpreting their replies may also facilitate further refinement of the concept. Next, they completed the Myers Briggs Type Indicator®, which indicate whether they have: *a personality preference for intuition* in perception and judgment. This third research question is discussed in section 7.4 and answered in the affirmative. Finally, they did score and rank the items of my tentative intuition and analysis scales in two different self-chosen strategic decisions. That is, they were asked to evaluate; *their emphasis on intuition and analysis* and the corresponding decision quality, thus answering the fourth research question. Chapter eight is devoted to this latter question. The exploratory empirical study thus serves two purposes. First, it may be a contribution to our knowledge of *how Norwegian top managers think they perceive and judge* in strategic decision making. Secondly, it is a test of certain aspects of intuition.

7.2 Intuition Defined by Norwegian Top Managers

In chapter five I reviewed the literature on intuition in strategy and did not find much empirical research done. The only international survey is by Parikh, Alden and Lank. They presented a somewhat limited conceptual framework, but conducted a comprehensive global survey of more than 1300 practicing managers in nine countries.[576] Norway, however, was not included. Their study differs from this one also in the sense that they addressed both managers and top managers. In asking their respondents to describe intuition, 23 percent defined it as a decision or perception without recourse to logical or rational methods. 17 percent described it as inherent perception, inexplicable comprehension, a feeling that comes from within. 17 percent described it as integration of previous experience, processing of accumulated information. 12 percent described it as gut feeling, 9 percent as a decision/solution to a problem, without complete data or facts, and another 7 percent as a sixth sense. 7 percent described it as a spontaneous perception or vision, 6 percent as insight, 6 percent, as a subconscious process, and another 6 percent described it as instinct.[577]

In Burke and Miller's study, 60 experienced professionals holding significant positions in major organizations across various industries in the U.S were interviewed.[578] Their findings

[576] Parikh, et. al., 1994, p. 25-41. My sample is restricted to top managers.
[577] Ibid. p. 165.
[578] Burke & Miller, 1999, p. 91.

revealed that 56 percent understood intuitive decisions to be based on previous experiences, together with emotional inputs. These replies are consistent with those presented below and those of the pilot-test. We may thus indicate that in most cases, managers define intuition along the lines I have suggested for the first level of intuition, which relates primarily to the *personal* unconscious experience.

The second research question of the current research then asks: *how do Norwegian top managers perceive intuition?* All of them replied to this open-ended question. Having recorded and typed their full answers, I color-coded and content-analyzed the sentences and in this way, aspects of intuition were differentiated. Some respondents focused in on only one aspect, for instance gut feeling, while others emphasized several aspects. Thus, the columns to the right include the number and percentage of respondents mentioning the particular aspect. Turning to the specific findings we may start by presenting them in this table:

Table 7.2.1 Research Question Two: How is Intuition Defined by Norwegian Top Managers?

Intuition Defined by 105 Norwegian Top Managers	%	Nr.
Gut Feeling	69	72
Experience Based	57	60
The Larger Picture	47	49
Sense of Right or Wrong	30	31
Unconscious, Tacit	24	25
Foreseeing Direction	17	18
Sudden, Immediate New Idea/Insight	12	13
What you Believe in	7	8

Gut Feeling

A large number of respondents referred directly to gut feeling. When asked whether the feeling was located in the head or the stomach, quite a few responded, both. We may include a few quotations on each of the aspects, to illustrate the main tendency in the replies: “Not so far away from gut feeling, and connected to your character. A kind of feeling for a possibility, for a successful result.” “Something that is not quantifiable. It cannot be defined or measured. No basis in theory.” “Gut feeling. Located in the head, linked with logic, but touches the stomach.” “Some of the brain cells strikes in your gut.” “A kind of sensitivity, emotional content.” “Gut feeling together with facts equals intuition.” “Gut feeling that develops over time when you learn to know the industry. Some have more than others due to their ability to be interested in not only themselves.” The more thorough replies include this one: “Gut feeling, telling you whether or not the required psychological process in the organization will gain enough momentum. This you can’t calculate or analyse.”

Experience Based

The reference to experience is widespread among the respondents: “Sum of own experience put in a system you are not necessarily conscious of.” “A total conception of the situation, with regard to my experience.” “Experience is the base of intuition. It is to look forward with support in what you have experienced.” “The ‘computer’ moves in and checks with the intuition. Intuition is connected with what life has taught you.” “Feeling that develops over time when you learn to know the industry. Based on experience, try and fail.” “Combination of experience and feeling.” “A mixture of analytical data and accumulated experience.” “The

more experienced you are as leader the more you learn to listen to your gut, and act in accordance with it." "It is not only something that falls down into your head but also a result of experience and insight anchored in an internal database in the back of your head." "Can be trained through broad experience." "Impossible to have intuition on something you have not been acquainted with previously. Much experience from similar situations facilitates intuition. It is in your backbone."

The Larger Picture

In defining intuition, 47 percent of the respondents used the larger picture or equivalents as metaphor: "Palette mixed with many ingredients. Many antennas, and sensing in many directions, internal and external." "Sum of own experience put in a system you are not necessarily aware of. The larger picture." "The clear picture you see when you wake up early after a good night sleep." "A total conception of the situation in relation to my experience." "System-thinking, holistic thinking." "Intuition is shaped as a mosaic throughout life." "Grasps wholeness and interrelationships." "Sum of trends, knowledge and experience, you see as relevant to the case." "Unconscious work that gather and unifies all relevant aspects of previous experience." "Intuition sees the complexity in a situation." "Something more than just gut feeling. Gathering of signals you receive from different levels and perspectives, and a kind of systematisation of them." "Intuition tells you how you are part of something larger than yourself. Kennedy and the man on the moon mission was intuitively embraced and supported by the people."

Sense of Right or Wrong, Unconscious

Approximately 25-30 percent of the respondents reflected upon the unconscious aspect of intuition and how it gives a sense of right or wrong. For instance: "The feeling that something is correct without knowing why." "The first idea that pops up almost always reveals itself as true." "A brief moment of insight." "Wake up early after a good night sleep with the answer, a result of an unconscious analysis." "True knowledge from a source beyond my reason." "The brain works unconsciously at putting together all your experience into go or not go, right and wrong. It is difficult to document it, explain or verbalize it because the references are tacit and unclear. It may oppose facts and figures." "Psychological hunch and understanding without knowing the entire equation consciously." "Inner conviction for right and wrong. Counterbalances the facts." "I have to forget that I am a civil engineer and that 2+2 = 4. I have to dare to mean something without knowing why." "A thought in the head, that you are unable to explain rationally. It can oppose the acclaimed rationale. A feeling of direction that a decision is moving, by looking at the non-quantifiable and non-tangible." "Good intuition is embedded in a big database of hidden, unconscious knowledge and experience."

Foreseeing Direction

More than 16 percent of the respondents did mention that intuition foresees direction. "You see a direction that you can not argue logically or thoroughly for there and then." "Ability to see what comes out of the situation we are in now. It is to look forward with support in what you have experienced." "A feeling that something is going to happen, the likely outcome." "Ability to think in several steps ahead, like chess." "Opinion about what you can do in order to have something done in the future." "An elevated feeling about what emerges as right." "Our business is not created by the past. Intuition sees the future, and indicates where to go." "An idea about how the world develops in the future. Ability to see trends, cycles and the

larger patterns." "You see the tail…." "Your industry experience, detailed knowledge, depth of knowledge, management operating systems, adds up to intuition, which is the ability to foresee the future, direction, change, developmental patterns, wholeness."
"Visualization of how things will develop."

Sudden, Immediate, New Idea or Insight
Twelve percent referred to the sudden, immediate nature of intuition. "Sudden reflection on what is wrong or correct." "Something that comes as a clear thought. Does not stay for long." "First impression." "Something sudden to it."
"The first idea that pops up almost always reveals itself as true." "An impulse."
"Sudden, first impression. The ability to immediately grasp wholeness and interrelatedness."
"Influenced by experience you have gathered from familiar terrain, and comes as first hunch in new terrain." "Sleep on it and then the answer is there." "Sudden thought or attitude."
"Power that strikes you in the head enabling you to bring the idea forward." Quite a few respondents also mentioned that intuition might be linked to what you believe in.

Comments
If we are to comment upon these replies, we may start by saying that they are rather hazy. When I did ask the respondents for elaboration they tended to stop short with two or three sentences. Apparently the folk conception of intuition: as new ideas, sudden insight, and gut feeling rooted in previous experience dominates. However, we should take note of the fact that these top managers agree when defining intuition. By and large they all stick to the same key words in their replies, which are congruent with the theory reviewed. If we apply the philosophical, psychological and management theory lenses on this account, we can ask certain critical questions. Regarding first the reference to *gut feeling*. As the respondents locate this feeling in both the head and the gut, we are left confused. The philosophers and psychologists tend to concentrate their exposition of intuition on the cognitive aspects. Bastick is a notable exception. In recapitulating, he argues that: "The intuitive process is dependent upon the interaction of emotional states and cognitive processes. It is evident from the feeling of satisfaction and reductions in tensions that accompany an insight that emotional involvement plays a part in intuitive processes. A whole body unifying theory is needed to describe intuitive processes."[579] Obviously, in this current research I have not been able to discuss this issue properly. Future research may thus benefit from addressing *how the cognitive components of intuition interact with emotional states*.

Turning to the next issue, namely that intuition is *based in unconscious experience* more has been said in previous chapters. A core question concerns the type of experience they refer to. My impression is that it is primarily their *personal* experience they refer to and that it is often unconscious. I have argued in accordance with Jung that this is the *first level* of intuition. The second level of intuition accesses and comprises the collective unconscious memory vault. When fully integrated in the conscious mind both individual and collective heuristics may be illuminated. Indeed, this is a long way to go and I do question whether there is any substantial awareness of these levels of the psyche among the respondents. However, it is interesting that many of the respondents take into consideration the *psychology* of the decision, when they rely on intuition. In addition, the many references to its *sudden and immediate nature* are well worth mentioning. The short or long incubation delivers the new idea or insight when needed

[579] Ibid. p. 133. See Bolte et al. 2003, for a recent contribution.

or after a good night sleep. Why and how certain new ideas are elicited from the *a priori* constraints of the human psyche is a thrilling mystery to most of us. The theoretical review indicates that meditation and a non-judgmental attitude may be facilitating techniques. Their reference to *foresight* will be discussed in the next section.

The larger picture or equivalents, was often used as a metaphor for intuition. How many pieces that make up these so-called larger *pictures* in the mind of the strategist is difficult to estimate. The related and troublesome question is how these *mental pictures* relate to genuine intuition and analytical inference. In the section on Kant, this intricate issue was discussed in detail. The *sense of right and wrong*, success and failure is yet another aspect of their description of the subtle workings of intuition. In the chapter on intuition and rationality, the discussion revolved around Føllesdal's view: that when we say a person is rational we tend to focus almost exclusively on the rationality of his or her beliefs and do not consider his values. Rawls admits that it is not possible to develop a theory of values without relying on intuition, and I rehearsed the argument that intuition is the ontological foundation for any theory of normative rationality. Thus, we may not dismiss the view held by these Norwegian top managers, that intuition provides a genuine reference to intrinsic values of right and wrong. *My conclusion then is that these top managers are experts in both the extraverted and the introverted aspects of the first level of intuition only.*

7.3 The Role of Intuition in Strategic Thinking

One critical finding in the aforementioned research of Parikh et al. is that intuition is perceived as playing a major role in the professional lives of the responding managers, with 56 percent using both intuition and logic/reasoning in almost equal measure, and a further 7,5 per cent stating that they use more of intuition. Furthermore, almost 80 per cent of the 1300 respondents believe that intuition has relevance in corporate strategy and planning.[580] The same indication is revealed in Burke and Miller's study.[581] When asked whether they always, often, sometimes, seldom, or rarely used intuition in the workplace, 47 percent answered often. Participants reported employing intuition when decisions needed to be made quickly or unexpectedly because potential costs were associated with delays. Other participants responded that they used intuition when uncertainty pervaded such novel situations as a first-time restructuring or reorganization and in some financial issues, such as formulating budgets, estimating prices, and selecting investments.[582] Turning to the latter part of my second research question it addresses; *how top managers perceive the role of intuition in strategic thinking and decision making*. With few exceptions, all the 105 respondents replied to this open-ended question. Having recorded and typed their full answers, I color-coded and content-analyzed the sentences, and in this way, the main issues could be differentiated. Four issues discussed by most of the respondents came to the fore: they linked intuition to *foresight, synthesis, new ideas, and as complimentary to analysis*.

[580] Ibid. p. 81.
[581] Burke & Miller, 1999, p. 91.
[582] Ibid. p. 92-94.

Foresight

The more common introductory reply to the question about the role of intuition in strategic decision making is exemplified by a few quotations: “required, imperative, pivotal, a must, decisive, essential, extremely useful.” When it comes to arguments for its salience, four main lines of reason came to the fore. The first issue I will mention is its link to *foresight*. One CEO in a company with 800 employees stated that: “The future is created by those who have vision and power to make it through, who have ideas, simplicity, clarity. You do not analyze yourself to the future.” Another CEO, in an equally large company put it slightly different: “Useful in the sense that we speak of a future which is not properly defined. Intuition gives us that foresight.” Yet another respondent replied that: “Intuition is the feeling you very early have of direction. The analysis tends to take you towards familiar solutions, while intuition provides new directions and solutions.” In addition, “Intuition is to try to look forward supported by your experience.” Many of the respondents referred to this issue and we include a few more remarks: “You are supposed to have an opinion about the future.” “We make a choice for our customers in the sense that we decide what we are to provide.” “Important because our industry is not created by the past. Intuition foresees the future, and indicates where to go. We can never calculate how a decision will turn out.” “Very useful because strategy is about vision, and belief in right direction, which we can never know for sure.” “Sense about what you can do in order to have something successfully done in the future.”

Synthesis

A second issue emphasized by most respondents is *synthesis*, or the ability to combine and integrate pieces and variables into a larger and clearer picture or pattern: “You are supposed to see how many insecure variables are linked in a complex way.” “Intuition gives the sum total of elements.” “It is an invisible umbrella over the analysis.” “In many ways it gives the combinations, revealing the wholeness crucial in SDM.” “Ability to see trends, cycles and new connections.” “Intuition is a mixture of analytical data and accumulated experience.” “Depth and details in knowledge, together with decision support systems, gives in sum intuition. It perceives direction, the future, change, wholeness, and development trends in the industry” “It perceives the interplay and friction with environment and opposing forces.” “Intuition facilitates concentration on what you know is doable.” “It brings in the whole group.” “Strategy is about seeing relation and connection between different elements that can influence on the company. Thus recognition of a pattern in previous experience is important.” “Useful in the sense that it is quick to see positive connections and solutions. It is anchored in the totality of your understanding for what you are doing.” The more philosophical replies include these ones: “It relates to level of development, and more specifically the blend of head and heart. Women are better at this.” “After all, our existence is cyclic. We are born, unfold, grow old and die. We make the same inherited mistakes.”

New Ideas

A third issue highlighted by a large number of the respondents is how intuition provides *new ideas*. For example: “Pivotal for genuinely new ideas.” “Linked to your personality and thus to your genuine contribution.” “The advantage with intuition is that it provides new ideas. But you must dare to be wrong.” “Ensures novel, innovative thinking.” “Need it to push new things through.” “Very important in the sense that it brings up the strategic alternatives you have to look closer at.” “Intuition builds on long experience. It comes immediately, while gut feeling comes after some work with the issue.” “Sometimes it is an impulse, sometimes it takes a bit of time.” “It is with an intuition it starts, that is, whether or not it is a sensible

project. It gives new solutions and direction." "Experience is more important in familiar situations." "Balance between my own hypothesis and those of other people is required for intuition to work properly. Thus it is critical to include the latter." Two more thorough replies emphasize the wider context: "The intuitive solution may come after a good night sleep. If you dare listen to it, and more people see it, then we start talking about what initially may be a vague idea. My MBA has nothing to do with it." "Intuition is related to intent, vision, goals. It separates greatness from ordinary performance, in that you are able to create and stretch commitment for something beyond yourself, which Kennedy did with his first man on the moon vision. A vision the people understood intuitively and embraced."

Intuition versus Analysis

Having noted the different lines of reason given by top managers when arguing why intuition is imperative, pivotal, decisive, etc. we can turn to the final issue, namely *its relationship with analysis*. As already indicated, a number of respondents emphasized the mutual reinforcement of analysis and intuition: "There is no divergence between intuition and analysis." "If intuition tells you that something is wrong you will seek help and continue the analysis." "They Complement each other. Upfront you must have proper analysis, which gives a good gut feeling, and vice versa." "Intuition is required because you don't start a large analytical exercise unless you build on an intuition." "We are overwhelmed by information and analysis. Intuition filters, and tells us what it is interesting to spend more time on. Intuition is not static as the analysis is." "It is very important because you must always have a qualitative evaluation in addition to the quantitative. If the analysis supports my intuition then the choice is easy. If not I choose by intuition." "We have a tendency to think that analysis and logic dominate much more than it actually does. Feelings and irrational factors are much more important than we like to believe. The consequences are not necessarily detrimental." "Many strategic decisions are irrational. You can have as much analysis as you like, but other stakeholders may have other agendas, moving the issue in other directions." "The younger you are the more important is the analysis. With experience and more developed intuition you see the picture more clearly. I have learned from my previous mistakes."

Apparently, this issue was of particular relevance to the respondents, thus we might include a few more remarks: "In early phases there is often not enough data for an analysis." "Believe most strategic decisions are intuitive." "Intuition facilitates visualization of how things will proceed and this increases the chance for success." "Intuition gives the advantage of taking action early. The analysis is introduced later and provides secondary support and documentation required when selling the decision." "Intuition is fast, not precise nor re-testable. However, it is essential, especially in complex decisions. With analysis you stop short in old, fixed patterns." "It is important to have an analytical personality, but not more so than still trusting the feeling you have for direction. Analysis takes you primarily into familiar solutions while intuition gives you new solutions and directions." "Hindsight teaches you that analysis is self-fulfilling as it is undertaken only when things have gone to hell. When you listen to your intuition things usually goes well." "A bit dependent on the choices you make. In areas where experience counts a lot and in human resource management it is important. In quantifiable things it is not so important." "The analysis must support the rationale of the choice, but intuition must examine the analysis, that is, the way the numbers are put together. If you know your field intuition will secure the quality of the analysis." "To make strategic decisions only with analytical exercises is wild. Intuition corrects the analysis."

"Intuition gives additional decision support beyond the rational." "It is a must, and very individual. Regardless of how much analytical work you do upfront, you add something of your own." "There is much uncertainty with the analysis. Thus intuition is important because it provides answers to what is right and wrong." "You will never be able to calculate your way to a strategy. The analysis is used as support." "Intuition is embedded in the wider context of the support system, thus it is more precise and better able to correct our direction." "Numbers and analysis are easy to get hold of. However, there are more to this game than numbers on costs. Utility, service, etc, and their consequences are indeed difficult to quantify." "No problem analysing yourself away from everything. Without intuition we do not get ahead in matters of strategic choice and processes." "Intuition usefully counterbalances the concrete and mathematical." A more thorough reply is this one: "A good leader must make many decisions applying intuition. Confusion in the organization may result, because the reasoning behind the choice is unclear. Intuition secures that you are not solely an instrument of the board, which is obliged to empirical confirmation and a bureaucratic mind set." The more critical replies included these ones: "Clearly less important than analysis." "Intuition is not to have overriding influence."

Comments

If we apply the philosophical, psychological and management theory lenses on the replies given, we can make the following remarks. Regarding first the reference to *foresight and new ideas*. The more critical reader of these self-reports would perhaps think along two dimensions. He or she may argue with e.g. Simon, that this is not intuition but rapid analytical *inference* taking place at a subconscious level. Secondly, there are those who advocate the heuristic and biases tradition, and system 1 & 2 processing. In recapitulating dual process theories, we may stop with Bargh & Ferguson and ponder upon their question; what controls controlled processes?[583] Moreover, where does new ideas and heuristics originate?

We may not find the answer with Jung, but he did equip us with *a theory* on intuition: "Since the unconscious is not just something, that lies there like a psychic *caput mortuum*, but *coexists* with us and is constantly undergoing transformations which are inwardly connected with the general run of events, introverted intuition, through its perception of these processes, can supply certain data which may be of the utmost importance for understanding what is going on in the world. It can even *foresee new possibilities* in more or less clear outline, as well as events, which later actually do happen. Its prophetic *foresight* is explained by its relation to the archetypes, which represent the laws governing the course of all things we can experience."[584] In the chapter on intuition in philosophy a rationale was presented, making Jung's theory a plausible one.

Turning to the latter issue of analysis and intuitive *synthesis*, we have again the problem of discriminating between them. Mintzberg, in full agreement with the top managers, quite clearly states that: "Analysis may precede and support synthesis, by defining the parts that can be combined into wholes. Analysis may follow and elaborate synthesis, by decomposing and formalizing its consequences. But analysis cannot substitute for synthesis. No amount of elaboration will ever enable formal procedures to forecast discontinuities, to inform managers who are detached from their operations, to create novel strategies."[585] He thus concludes that

[583] Bargh & Ferguson, 2000, p. 938.
[584] Jung, 1971, p. 401. My italics.
[585] Mintzberg, 1994, p. 321. See also Mintzberg, 1978, 1982.

strategy cannot be planned because planning is about analysis and strategy is about intuitive synthesis.

Bergson is one author that tries to make such a line of reasoning more logically stringent by arguing that the fixed concepts of the analytical intellect may be extracted by our thought from mobile reality, but there are no means of reconstructing the mobility of the real with fixed concepts. The discursive, analytical intellect is therefore bound to misunderstand the fact of motion and change.[586] As the distinction between analysis and intuitive synthesis has been the main one throughout the thesis, it will not be further discussed here. *The conclusion to the second research question then, is that top managers define intuition in accordance with the theory reviewed*.

7.4 MBTI® Personality Profiles of Top Managers

Having discussed the second research question; how this sample of top managers define intuition and how they perceive its role in strategic thinking and decision making, we now turn to the third question: *Do Norwegian top managers have a personality preference for intuition as indicated by the Myers Briggs Type Indicator®*? Philosophy, psychology, and more lately management disciplines, all give attention to consciousness, cognition and intuition. These issues are to some extent discussed and anchored in type and trait theory. The work of e.g. Jung and Westcott indicate that intuitive types share distinct personality characteristics.[587] Several instruments are developed that seek to reveal our traits and preferences in perception, judgment and decision making. However, the assumption that there is an intimate, causal relation between personality and decision making behavior is indeed a controversial one.[588] Therefore, before we apply MBTI scores as `independent variable` we need to familiarize with some of the main objections.

One serious problem is whether the traits as measured by personality tests, are *consistent across* contexts. If the traits are not consistent across contexts, we may not predict behavior. Even more intricate and challenging is the probability that a top manager who is intuitive by Myers Briggs standards, will differ in emphasis on intuition and analysis *within* SDM contexts. We may hypothesize that he will use intuition in an explorative decision making mode but not so, when in an exploitative decision making mode. Thus, I control for this by having the respondents describe their thinking in both exploration and exploitation. The discussion about cross-situational consistency in behavior has been intense and according to Cloninger, neither side is the clear victor. Depending upon how the study is conducted either factor can be stronger.[589] It is important to recognize that the cross-situational consistency/inconsistency controversy refers mainly to different contexts. We may argue that SDM situations have enough common elements to say that they are similar situations. They

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[586] Bergson, 1949, p. 30.
[587] Wetcott, 1968, p. 140, Jung, 1971.
[588] Bass & Stogdill, 1990, p. 87, 563-658. “It is reasonable to conclude that personality traits differentiate leaders from followers, successful from unsuccessful leaders, and high-level from low-level leaders.” “Though, above and beyond personal attributes of consequence, the situation can make a difference.” See also Terkelsen, 1999, p. 67, March, 1994, p. 59, and Pervin, 1990.
[589] Cloninger, 1996, p. 78-83. He refers to Mischel, 1984, Peake, 1982, Conley, 1984, Funder, 1983, Cook, 1986.

are work issues, not private, and they are all strategic. However, this does not resolve the main problem.

Yet another aspect of this problem is the age-old debate: whether genes and inborn traits are more or less influential than environment. Moreover, is the influence different in children, adults, and professionals? A new twist in this discussion is coined *moderator* variables. The moderator variables attempt to explain why people are sometimes consistent across situations, sometimes not. Bem & Allen rejected that all traits are equally relevant for describing everyone's personality. Rather, they seek to determine *which traits are relevant to each person*.[590] There are different ways to determine which traits are relevant to each individual, but the important point here is the claim that personality scores do predict behavior when the trait is relevant to the individual. There is little doubt that intuitive and analytical thinking are relevant traits and skills for top managers. Another key element is *global* versus *specific* traits. Global traits are phrased in quite general terms and are presumed to apply to behavior in many situations. Specific traits describe behavior in particular situations. The MBTI indicates global traits, or more precisely, psychological functions.

A final issue we can mention is the *interaction* between traits and situations. We may predict behavior from the *joint* effect of personality and situations. From this perspective, we do not seek to identify personality differences that have persuasive effects regardless of situation. Instead it is recognized that a given personality trait may have one impact on behavior in one type of situation and another impact in another.[591] Consider the fact that situational effects are sometimes overwhelming: When a building catches fire, its occupants try to escape, regardless of the personality differences among them. Situations that have such powerful impacts on behavior are called *strong* situations. When situational pressures are *weak*, however, personality differences presumably do influence behavior. That is, personality traits predict behavior best when situations are weak. From the perspective of a top manager, SDM situations are probably weak situations. Whether or not there is an intimate, causal relation between personality and decision making behavior then, will not be settled here. Given these difficulties we will interpret the findings presented below cautiously and conservatively.

Validity & Reliability of the MBTI

Before we turn to the findings a few words on reliability and validity are required. Gardner & Martinko include a detailed examination of the psychometric properties of MBTI. Concerning the available evidence for reliability, they write that, "the estimated reliabilities of type categories appear to be satisfactory in most cases. The split-half reliabilities of continuous scores for numerous samples repeatedly exceed .75 for each scale. Test-retest reliabilities for continuous scores usually exceed .70 and often surpass .80."[592] Constructs tapped by self-report measures such as the MBTI, cannot easily be verified by other means. However, extensive validity evidence is supplied by type distribution tables, which reveal differing type proportions across occupations that are consistent with type theory.[593] Nordvik claims that; "because the personality concepts refer to behavioral modes that are congruent with one's

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[590] Bem & Allen, 1974, p. 506-520. See also Cloninger, 1996, p. 80. He refers to Stringfield, 1980, Zuckerman, 1989, Koestner, 1988, Reise & Waller, 1993, Baumeister, 1991, Tice, 1988.
[591] Cloninger, 1996, p. 81. He refers to Magnuson, 1990, Romer et al., 1986, Caprara, 1987.
[592] Gardner & Martinko, 1996, p. 50.
[593] Ibid. p. 51. See also Cohen, 1996, p. 658-659. He refers to Davey, 1993, LaCorte & Risucci, 1993, Lowenthal, 1994.

personal assets, MBTI scores of various occupational groups have been used to validate the test (e.g. Myers & McCaulley, 1985, Nordvik, 1994, Thorne & Gough, 1991)."[594] Because the Norwegian translation of the MBTI will be applied, it is important to look at his validity study of the Norwegian translation. Here it is found that all of the MBTI continuous dimensions were significantly related to occupational grouping. The relationship was strongest for *sensing – intuition* and weakest for extroversion- introversion.[595]

Cohen, in his thorough discussion of psychological testing and assessment point to the fact that the MBTI leaves no middle ground with regard to the scoring of the four functions, nor any room for situation-specific circumstances to alter the classification. One's type is thinking or feeling, sensing or intuition. "This type of scoring has been criticized for both the systematic loss of information it may entail and its over-sensitivity to responses to single items."[596] That is, a test-taker may be classified as a thinking type if the thinking score is slightly higher than the feeling score, whereas a different response to just one item could produce the opposite classification. Because so many subjects cluster around the point used to divide the distribution, an unstable situation is created with regard to the type. Moreover, cluster analysis does not support 16 distinct types, Cohen argues.

The dimensions however have been found to be more reliable than the type designations.[597] Thus, for the most part I leave the type designations aside and focus in on dimension scores. A second concern is the bipolarity of the dimensions. Cohen argues that if the dimensions were in fact bipolar, negative correlations between characteristics assumed to be on opposite ends of the dimensions would be expected. He refers to two studies where this is not the case.[598] The construct validity of the MBTI dimensions may thus be questioned. Yet another concern is that many of the MBTI validity studies are conducted with small samples of people. For that reason the reported differences may not be reliable. Finally, factor-analytic studies do not support a four-factor structure of the MBTI: as many as six factors may be identified.[599] In the MBTI manual, they refer to several studies opposing the arguments of Cohen.[600]

Research on MBTI and Management Behavior

A thorough review of the research on the relationships between psychological types, as measured by the MBTI, and managerial attributes, behaviors and effectiveness, is provided by Gardner & Martinko. Their review reveals that *intuitive types are predominant among top managers*, while sensing types are most common in samples of middle and lower level managers. They refer to Roach who contrasted sub-samples of supervisors, managers and executives with his total sample, and found that the *proportion of intuitive types rose with movement up the hierarchy*. Among executives the scoring was 67 percent intuition and 33 percent sensing, this being similar to my sample with 73 and 27 percent respectively. They

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[594] Nordvik, 1996, p. 263.
[595] Nordvik, 1994, p. 32. See also Nordvik, 1994 B.
[596] Cohen, et al. 1996, p. 658-659.
[597] Ibid. He refers to Girelli & Stake, 1993, and Pittenger, 1993.
[598] Ibid.
[599] Ibid.
[600] Briggs et al. 1998, p. 172, 173, 196-219. They refer to Harvey, 1995, Thompson, 1986, 1989, Tzeng, 1984, Tischler, 1994, Johnson, 1990, Sipps, 1985, Comrey, 1983, Jøreskog, 1981.

also refer to Van Velsor, who reports that intuitive types are over-represented in a sample of 1 981 top and middle managers.

In considering the potential reasons for the prevalence of intuitive types, among higher-level managers, they point to their conceptual skills, such as strategic and holistic thinking.[601] An issue here is the divergence of opinion regarding the existence of individual differences in the use of intuition, ranging from intuition being the preserve of a creative elite, to intuition as a basic cognitive process that is equally accessible to all. Woolhouse and Bayne thus studied the relationships between the sensing-intuition scale of the MBTI, and strategy and performance on an implicit learning task. The results indicated clear differences. Intuitive types were more likely to report a strategy of using intuition and sensing types were more likely to use explicit knowledge. In addition, intuitive types were more accurate than sensing types in their intuition.[602]

The Consulting Psychologists Press in their extensive evaluation of MBTI applications also notes that there is an *increasing selection for intuition* (N) as one moves up the ranks, and for thinking (T) and extraversion (E), at the executive level.[603] The MBTI research literature has a number of sources of occupational data, and the data bank contains many hundred thousand records.[604] One conclusion is: "Expect samples of managers at all levels to have more judgment (J) than perception (P). Most samples of management have substantial numbers of the tough-minded TJ types with operational and production managers more likely to report STJ, and long-range planning managers NTJ."[605] For instance, in a sample of 1 394 federal executives, 41 percent were NT's, and in a sample of 136 high level corporate executives 39 percent were NT's.[606] In my sample, it is 46 percent.

A word of explanation is required here. The four mental functions, which are the basis of MBTI and Jungian typology, are thinking (T), feeling (F), sensing (S) and intuition (N). The former two are modes of judgment (J) and the latter two are modes of perception (P). I have covered these functions in the section on Jung, and elaborated on *why he contrasts intuition with sensing, not with thinking*. When the introvert (I) and extrovert (E) preferences are included we are left with altogether 16 different personality types, each one described by four letters. For example: ENTJ indicates that the person is extrovert (E) and prefers intuition (N) to sensing and thinking (T) to feeling. Moreover, (J) indicates that he or she put more emphasis on judgment than perception, thus we have the ENTJ type.

Turning to my sample of 105 top managers, we find that there are 89 extroverts and only 16 introverts. There are 77 intuitive and 28 sensing types. The thinking types amount to 75, leaving us with 30 feeling types. Finally, there are 76 who have a preference for judgment and 29 that have a preference for perception. When occupational trends of the 16 types are analyzed, 4 of them are more likely to be in the management disciplines. They are ENTJ, ESTJ, ENTP, and ISTJ.[607] When we look at a sample from 1984, of 7 463 middle and high-

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601 Gardner & Martinko, 1996, p. 64. They refer to Roach 1986, and Van Velsor, 1988.
602 Woolhouse, & Bayne, 2000, p. 157.
603 Hammer, 1996, p. 71. See also Hammer, 1992.
604 Briggs et al., 1998, p. 295. The most comprehensive list of occupational data sorted by type are published in Appendix D of the 1985 MBTI Manual and in the *Career report Manual*, Hammer & Macdaid, 1992, and in *The Atlas of Type Tables*, Macdaid, 1986.
605 Macdaid, 1986, section III, p. 3.
606 Ibid.
607 Briggs, et al. 1998, p. 294.

level managers these four types accounts for 47 percent.[608] In a more recent multicultural sample of 43 586 managers these four types account for an average of 58 percent.[609] In my sample of top managers, these types account for 61 percent. The table below summarizes the main findings with regard to type distribution and we may conclude that it aligns with the tendency in larger samples.

Table 7.4.1 Distribution of the 16 MBTI Types in my Sample of 105 Top Managers

ISTJ	N = 5	4.7 %	ISFJ	N = 1	1 %	INFJ	N = 1	1 %	INTJ	N = 6	5.7 %
ISTP	N = 1	1 %	ISFP	N = 0	0 %	INFP	N = 1	1 %	INTP	N = 1	1 %
ESTP	N = 2	1.9 %	ESFP	N = 0	0 %	ENFP	N = 16	15 %	**ENTP**	N = 8	7.6 %
ESTJ	N = 18	17 %	ESFJ	N = 1	1 %	ENFJ	N = 10	9.5 %	**ENTJ**	N = 34	32 %

Are Norwegian Top Managers Intuitive by the MBTI Standard?

The dimensions have been found to be more reliable than the 16 type designations, thus they will be used to address my third research question: *Do Norwegian top Managers have a personality preference for intuition as indicated by MBTI*? In this sample, we see a strong emphasis on extroversion, intuition, thinking, and judgment. There are altogether 30 points on each of the four dimensions and intuition receives 19.2 sensing the remaining 10.8. Thinking gets 18.6 and feeling 11.4. *The research question may therefore be answered in the affirmative*. When these dimensions are correlated, we find a significant negative correlation between intuition and thinking and between intuition and judgment, which is of relevance for the issue of discriminant validity. There is no significant correlation with introversion or extroversion.

Table 7.4.2 MBTI Dimension Scores. N=105

	Extrovert	Introvert	Sensing	Intuition	Thinking	Feeling	Judgment	Perception
Average	21.6	8.4	10.8	19.2	18.6	11.4	18.6	11.4
Std. dev.	5.7	5.7	7.3	7.2	6.6	6.6	6.8	6.8

Table 7.4.3 Correlations of MBTI Dimensions Scores. N=105

	Extrovert	Introvert	Sensing	Intuition	Thinking	Feeling	Judgment	Perception
Extrovert	1	-1	-.12	.12	-.13	.13	.00	.00
Introvert	-1	1	.15	-.15	.15	-.15	.00	.00
Sensing	-.12	.15	1	-1	.44**	-.45**	.47**	-.47**
Intuition	.12	-.15	-1	1	-.43**	.43**	-.49**	.48**
Thinking	-.13	.15	.44**	**-.43****	1	-1	.50**	-.49**
Feeling	.14	-.15	-.45**	.43**	-1	1	-.50**	.49**
Judgment	.00	.00	.47**	**-.49****	.50**	-.50**	1	-1
Perception	.00	.00	-.47**	.49**	-.50**	.50**	-1	1

** Correlation is significant at the 0.01 level.

With any personality inventory, there are validity and reliability issues that might concern us, and this debate will not be settled here. I may repeat the two main reasons for applying the

[608] Macdaid, 1986, section III.
[609] Briggs, et al. 1998, p. 383.

MBTI. First, it serves a *validity purpose*. It allows us to *compare this sample to the trend in much larger samples*. It is also *yet another measure* of preference for intuition and analysis. Together with my eleven questions and interview-data, it indicates how top managers perceive and judge along the analytical and intuitive dimensions thus *addressing the second research objective*. Secondly, these measures are correlated, in order to find out what type of correlation there is between the MBTI personality measures and the emphasis on intuition and analysis in strategic decision making, as revealed by my questionnaire.[610] The results are presented in the table below.

When we look at the correlations between the MBTI *intuition* measures and the scores for my seven intuition items there is hardly any correlation. This may be expected. If these top managers do belong to an intuitive group, as postulated, we could have a case of low correlations due to homogeneity of scores. However, we would expect negative correlations with the analysis scores, which is not the case. When we look at the MBTI *thinking* measures and the scores for my intuition and analysis items the picture is slightly different. Here we do find certain significant positive correlations with the analysis items and a negative one with the single item intuition. Though this is the case only in decision situations characterized by exploration of new terrain and technology.

Table 7.4.4 Correlation of MBTI Dimensions Scores with my 11 Intuition and Analysis Scores. In each column, the figures to the left refers to exploration while the figures to the right refers to exploitation.

The 11 Items	***MBTI Intuition***	***MBTI Thinking***
Controlled Study	.01/.00	.24*/.14
Evaluation of alternatives	.02/-.07	.15/.11
Dividing the situation	-.04/-.02	.18/.26**
Analysis	.08/.01	.02/.00
Timing	-.04/-.13	.12/.16
Cycles	.06/.02	.01/.02
Big Picture	.07/-.01	-.13/-.05
Synthesis	-.03/-.10	-.02/.15
Gut Feeling	-.01/-.06	-.14/-.09
Possibilities	.04/-.15	-.08/.20*
Intuition	.04/.00	-.21*/-.11

** Correlation is significant at the 0.01 level.
* Correlation is significant at the 0.05 level.

There are a number of possible and speculative explanations of these results. The more likely one perhaps being the one mentioned above, namely that the correlations are low due to homogeneity of scores thus indicating that personality does play a role.[611] Another angle to these findings is to say that personality may not have explanatory power at all, in this context.[612] Along the same line of reasoning, we may suggest that Jung, Westcott, and those who advocate intuitive personality typology, are wrong on this issue. In addition, the measures of intuition may not be instrumental. Those of the MBTI, and those applied in the current research can all be questioned.

[610] In doing so I am aware, that statistical analysis cannot be used to establish the time sequence of the variables. It must be inferred from theoretical considerations. That is, I cannot use these correlations to prove that personality precedes preferred mode of strategic thinking.
[611] Rather high standard deviations, in particular for the MBTI measures, may point in other directions.
[612] Hammer, 1996, p. 55-74. See this section for an excellent discussion.

The attentive reader has noted that with Jung and MBTI, intuition is contrasted with sensing while I stick to the main tradition and contrast it with analysis.[613] The rationale of these different approaches is elaborated in the theoretical part, particularly in the section on Kant and Jung.[614] The more important point I believe is whether the MBTI and my measures of intuition reflect the same underlying process. Obviously there is an overlap, insofar the MBTI items include; insight, vision, imaginative, future, patterns, possibilities, original, unknown, change, idea, opportunities, inspiration, inventing and design. Given these results then, the tentative conclusion is that it is still an open question whether or not personality influences on emphasis on intuition and analysis in strategic thinking and decision making.

7.5 Conclusion

The preceding and more laborious theoretical part of this inquiry addressed the first research question: How is intuition conceived in philosophical, psychological and management theory? Having explored the concept theoretically, this chapter focused in on the empirical counterpart, which has three main elements. First, the 105 top managers were interviewed about *how they perceive intuition and its role in strategic thinking*, this being also my second research question. In defining intuition, they emphasized gut feeling, unconscious experience, the larger picture, a sense of right and wrong, and sudden new insight. When discussing the role of intuition four main issues came to the fore namely: foresight, synthesis, new ideas, and how it is complimentary to analysis. The replies were interpreted by both myself and colleague Per Grøholt. Apparently, they are congruent with the theory reviewed.

Secondly, they completed the Myers Briggs Type Indicator®, which indicate whether they have *a personality preference for intuition* in perception and judgment. This research question is answered affirmatively. In the third latter part of the empirical study, the respondents scored and ranked the items of my intuition and analysis scales in two self-chosen strategic decisions. That is, they were asked to evaluate their emphasis on intuition and analysis and the ensuing decision quality. The findings and corresponding statistics are discussed in the next chapter. Colleague Espen Røysamb verified them.

[613] However, I do not contrast them on the same dimension.
[614] An intuition in the form of a mental picture is a perception and a cognitive event that may be contrasted with both analytical inference and sensing.

8 THE EMPIRICAL STUDY & FINDINGS PART II

8.1 Introduction

Even though intuition is recognized as imperative in strategic thinking, management literature is surprisingly silent on the issue. The research problem is thus focused in the question: *What is intuition*? Theory construction is the primary research objective and I come at this objective from two angles. One is a rather thorough historical, cross-disciplinary theoretical inquiry of intuition aiming at *conceptual clarification*. The other is this exploratory empirical study. Concepts are the most critical element in any theorizing because they guide what is captured. Having discussed *how top managers conceive of intuition and its role in strategic thinking* I now turn to a test of certain aspects of the concept, considered relevant in this particular managerial context. This was done by structured personal interviews in which the 105 respondents were asked to both score and rank the items of tentative intuition and analysis scales, in two different self-chosen decisions. That is, *they were asked to evaluate their emphasis on intuition and analysis and the ensuing decision quality*. The results indicate that there is more emphasis on intuition than analysis, particularly in exploration of new terrain and technology. The empirical study may thus also contribute to our knowledge of *how Norwegian top managers think about their intuitive and analytical thinking in strategic decision-making*, this being the second research objective.

8.2 Intuition Versus Analysis in Strategic Decisions

Having discussed research question one, two and three we now turn to the fourth and final one: *Is intuition more or less emphasized than analysis in strategic thinking and decision making*? Theory, interview data and the MBTI measures have indicated that both intuitive and analytical thinking are prominent personality preferences for top managers. Now we focus in on their thinking about their actual strategic thinking in order to reveal more information. The opening question in the interview is; "would you please elaborate on two recent strategic decision making-situations that you have thorough experience with, and in-depth knowledge of. One should be characterized by exploration (A), that is search for new possibilities, experimentation with completely new alternatives & technology, variation, risk taking, innovation. In short you are to have *no previous experience* with such a situation. The other situation is to be characterized by exploitation (B) of old certainties, refinement, improvement & increased efficiency of existing production & technology that you are familiar with."
Then the respondents are asked to reply to the eleven interview questions *in both decisions* by scoring their emphasis on a Likert scale. It is ranging from one to seven where one is not emphasized, two little emphasized, three somewhat emphasized, four emphasized, five quite emphasized, six considerably emphasized and seven is heavily emphasized. The opening phrase in each of the eleven questions posed is; *to what degree did you emphasize*……?

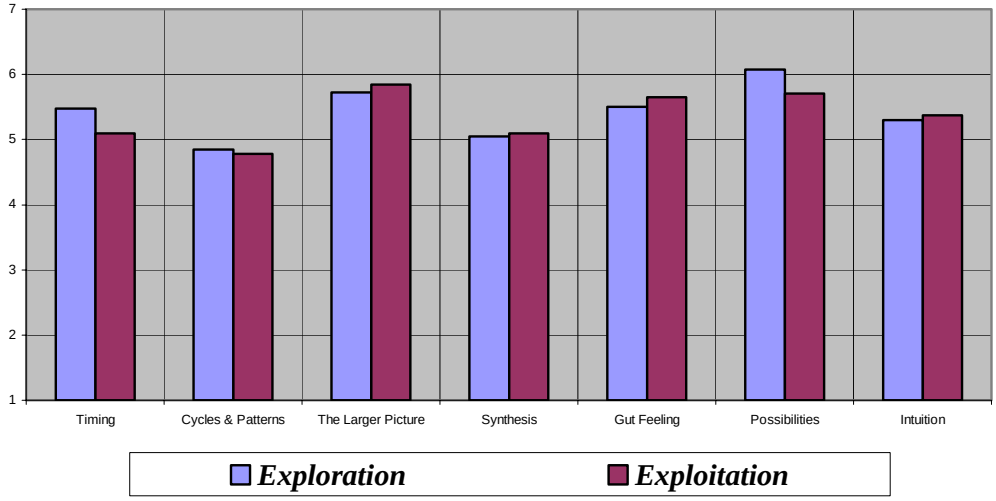
Table 8.2.1 The 11 Interview Questions on Analysis & Intuition

1	***A controlled study*** and break down of explicit data, using quantitative models.
2	***Evaluation of alternatives*** in terms of their consequences for preferences.

3	***Dividing the whole situation*** into sub-areas, dissecting & scrutinizing them.
4	***Analysis*** of facts, figures, reports, data & evidence.
5	Correct ***timing*** (knowing when to take the right step in the marketplace).
6	Perception of ***cycles*** (foreseeing emerging trends, patterns and recurring events).
7	Perception of ***the larger picture*** (a holistic view and apprehension of the situation).
8	***Synthesis*** (the ability to perceive many factors and variables as a coherent whole).
9	***Gut feeling*** rooted in the sum of implicit & unconscious knowledge, insight and previous exp.
10	Perception of ***possibilities*** (the innate idea).
11	**Intuition**

The first four questions address analytical thinking and the remaining seven, intuition. During the interview, they are mixed according to a fixed pattern. The rationale behind each question is elaborated in the previous chapters and summarized in the chapter on methodology and the section on research variables. The complete interview-guide is included in the appendix. Turning first then to emphasis on intuition, we can illustrate the replies in the following way: (The seven point Likert scale is on the y-axis.)

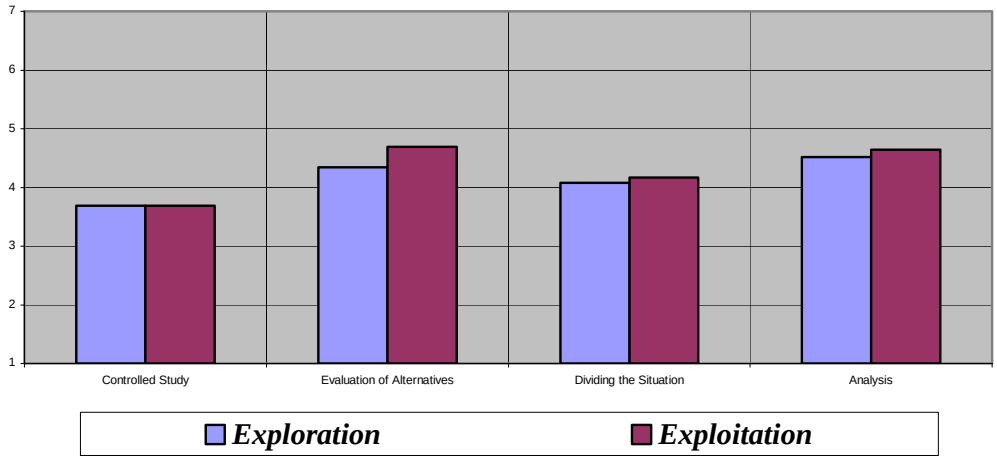
Figure 8.2.2 Emphasis on Aspects of Intuition in Strategic Decision Making. Average Scores.



When contrasted with aspects of the more analytical approach we find that apparently the respondents think they did put less emphasis on those. The average scores for *the single item intuition*, seen to the right in the diagram above, are 5.30 and 5.37 in exploration and exploitation respectively. The same figures for *the single item analysis*, seen to the right in the diagram below, are 4.52 and 4.64.[615] As these scores relates to the specific decisions chosen by the respondents, a control question about emphasis on intuition and analysis in their *normal* work with strategic decisions was included. It reveals an average on 5.40 for intuition and 5.13 for analysis. Which scores are the more representative of their actual behavior, is hard to tell.

Figure 8.2.3 Emphasis on Aspects of Analysis in Strategic Decision Making. Average Scores.

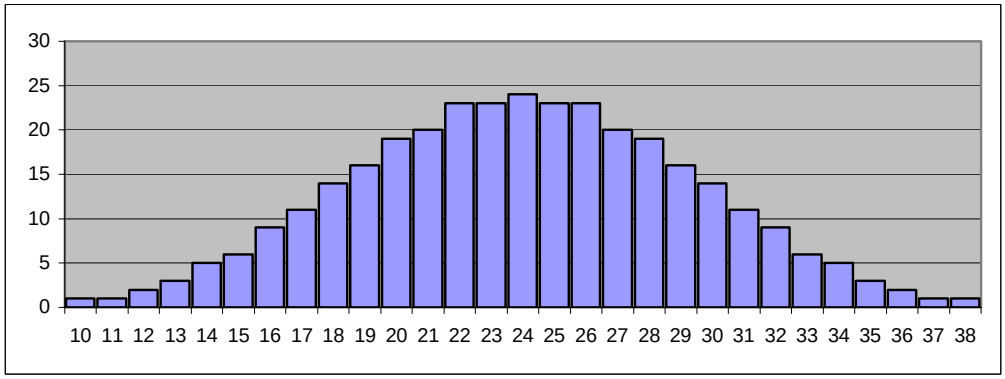
[615] Corresponding standard deviations are 1.43 and 1.54 for intuition, 1.68 and 1.66 for analysis.



Is Intuition More or Less Emphasized than Analysis in Strategic Thinking?

In order to answer this fourth research question I will apply a rank sum test.[616] A t-test on pair-wise differences between analysis and intuition indexes would be invalid as the average scores for analysis and intuition are not on the same scale. After completing the scoring, the respondents were given eleven cards with the eleven items written on. Then they ranked them according to emphasis, in both decisions. The starting point for the rank sum test is the null hypothesis of no difference in emphasis on intuition and analysis, with the alternative that intuition is more emphasized. Then the ranks of the four analysis items can be interpreted as random draws from the eleven ranks. This gives 330 different combinations, each with a belonging rank sum. The distribution of the rank sums under H0 is illustrated in the diagram and table below. It will be used to test whether a particular top manager is significantly analytic or not. A low rank sum signifies high emphasis on analysis. The rank sum values range from 10 to 38, which is seen on the x-axis (1+2+3+4=10 and 8+9+10+11=38). How many rank sums that have a particular value is seen on the y-axis.

Figure 8.2.4 Rank Sum Distribution for Analysis under the Null Hypothesis



[616] This test is developed by Prof. F. Wenstøp at Norwegian School of Management BI.

A rank sum of 14 or less indicates a significant emphasis on analysis at the 0.05 level. In the table below, we see that in exploration (A) there are 1.9 percent of the top managers that think they have such a strong emphasis on analysis. In exploitation (B), the figure is also 1.9. At the opposite end of the table, we see that a rank sum of 34 or higher indicates a significant emphasis on intuition at the 0.05 level. In *exploration*, there are 100-76.2 = 23.8 percent of the top managers that think they have such a strong emphasis on intuition. In *exploitation*, the figure is 100-87.6 = 12.4 percent. In order to determine whether intuition in general is more emphasized, we are to ask if the majority have a rank sum equal to or above 25. If so we may conclude that there in this sample is more emphasis on intuition. We see that there are 30.5 and 33.3 percent respectively that have a rank sum below 25. *The remaining majority of 69.5 and 66.7 are evidence in favor of the assumption that intuition is more emphasized than analysis regardless of decision situation*.

Table 8.2.5 Rank-Sum Distributions for H0, Exploration (A) & Exploitation (B)

Rank Sums	H0	H0[617]	P-values	A	Cumul. % A	B	Cumul. % B
10	1	0.32	0.003	0	0.0	0	0.0
11	1	0.32	0.003	0	0.0	0	0.0
12	2	0.64	0.006	0	0.0	0	0.0
13	3	0.95	0.009	1	1.0	2	1.9
14	5	1.59	**0.015**	1	**1.9**	0	**1.9**
15	6	1.91	0.018	1	2.9	1	2.9
16	9	2.86	0.027	3	5.7	0	2.9
17	11	3.5	0.033	2	7.6	1	3.8
18	14	4.45	0.042	4	11.4	2	5.7
19	16	5.09	0.048	1	12.4	2	7.6
20	19	6.05	0.058	4	16.2	4	11.4
21	20	6.36	0.061	6	21.9	5	16.2
22	23	7.32	0.070	2	23.8	7	22.9
23	23	7.32	0.070	6	29.5	6	28.6
24	24	7.64	0.073	1	**30.5**	5	**33.3**
25	23	7.32	0.070	1	31.4	9	41.9
26	23	7.32	0.070	2	33.3	6	47.6
27	20	6.36	0.061	3	36.2	8	55.2
28	19	6.05	0.058	9	44.8	5	60.0
29	16	5.09	0.048	10	54.3	5	64.8
30	14	4.45	0.042	5	59.0	5	69.5
31	11	3.5	0.033	6	64.8	4	73.3
32	9	2.86	0.027	5	69.5	3	76.2
33	6	1.91	0.018	3	72.4	4	80.0
34	5	1.59	**0.015**	4	**76.2**	8	**87.6**
35	3	0.95	0.009	7	82.9	3	90.5
36	2	0.64	0.006	8	90.5	2	92.4
37	1	0.32	0.003	3	93.3	4	96.2
38	1	0.32	0.003	7	100.0	4	100.0
	330	**105**	**1.0**	**105**	**100.0**	**105**	**100.0**

To make further conclusions we can perform a Chi-square test. Under the null hypothesis, we expect the distribution of the rank-sums to follow the random pattern in figure 8.2.4. Under the alternative, it will be located more to the right. Given the problem of many cells with expected frequencies less than five, we have to merge cells in order to apply the Chi-square test. This is especially so with the cells pertaining to rank sums 10-17. These first eight cells are therefore summarized and reduced to two cells, leaving us with 23 cells. They define the x-axis in the figures below. That is, in cell 1 and 2 rank sums 10-17 are now merged, while cell 3-23 still equals rank sum 18-38. Thus, there is a bulge on the left side of H0. How many

[617] In order to compare the distribution under H0 with those in A and B, the former need to be adjusted. This is done by multiplying each figure with 105 and dividing it with 330.

of the rank sums in A and B that have a particular value, is seen on the y-axis. The results from the table above can then be illustrated graphically:

Figure 8.2.6 Rank Sum Distributions under H0 and in Exploration (A)

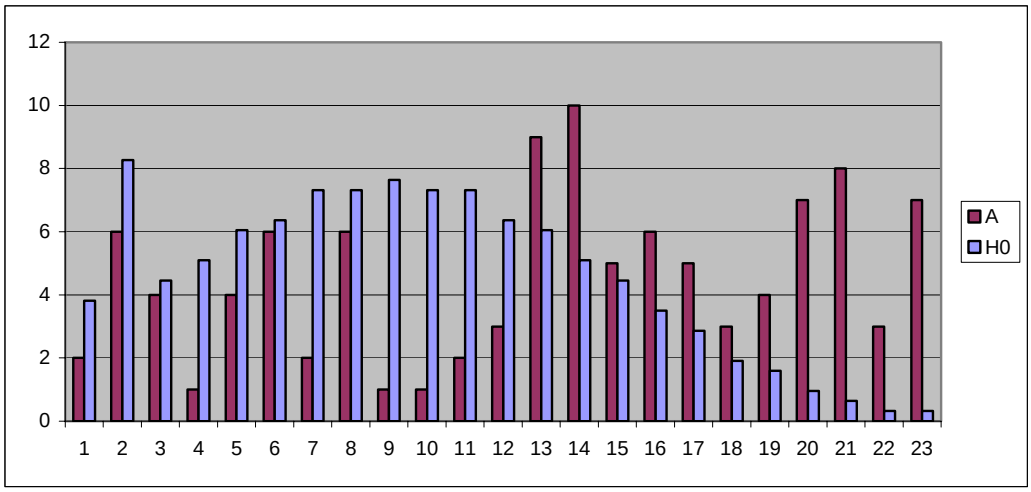
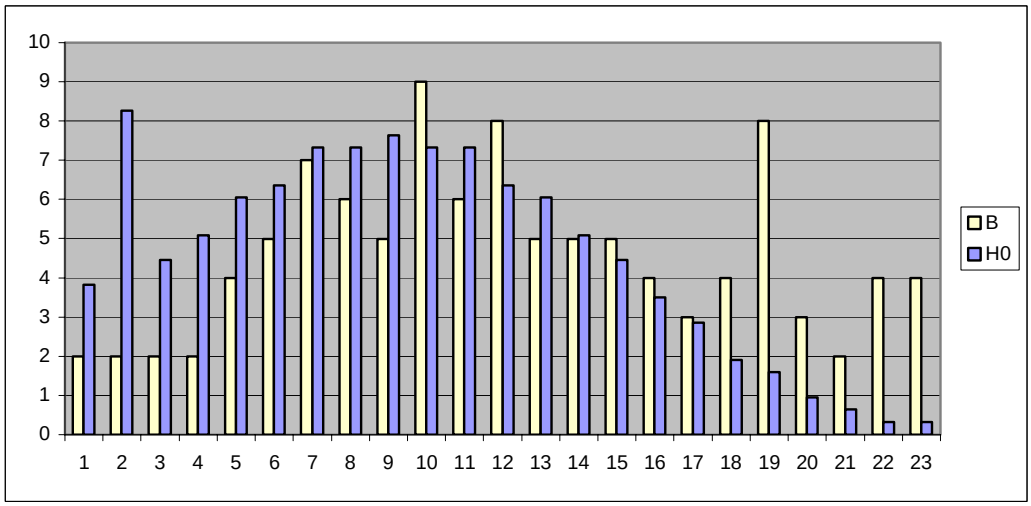


Figure 8.2.7 Rank Sum Distributions under H0 and in Exploitation (B)



In figure 8.2.6, we see that there is no good overlap between the distribution in H0 and the one in exploration (A). In figure 8.2.7 there is a much tighter fit. Turning to the Chi-square test then it asses' the goodness-of-fit and reveals a significant difference between H0 and A at the 0.05 level, but not so between H0 and B.[618] We should also take note of the fact that the difference between the distribution in A and B is *not significant* in strict terms. This is of relevance to the question addressed in the next section, about the role of experience. The Chi-square test thus leaves us with the conclusion that apparently Norwegian top managers *think they rely more on intuition than analysis in exploration of new terrain and technology. The data are not supportive of the same conclusion in decisions characterized by exploitation of familiar terrain and technology*.

[618] Hair, et al. 1998, p. 280, Wenstøp, 2003, p. 264, Kristianslund, 1985, p. 186.

Figure 8.2.8 Chi-square Test Assessing the Goodness of Fit of Rank Sum Distributions under H0, Exploration (A) and Exploitation (B).

Distribution	*Alpha*	*d. f.*	*Chi²*	*Critical value*	*Sig. prob.*
H0 versus A	0.05	22	45.30	33.92	0.005
H0 versus B	0.05	22	21.66	33.92	0.599
A versus B	0.05	22	30.55	33.92	0.105

8.3 Intuition and Experience

In the theoretical inquiry, I argued that *experience* might be a relevant independent variable. It is reflected in for example Jung's definition of intuition as a function that mediates perceptions of personal and collective unconscious experience. The work of Simon and Baylor are other examples.[619] The top managers interviewed also share this view. Given this particular research context and my tentative items on intuition we may thus address the question: *Is emphasis on intuition positively correlated with experience?* In the empirical study, experience is accounted for in two ways. First, the top managers are asked to evaluate their emphasis on intuition in an explorative decision situation in which they had *no previous experience* and in a situation familiar to them. Whether their emphasis differs across these two different strategic environments will be indicated by a t-test. Secondly, a number of questions reveal their professional experience. Their answers to these latter questions will be correlated with their scoring of emphasis on intuition.

The paired sample t-test then, assesses the statistical significance *of the difference between the mean scores* of the intuition and analysis items in exploration and exploitation respectively.[620] It computes the difference between the two scores for each of the eleven items and tests whether the averages differs from zero. If we specify a 99 percent confidence interval, the t-values reveal that three of the four analysis item scores and three of the seven intuition item scores *do not* differ significantly in exploration and exploitation. If we specify a 95 percent confidence interval all but one intuition item score differ significantly in the two situations. However, it is only *timing* and *possibilities* that are more emphasized in situations where the top managers have no previous experience to rely on, while the other intuition items are more emphasized in familiar terrain. Together with the Chi-square test, these findings thus indicate that decision makers *actually think they treat both kinds of decisions very much alike and that experience does not exert a significant influence in explaining different emphasis on intuition across the two situations*.

Table 8.3.1 Paired sample t-test with 99 percent confidence interval of the difference between the means of the 11 items in exploration and exploitation, 104 degrees of freedom.

The 11 Items	*Mean Difference*	*Lower*	*Upper*	*t-values*
1 Controlled Study	0	-0.54	0.54	0
2 Evaluation of Alt.	-0.34	-0.90	0.22	**-1.61**
3 Dividing the Situation	-0.09	-0.57	0.38	-0.52

[619] Jung, 1971, p. 453, Baylor, 2001, p. 238, Simon, 1987.
[620] Hair, et al. 1998, p. 331. The items that differ significantly are bold-typed.

4 Analysis	-0.11	-0.68	0.45	-0.53
5 Timing	0.36	-0.23	0.95	**1.60**
6 Cycles	0.06	-0.44	0.57	0.34
7 Larger Picture	-0.11	-0.51	0.28	**-0.75**
8 Synthesis	-0.04	-0.41	0.31	-0.34
9 Gut Feeling	-0.14	-0.58	0.29	**-0.86**
10 Possibilities	0.36	0.02	0.70	**2.81**
11 Intuition	-0.06	-0.48	0.35	-0.41

The theoretical inquiry revealed that the nature of intuition might be such that it is particularly well suited in exploration of brand new technology and terrain. That is, several authors and top managers link it to foresight and ability to perceive new ideas and possibilities.[621] Thus it may not surprise us that it is the items *timing* and *possibilities* that are significantly more emphasized in exploration of new terrain. Given this result, and the fact that these two items are the more troublesome ones in the factor analysis, it might be worthwhile pursuing further research focusing on these two items.

Turning then to the second issue, of how *personal and professional experience* relate to emphasis on intuition we may start by presenting the descriptive statistics:

Table 8.3.2 Years of Experience in Industry, Company, Strategy and in Other Industries

	Industry	*Company*	*Strategy*	*Other Industries*	*Age*
Average	16.17	10.84	10.30	1.69	46.87
Stand. Dev.	8.71	8.21	7.56	1.54	7.87
High	50	50	50	7	76
Low	1	0	1	0	31

When their different types of individual experience and age are correlated with their emphasis on analysis and intuition we find no persuading tendency in the statistics. The exception is age, which is positively and significantly correlated with many of the intuition items but not so with the analysis items. Of interest is also the significant negative correlation between three of the experience measures and the item evaluation of alternatives. In order to double check the relevance of experience and personality as independent variables I performed different types of regression analysis with the intuition and analysis indexes as dependent variables. Without exceptions the R^2 values revealed no significant results. If we are to say anything about these findings then, it is that apparently there is a stronger positive correlation between experience and intuition than what is the case with experience and analysis. This conclusion is the same regardless of decision situation. Altogether there are only 9 out of 40 correlations that are positive for analysis, while there are 61 of 70 for intuition, many of which are significant at the 0.10 level. The figures to the left in the table refer to decision A that is exploration, while those to the right refer to exploitation.

Table 8.3.3 Emphasis on Analysis & Intuition Correlated with Age and Experience in Industry, Company, Strategy, and Other Industries. The Exploration Measures are to the Left and the Exploitation Measures are to the Right.

[621] Jung, 1971, Bergson, 1949, Cappon, 1994, Vaughan, 1979, Miller & Ireland, 2000.

The 11 Items	*Industry*	*Company*	*Strategy*	*Other Industries*	*Age*
Contr. Study	-.09/-.05	-.15/.02	-.16/-.03	-.10/-.04	-.07/.08
Evaluation Alt.	-.10/-.16	-.24**/-.03	-.21*/-.15	-.15/-.03	-.18*/-.05
Dividing the Sit.	-.09/-.14	-.17/-.14	-.09/-.16	.01/.11	-.10/-.07
Analysis	-.09/-.04	-.08/.05	-.07/.08	-.08/.12	.07/.14
Timing	.07/.00	-.11/.01	.00/-.01	.07/.14	.06/.10
Cycles	-.03/.07	-.07/.10	-.02/.21*	.20*/.14	.07/.21*
Larger Picture	.10/-.04	.00/-.06	.06/.01	.11/.12	.15/.12
Synthesis	.13/.09	.03/.00	.13/.08	.10/.25**	.09/.23**
Gut Feeling	.21*/.12	.18/.11	.18/.09	-.01/.09	.20*/.17
Possibilities	.07/.05	.05/-.01	.07/.13	.09/.15	.22*/.21*
Intuition	.15/.12	.15/.18*	.18/.16	.12/.11	.22*/.11

** Correlation is significant at the 0.01 level.
* Correlation is significant at the 0.05 level.

8.4 Intuition & Decision Quality

Before we turn to a discussion of the validity and reliability of the study, I should also report on how the top managers perceived the quality of their decisions, as well as say a few words about how the remaining demographical variables relate to emphasis on intuition and analysis. I asked four questions relevant to decision quality. First the respondents were asked to judge the quality of their *strategic thinking* in the two decisions made, as compared with their thinking in other strategic decisions they have made. Secondly they judged the quality of *the decision itself* with regard to the outcome of the decision. Given the fact that these decisions are strategic and thus often long-term this latter question was sometimes difficult for them to answer, as the end-result was not yet in place. When asked what criteria they adhered to, the more common reply was financial gain. Finally they were also asked: To what degree would you say efficiency and a feeling of certainty characterized your strategic decision making?

When the scores on these four questions are correlated with the eleven intuition and analysis items we get the results presented in the table below. The exploration measures are to the left and the exploitation measures are to the right. By and large there are no significant correlation with the analysis items, except for two, but more so with the intuition measures. There are a huge variety of questions that could reveal decision quality, giving other results. Also, self-report measures are dubious, thus these results are to be interpreted with much caution. However, tentatively we may indicate *that emphasis on intuition facilitates good strategic decisions*.

Table 8.4.1 Emphasis on Analysis & Intuition, Correlated with Thinking and Decision Quality. The Exploration Measures are to the Left and the Exploitation Measures are to the Right.

The 11 Items	*Quality of Thinking*	*Quality of Decision*	*Efficiency*	*Certainty*
Contr. Study	.24*/-.03	.15/-.09	.06/-.11	.17/-.02
Evaluation Alt.	.10/-.10	.10/-.06	-.00/-.14	.07/-.07
Div. the Sit.	.14/-.05	.28**/-.03	.03/-.05	.06/-.02
Analysis	.08/.10	.01/-.04	.08/.07	.12/.07
Timing	.25*/.14	.21*/.15	.39**/.13	.14/.12
Cycles	.21*/.16	.07/.06	.33**/.19	.06/.06
Larger Picture	.23*/.33**	.35**/.10	.18/.21*	.13/.26**
Synthesis	.25*/.21*	.22*/.18	.22*/.04	.24*/.04
Gut Feeling	.27**/.06	.26*/.06	.28**/.04	.30**/.17

Possibilities	.19/.44**	.10/.48**	.18/.35**	.22*/.39**
Intuition	.21*/.21*	.21*/.19	.19/.28**	.20*/.13

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Demographical Findings
The remaining demographical classes include gender and educational background. Female intuition is an issue that could be of interest to discuss, but there are to few women (13) in the sample to address this issue properly. However, if we do correlate gender with the intuition and analysis measures we do not find any significant correlations. As the major bulk of respondents are educated in business (50 persons) or engineering (24 persons), I did primarily look at these two categories. There are but a few noteworthy correlations with the measures of intuition and analysis. The item *gut feeling* is negatively correlated with business education (-.34) and positively with engineering background (+.28), both significant at the 0.01 level. Thus, apparently, those educated in engineering do rely more on their gut feeling than do those educated in business. There are also negative correlations, significant at the 0.05 level, between business education and the items *intuition* and *the larger picture*.

8.5 Validity and Reliability of the Study

Validity
In the chapter on methodology, the internal, external, construct and content validity of the study were discussed. In this section it is of interest to further investigate how well the eleven items measure the constructs *analysis* and *intuition*. They may not be instrumental in revealing these different cognitive activities. Whether or not there are *two* factors, as the theoretical review and the interview data have indicated, remains a hypothesis. Thus, we turn to the factor analysis. It may tell us if we are correct in assuming two different factors. "The general purpose of factor analytic techniques is to find a way to condense or summarize the information contained in a number of original variables into a smaller set of new, composite dimensions or factors with a minimum loss of information – that is, to search for and define the fundamental constructs or dimensions assumed to underlie the original variables."[622] According to Hair we generally would not factor analyze a sample of fewer than 50 observations, and preferably, the sample size should be 100 or larger. Hair suggests that as a rule the minimum is to have at least five times as many observations as there are variables to be analyzed and the more acceptable size would have a ten-to-one-ratio.[623] In my case, there are 105 observations and 11 variables.

Common factor analysis and *principal component* analysis are the two basic models to obtain factor solutions. Which one to apply, is determined by the objectives of the analysis and the amount of prior knowledge about the variance in the variables.[624] Common, specific, and error variance are taken into consideration. Common variance is defined as the variance in a variable, shared with all other variables in the analysis. Specific variance is variance

[622] Hair, et al. 1998, p. 95.
[623] Ibid. p. 98.
[624] Ibid. p. 102.

associated with only a specific variable. Error variance is due to unreliability in the data-gathering process, measurement error, or a random component in the measured phenomenon. Hair argues that the principal component model is appropriate when the primary concern is about the minimum number of factors needed to account for the maximum portion of the variance represented in the original set of variables, and when prior knowledge suggests that specific and error variance represent a relatively small proportion of the total variance. "In contrast, when the primary objective is to identify the latent dimensions or constructs represented in the original variables, and the researcher has little knowledge about the amount of specific and error variance and therefore wishes to eliminate this variance, the common factor model is most appropriate."[625]

According to Hair, this latter model suffers from several problems contributing to the widespread use of the former e.g. factor indeterminacy, which means that for any individual respondent, several different factor scores can be calculated. There is no single unique solution. "Although there remains considerable debate over which factor model is the more appropriate, empirical research has demonstrated similar results in many instances."[626] Given these problems, my research objectives, and the error variance in my data, *the principal component model is selected*.

Choosing the number of factors to be interpreted is something like focusing a microscope. Hair argues that too high or too low an adjustment will obscure a structure that is obvious when the adjustment is just right.[627] I will take both the latent root, percent of variance, scree test and *a priori* criteria into consideration. The rationale for the latent root or *eigenvalue* criterion is that any individual factor should account for the variance of at least a single variable. Each variable contributes a value of 1 to the total eigenvalue. "Thus, only the factors having latent roots or eigenvalues greater than 1 are considered significant." However, "using the eigenvalue for establishing a cutoff is most reliable when the number of variables is between 20 and 50. If the number of variables is less than 20, there is a tendency for this method to extract a conservative number of factors."[628]

In the table below we see that there are four factors that have an eigenvalue greater than 1, although two of them barely exceeds this limit. The *percentage of variance* criterion then, is an approach based on achieving a specified cumulative percentage of total variance extracted by successive factors. Hair writes that the purpose is to ensure practical significance for the derived factors by ensuring that they explain at least a specified amount of variance. In the social sciences, it is not uncommon to consider satisfactory, a solution that accounts for 60 percent of the total variance, and in some cases even less.[629] I have included only the first six factors and we see that the first four factors add up to 65 and 60 percent in exploration and exploitation respectively.

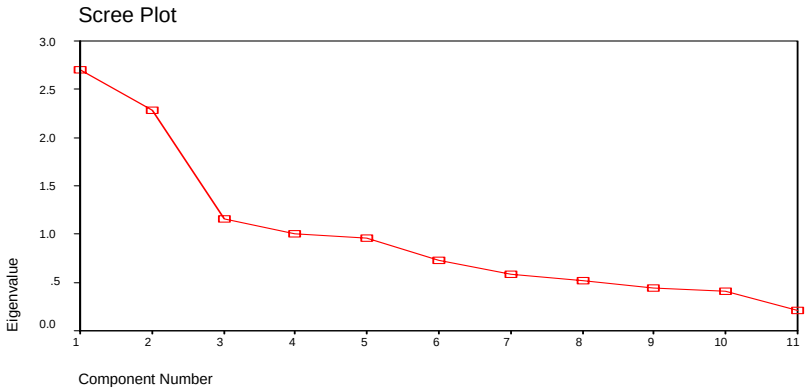
Table 8.5.1 Eigenvalues & Percent of Total Variance

	Eigenvalues		*Percent of Variance*	
Factor	Exploration	Exploitation	Exploration	Exploitation
1	2.7	2.5	24.6	22.7

[625] Ibid.
[626] Ibid. p. 103.
[627] Ibid.
[628] Ibid. The latter five eigenvalues range from .72 to .20.
[629] Ibid. p. 104. The latter five components range from 6.5 to 1.9 percent of variance.

2	2.3	1.9	20.8	17.2
3	1.1	1.1	10.5	10.4
4	1.0	1.1	9.2	10.1
5	.96	.98	8.8	8.9
6	.73	.79	6.6	7.2

The eigenvalue and the percent of variance criteria may thus persuade us that there are at least three factors. In addition, the statistical software-packages SPSS and LISREL usually suggests three or four factors with these data. However, the scree test may not be supportive of such a conclusion. The scree test is used to identify the optimum number of factors that can be extracted before the amount of specific variance *begins to dominate* the common variance structure. Although all factors contain at least some specific variance, *the proportion* of specific variance is substantially higher in later than in earlier factors. According to Hair, the point at which the curve first begins to straighten out is thus considered to indicate the maximum number of factors to extract. If we look at the scree plot, we find this point to indicate two factors.[630]



The rather lengthy theoretical inquiry into the history of the concepts intuition and analysis, is yet another argument to be considered. The long tradition of philosophers and psychologist has normally contrasted these two cognitive activities, and the items applied are derived from their work. *A priori* we might thus assume that there are two factors, and then apply factor analysis to test this assumption. When instructing the computer to extract two factors only, we get the results presented in the table below.

Table 8.5.2 SPSS Principal Component Analysis. Rotation Method: Oblimin, Kaiser Normalization.

The 11 Items	**Exploration**		**Exploitation**	
	Factor 1	Factor 2	Factor 1	Factor 2
Gut Feeling	.78	-.24	.68	-.39
Intuition	.77	-.27	.76	-.33
Larger Picture	.63	.06	.52	.08

[630] Ibid. The scree plot for exploitation does not differ much.

Timing	.60	.35	.12	.40
Synthesis	.59	.18	.48	.31
Cycles	.54	.21	.31	.27
Possibilities	.27	-.15	.66	.02
Controlled Study	-.12	.80	-.27	.75
Analysis	-.04	.72	-.06	.70
Dividing the Situation	.10	.65	.06	.63
Evaluation of Alternatives	.05	.61	-.03	.46

Before we interpret this factor matrix and loadings, we need to mention the issue of rotation. Un-rotated factor solutions extract factors in the order of their importance. The first factor tends to be a general factor with almost every variable loading significantly, and it accounts for the largest amount of variance. The second and subsequent factors are then based on the residual amount of variance. Each accounts for successively smaller portions of variance. Hair writes that; "the ultimate effect of rotating the factor matrix is to redistribute the variance from earlier factors to the later ones to achieve a simpler, theoretically more meaningful factor pattern."[631] In yet other words, the objective of all methods of rotation is to facilitate interpretation.

According to Hair, there is no compelling analytical reason to favor one rotational method over another. In brief, the choice may be made with regard to the particular needs of the research problem. "If the goal of the research is to reduce the number of original variables, regardless of how meaningful the resulting factors may be the appropriate solution would be an orthogonal one. Also, if the researcher wants to reduce a larger number of variables to a smaller set of uncorrelated variables for subsequent use in regression in other prediction techniques, an orthogonal solution is the best." Oblique rotations are similar to orthogonal rotations, except that the former allow correlated factors instead of maintaining independence between the factors. Hair thus argues that if the ultimate goal of the factor analysis is to obtain several theoretically meaningful constructs, as it is in my case, an oblique rotation is appropriate. "This conclusion is reached because, realistically, very few factors are uncorrelated, as in orthogonal rotation."[632]

Turning to criteria for significance of factor loadings, both *practical* and *statistical* significance are to be considered. Because factor loading is the correlation of the variable and the factor, the squared loading is the amount of the variable's total variance accounted for by the factor. A .30 loading translates to approximately 10 percent explanation of the variance and is by Hair considered to meet the minimal level of practical significance. A .50 loading translates to approximately 25 percent explanation of the variance accounted for by the factor and is considered practically significant.[633] In the table above, we see that in exploration all but one loading meets the .50 criteria. The item possibilities load with .27 and is thus in the range of .30. In exploitation the item possibilities loads with .66.

The more troublesome item in exploitation is timing which loads with only .12. Moreover, it loads high on the other factor in both situations. Timing and possibilities might thus be candidates for deletion. Statistical significance then, is a different story. With an objective of obtaining a power level of 80 percent, a .05 significance level and my sample size of 105 the

[631] Ibid. p. 107.
[632] Ibid. p. 110, 113. As I have used an oblique rotation, two factor matrices of loading are provided by the SPSS. I apply the more common factor *pattern* matrix, which has loadings that represent the unique contribution of each variable to the factor. The other is the factor *structure* matrix. It contains both unique variance between variables and factors, and the correlation among factors.
[633] Ibid. p. 111.

loadings ought to be between .50 and .55 according to Hair.[634] In the former situation of exploration, it is still one item only that does not meet this requirement. However, in the latter situation there are altogether four items that face difficulties. Two of these are close by though.

Apparently, a proper discussion of this factor analysis could include three or more factors. However, the more critical validity issue in this study, in my opinion, is perhaps not these factor loadings, but how well the top managers evaluate their own thinking. Asking them to discriminate between analytical inference and intuition in decisions taken place some time ago is indeed a dubious matter. There is but one solution to this challenge and it is to start exploring it. This study is one attempt. The conclusion to this factor analysis then is that *there are not one but rather two major factors, covering intuition and analysis respectively, as unrelated concepts*.

Reliability

Reliability is of central concern to social scientists because the measuring instruments they employ are rarely completely valid. Nachmias says that in many cases, evidence of validity is almost entirely lacking and instead the measuring instrument is evaluated with regard to other characteristics. Reliability is frequently used and is an assessment of the degree of consistency between multiple measurements of a variable. One type of reliability refers to the extent to which a measuring instrument contains variable errors. That is "errors that appear inconsistently from observation to observation during any one measurement attempt or that vary each time a given unit is measured by the same instrument."[635] It differs from validity in that it does not relate to *what* should be measured, but instead to *how* it is measured. The *Test-Retest method* is one common way of estimating reliability.

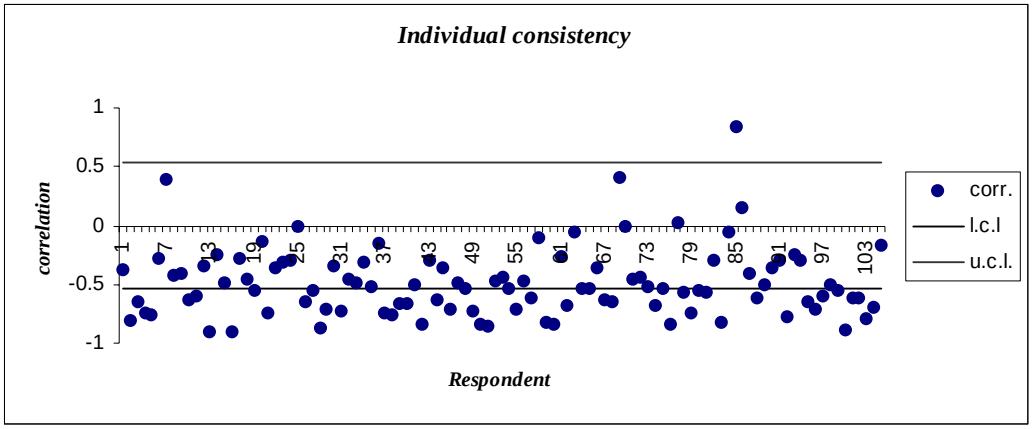
Here the instrument is administered to the same group of respondents twice, and the correlation between the two sets of scores is computed. The objective is to ensure that responses are not too varied across time periods so that a measurement taken at any point in time is reliable. There are at least two limitations of this approach. One is that the respondents may be influenced by their own replies on the first occasion. The other is that there may have been changes in the variable measured, in the time elapsed since the first testing. Another method, without the aforementioned limitations, is the *Parallel-Forms Technique*. It is characterized by two parallel versions of the instrument. A critical question with this method, that must be addressed, is whether the instruments are in fact parallel.

My approach is slightly different. During the interview, the respondents were asked to both score and rank the same eleven items in the two self-chosen decisions. I will use the correlation between these individual scores and ranks to assess the reliability of my instrument. Calculations reveal that the median of the correlations is -0.58 and -0.54 in decision A and B respectively. In the diagram below the individual consistency for situation B is pictured. Situation B refers to exploitation of familiar terrain and technology. In situation A, or exploration, the consistency is just a little stronger. The critical correlation value at the 0.05 level, with nine degrees of freedom, is approximately -0.53. The lower horizontal line in the diagram pictures this level. There are altogether 55 out of 105 respondents with a correlation between -0.53 and -1, indicating a fairly good individual consistency. Here I should mention

[634] Ibid. p. 112. See also Coven, 1991.
[635] Nachmias, 1996, p. 170.

the possible difficulties faced by the respondents in discriminating between the eleven items when ranking them. My impression was that by and large the top managers faced no problems in distinguishing the analysis items from the intuition items, but more so in discriminating between the items gut feeling and intuition.

Figure 8.5.3 Correlation Between Individual Scores and Ranks in Exploitation (B). The Correlations Below the –0.53 Line are Significant at the 0.025 Level.



Internal Consistency

Another commonly used measure of reliability is *internal consistency*, which applies to the consistency among *all* the variables in a summated *scale*. "The rationale for internal consistency is that the individual items or indicators of the scale should all be measuring the same construct and thus be highly inter-correlated."[636] Because no single item is a perfect measure of intuition, we must rely on a series of diagnostic measures to assess internal consistency. First, there are several measures relating to each separate item, including the item-to-total correlation (the correlation of the item to the summated scale score) and the inter-item correlation (the correlation among items). According to Hair, rules of thumb suggest that the item-to-total correlations exceed .50 and that the inter-item correlations exceed .30.[637]

The second type of diagnostic measure is the reliability coefficient, assessing the consistency of the entire scale, with Chronbach's alpha being the most widely used measure. Hair states that "the generally agreed upon lower limit for Cronbach's alpha is .70, although it may decrease to .60 in exploratory research."[638] Given the complexity of intuition, we may not like to see a too high alpha value, since we are then likely to have missed important aspects of intuition. The alpha values for the scales on intuition and analysis as well as inter-item and item to total correlations are presented in the tables below. Again, all the figures to the left refer to exploration or decision A and the figures to the right refer to exploitation, that is decision B.

Table 8.5.4 Chronbach's Alpha for Scale on Analysis

[636] Hair, et al. 1998, p. 118.
[637] Ibid.
[638] Ibid.

The 4 Analysis Items	*Item-to-Total Correlation*	*Alpha if Item Deleted*
1 Controlled Study	.58/.56	.55/.46
2 Evaluation of Alternatives	.43/.30	.65/.65
3 Dividing the Situation	.41/.38	.66/.60
4 Analysis	.46/.47	.63/.54
Alpha for Scale:		**.69/.64**

Table 8.5.5 Chronbach's Alpha for Scale on Intuition

The 7 Intuition Items	*Item-to-Total Correlation*	*Alpha if Item Deleted*
5 Timing	.47/.08	.68/.59
6 Cycles	.41/.21	.70/.53
7 The Larger Picture	.44/.27	.69/.51
8 Synthesis	.43/.26	.69/.51
9 Gut Feeling	.54/.36	.66/.47
10 Possibilities	.17/.41	.73/46
11 Intuition	.54/.40	.66/.45
Alpha for Scale:		**.72/.56**

Table 8.5.6 Inter-Item Correlations for Analysis and Intuition

Inter-Item Correlation	*Mean*	*Minimum*	*Maximum*
Analysis	**.36/.31**	.23/.16	.56/.49
Intuition	**.26/.16**	.02/-.10	.75/.79

The alpha measures for the scale on analysis are .69 and .64 in the two different decision contexts. Apparently this is close to being satisfactory. However, we may argue that the items on analysis are not of an exploratory kind, thus we should apply the limit of .70 fairly strictly. The alpha measures for the scale on intuition differ substantially with .72 and .56 respectively. If they are perceived together, we might suggest that this scale passes the limit of .60 often applied in exploratory research. Turning to the inter-item correlations for analysis we find them barely exceeding .30. Even though exploratory research may allow for a slight decrease in this limit of .30 the inter-item correlations for intuition are not fully satisfactory. Moreover, I sidestep the entire issue of weighting of the items, which could influence on the reliability measures. And of course, another research context and time may very well give different results. Having said this we may indicate that the single items on intuition and analysis have fairly good reliability while the reliability of the scales pass, but can be questioned.

8.6 Conclusion

In this chapter the latter part of the empirical study was presented. The respondents were asked to both score and rank the items of my tentative intuition and analysis scales in two different self-chosen strategic decisions. That is, they were asked to evaluate their emphasis on intuition and analysis. A rank-sum test and a Chi-square test indicated that *Norwegian top managers think they rely more on intuition than analysis, particularly in exploration of new terrain and technology*.

Theory and pilot interviewing provided reasoning for why *experience* might be a relevant independent variable. The top managers were thus asked to evaluate their emphasis on intuition in an explorative decision situation *in which they had no previous experience*, and in a situation familiar to them. Whether their emphasis differs across these two different strategic contexts was indicated by a t-test. It revealed that the decision makers *think they treat both kinds of decisions very much alike and thus that experience does not exert a*

significant influence. This conclusion is supported, though not firmly, when their age and different types of individual experience in company, industry, and with strategy, is correlated with their emphasis on analysis and intuition. With the exception of age there is no strong, persuading tendency in the statistics.

Having replied to *how* they think, the top managers also evaluated *the quality* of their decision making. They were asked to judge the efficiency and quality of their strategic thinking in the two decisions made, in comparison with their thinking in other strategic decisions they have made. They also judged the quality of the decision itself with regard to the outcome of the decision. *By and large I found no significant correlation with the analysis items except for two, but more so with the intuition measures*. There are of course a huge variety of questions that could reveal decision quality, giving other results. Moreover, self-report measures are often incorrect thus these results are to be interpreted with much caution. However, we may indicate *that emphasis on intuition facilitates good strategic decisions*.

Concerning construct validity, factor analysis showed that among my eleven items, there are not one but rather two major factors, covering intuition and analysis respectively, as *unrelated concepts*.[639] Thus the more critical validity issue in this study is perhaps not the factor loadings, but how well the top managers evaluate their own thinking. Asking them to discriminate between analytical inference and intuition in decisions taken place some time ago is indeed dubious matter.

9 CONCLUSION

9.1 Theoretical Implications of the Study

Two research objectives have guided this research. Reading strategic management literature, I noted that intuition is recognized, *as imperative in strategic thinking* and that the literature *does not* provide adequate theory on the issue. This called for a thorough theoretical inquiry into the concept of intuition. It serves also as a separate contribution. *Conceptual clarification* was thus *the foremost* research objective. Being equipped with the historical, cross-disciplinary review, I then undertook the second objective: to contribute to our knowledge of how top managers perceive their intuitive and analytical thinking when performing strategic decision-making. In conducting the theoretical inquiry, and addressing the first research question: how is intuition conceived in philosophical, psychological and management theory, three levels of intuition were discerned.

There are first intuitions stemming from *the personal unconscious*. This level relates to the accumulated personal experience and knowledge. These intuitions can be more or less biased and mature, depending upon the individual's way of living and level of expertise.[640] Second,

[639] Hair et al. 1998, p. 119. Given the rather vague concept of intuition proper discriminant and nomological validity is difficult to establish at this point. Discriminant validity ensures that my scale is sufficiently different from other similar concepts to be distinct, while nomological validity determines if the scale demonstrates the relationship shown to exist based on theory and or prior research.
[640] Baylor, 2001, p. 239-241. Hogarth, 2001, p. 41.

there are intuitions from *the collective unconscious*. This level relates to the accumulated collective experience and knowledge. Here we also find the Ideas, Forms and Archetypes, that hypothetically condition all our experiences in everyday life.[641] An introvert person tends to have better access to this level than the extrovert. Both kinds of intuitions can work their way through the individual mind, body and feelings, giving insight, new ideas, foresight and a sense of right and wrong.[642] With no awareness of these levels of the psyche, *any* activity might have a substantial portion of automatic flavour and functioning. This may include the explicit, controlled, analytic activities of system two elaborated in dual process theories.

The third level is the developed, mature intuition. This is the level that corresponds to the so-called *rational intuition* heralded by certain philosophers. It is nurtured by and anchored in a rich and profound understanding and perception of the personal and collective unconscious, as well as of their mutual and *integral* relationship. It is the ability to perceive how Ideas, Forms and Archetypes are reflected and *unified* with what is going on in the individual and the world of physical appearances. A certain amount of analytical inference is required here. Kant thus argues that the analytic procedure is involved in the complete *synthetic* method, and Bergson emphasizes the counter analysis. However, as inferential thought activity comes to a rest the result may eventually be the *non-dualistic state of mind* as Buddhist practice proclaims. It is a consciousness which is conscious of it-self. The research of Penrose and Pribram on intuition and consciousness indicate that this state of mind is equal to "a global (essentially quantum) large-scale coherent 'hologram' activity in the brain"[643]

The second research question asked was: *How are intuition and its role in strategic thinking perceived by Norwegian top managers*? When the theoretical account and the three levels of intuition are used to interpret the replies given, certain remarks can be made. To me their conceptions of intuition came about as rather hazy. When I asked the respondents for elaboration, they tended to stop short with two or three sentences. Apparently the 'folk conception' of intuition: as *the larger picture*, *sudden insight*, and *gut feeling*, rooted in previous *unconscious experience*, dominates also here. However, we should take note of the fact that these top managers agree in their conceptions. For the most part, they all used the same key words in their replies. A core question is what type of experience they anchor their intuitions in. The overall sense from the interviews in hindsight is that they refer primarily to their *personal unconscious experience*. *The conclusion then is that these top managers conceive intuition in accordance with the suggested first level of intuition, only*.

In delineating *the role* intuition plays in strategic thinking, more nuances came to the fore. Here they emphasize *new ideas*, *foresight*, and how intuitive *synthesis* and analysis represent distinct, complementary skills. A short or long incubation period delivers the new idea or insight when needed, or perhaps after a good night's sleep. Why and how certain brand new ideas are elicited from the *a priori* constraints of the human psyche is a thrilling mystery to most of us. How intuitive synthesis and analysis complement each other is likewise an intricate matter, as we have seen. The notion of foresight is yet another difficult one. Whether genuine foresight is a result of rapid, unconscious analytical inference as Simon claims, or an aspect of Jung's introvert intuition, will not be settled here. The important point, however, is that these top managers do describe intuition in terms *congruent with the theory reviewed*.

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641 Jung, 1971, p. 401.
642 Vaughan, 1979, p. 55.
643 Penrose, 1994, p. 368. Pribram, 1971, 1991, 1998, and in Gunter, 1987, p. 171.

That is, primarily with psychological theory.[644] This adds to the problem faced by philosophers, of scarce empirical support for their theories.

Quite late in the research it became clear to me that in the history of epistemology there is a *divergence in opinion* with regard to the concept of intuition. Along some fairly general lines I suggested a controversy between philosophy and psychology. More specifically, I referred to psychological theory where intuition is conceived as a rather biased, automatic, unconscious, rapid and effortless cognitive process.[645] This is opposite to the view held by philosophers, where intuition is considered supreme *rational* intelligence, and to quote Plato; "the apprehension of it is rather to be thought of as a revelation which can only follow upon a long intellectual training."[646] Here I will not repeat the many arguments, but only reflect a little more upon *the main theoretical argument of this current work, namely that a Copernican reversal has taken place in the history of thought*.

The brief reflection may start with Plato's distinction between the *intelligible* world and the world of physical appearances. His notion of discursive or analytical thinking, *dianoia*, is attached to the former. For Kant, the situation is similar. He draws a distinction between the *a priori* and the *a posteriori*. His notion of analytical thinking, *verstand*, is also related to the intelligible world, or the *a priori*. The new and confusing element introduced by the later Bergson, is that *his* notion of analytical thinking, made equivalent to intellect, is fallen from the *a priori*, *intelligible* world, down to an occupation in the Platonic cave, where its primary interest now is the world of physical appearances. With Bergson, we therefore have the contradictory situation, that the intellect no longer occupies a place in the intelligible world. Its character and memory is from then on, gradually becoming devoid of soul. *Rational intuition* is left alone with the intelligible, metaphysical, spiritual agenda, and the intellect is solely in charge of the more solid affairs. With Jung and onwards this tendency to equate intuition with the elusive aspects of the subjective *psyche*, and the analytical intellect with objectivity and empiricism, is more or less firmly established in folk conceptions. The trend continues today, where analytical thinking is regarded by many as rational and intuition as irrational, automatic and biased.

If we ask *why* this reversal has taken place we are left without any easy answers. However, we may speculate. Here, I am inclined to go along with Osbeck, who writes that the avoidance of epistemological perspectives on intuition might reflect psychology's development into an empirical science.[647] The intriguing example is that in psychological literature there is hardly any reference to the *soul*, even though the meaning of *psyche* is soul.[648] Westcott indicates that with the advent of positivism, and the rise of analytical philosophy, views of reality became suspect if not properly supported by demonstrative reasoning and empirical observation. The opposition between intuitionism and empiricism has persisted in psychology to the present day, just as it has in philosophy.[649] Thus, the syndrome of the Platonic Cave need not be limited to the tribal consciousness of a primitive society. According to Seung it is equally present in the positivistic consciousness of our scientific world. "For the positivistic consciousness is governed as much as the tribal consciousness by its own provincial norms

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[644] There are no references to Ideas, Forms or Archetypes. The replies are more in tune with the work of Polanyi, 1966, Bastick, 1982, Epstein, 1996, Stanowich & West, 2000, Gilovich, et al. 2002.
[645] Gilovich, Griffin, Kahneman, 2002, p. 51. Stanovich & West, 2000, p. 658.
[646] Cornford, 1955, p. 206.
[647] Osbeck, 1999, p. 229.
[648] Teigen, 1999, p. 412. See also Berger & Luckman, 1967, on social construction of reality.
[649] Westcott, 1968, p. 16.

and standards. Positivism has its own cave, the cave of an exclusively materialistic universe, and this cave is so deep and dark that it allows no view of any other dimension of reality."[650]

Given this main theoretical argument of a Copernican reversal in our history of epistemology, it became pivotal to further investigate *how intuition relates to rationality*. I started out asking; what is rationality *per se*? There is no brief or elegant answer. Rather, there is a multitude of perspectives and this state of affairs is characteristic of the classical theories of normative rationality. *I then argued that intuition is the ontological foundation for any normative theory of rationality*. That is, in examination of three well-known forms of rationality; formal and instrumental rationality, and Rawls's ideal constructivism, the impossibility of constructing a normative system of rationality without using some normative intuitions, was demonstrated. Thus I further refined my *sketch* of the required theory of intuition, including a discussion of *criteria* for rational judgment. *Intuitive equilibrium* was suggested as a complementary version of reflective equilibrium, providing a proper frame of reference. *One conclusion then* is that philosophers emphasize *vertical* rationality, that is, consistency between *a priori* and *a posteriori*, *episteme* and *doxa*, while psychologists are less inclined to do so. The proposed contribution of this research is thus to demonstrate *that by better understanding intuition and its application, more effective strategic thinking and decision-making could result*.

The weaker part of the theoretical inquiry may be its fairly brief discussion of the literature on heuristics and biases. This is partly due to the fact that I come from the philosophical tradition, but also because it is a rather long undertaking to cover the history of intuition across three theoretical disciplines within the given limitations of this thesis work. In future research it would be of interest to work on a possible reconciliation, where heuristics and biases might turn out to be consonant with the suggested level one and two of intuition. More specifically such a discussion could elaborate on the notions *evolutionary* and *normative* rationality. Stanovich & West might have a good point when they argue that one way to view the difference between evolutionary and normative rationality is that they are not really different types of rationality. Rather, "they are terms for characterizing optimisation procedures operating at the sub-personal and personal levels, respectively."[651] The appealing promise of the suggested third level of intuition is a conscious awareness of *how* these levels are *integral* to each other.

The theoretical inquiry revealed one more key point. Given the argument that intuition is the ontological foundation for any normative theory of rationality it is even more significant that the philosophers provide *distinct and different methodologies for intuition and analysis*. In other words, if science is concerned with the question *how do we know*, and characterized by its *methodology*, new progress may be achieved by better integrating the methods of intuition in our scientific effort.[652] There is little doubt that the analytic and the synthetic methods delineated by Kant, in important respects, are copies of Plato's two clear-cut methods of *dianoia* and dialogue. So also with Bergson, who elaborates on the methods of metaphysical and physical science. When examined I found the same innate rationale in all these methods, even though they span more than two thousand years. *These findings may thus inspire further research in the philosophy of science and scientific methodology*.

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[650] Seung, 1993, p. 210. See Davis-Floyd & Arvidson, p. 22.
[651] Stanovich & West, 2000, p. 661.
[652] Nachmias, 1996, p. 3.

9.2 Implications for Strategic Thinking

Strategic thinking is often defined as a coherent, unified perception that reveals a unique and consistent set of patterns and activities, propelling the company into what it is to be.[653] According to Eisenhardt, Hamel & Prahalad, de Wit & Myer, and Mintzberg, it is also a process of foresight and synthesis based on intuition, where the outcome is an integrated perspective of the enterprise.[654] This is a vision of the whole as Porter put it.[655] Even though intuition is recognized as crucial, studies on *the role* of intuition in strategy are rare.[656] More critically it is, that the management literature does not address this issue properly. Having laboured through the theoretical inquiry, the next step was thus an exploratory empirical study, of *how* top managers perceive their intuitive and analytical thinking in strategic decision-making. I applied certain aspects of the concept, considered relevant in this managerial context and asked: *Is intuition more or less emphasized than analysis, in strategic thinking and decisions?*

The more noteworthy result of the empirical study is that these top managers *think they rely more extensively on intuition than analysis*. This is especially so in decisions characterized by exploration of new terrain and technology. In taking a step back, and asking *why* they do, their own replies might be informative. Arguments for the salience of intuition in strategy, emphasized by most of the respondents, centered around *four themes*; namely its link to *synthesis, foresight, new ideas, and a sense of right and wrong*. A few quotations illustrate part of their rationale: "Intuition is useful in the sense that we speak in strategy of a future which is not properly defined. You do not analyze yourself to the future. Intuition gives us that foresight." "Intuition is an invisible umbrella over the analysis. It gives the combinations and synthesis, revealing the wholeness necessary in strategic decision making." "Intuition ensures novel, innovative thinking." "Gut feeling, telling you whether or not the required psychological process in the organization will gain enough momentum. This you can't calculate or analyse."

Synthesis

Mintzberg, in full agreement with the top managers, states that: "Analysis may precede and support synthesis, by defining the parts that can be combined into wholes. Analysis may follow and elaborate synthesis, by decomposing and formalizing its consequences. But analysis cannot substitute for synthesis. No amount of elaboration will ever enable formal procedures to forecast discontinuities, to inform managers who are detached from their operations, to create novel strategies."[657] He thus concludes that strategy cannot be planned because planning is about analysis and strategy is about intuitive synthesis. The distinction between analysis and intuitive synthesis has been the main one throughout this inquiry. *Thus right here it may prove its worth, by informing the field of strategy about how these distinct cognitive efforts can complement each other in a more conscious, rational, and effective way*.

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[653] Andrews, 1987, p. 14-15. See chapter 4.2 for elaboration.
[654] Eisenhardt, 1999, p. 66, 1992, p. 33, Hamel & Prahalad, 1996, p. 25, Mintzberg, 1994, p. 329.
[655] Porter, 1998, p. 68. See also de Wit & Myer, 1998, p. 72.
[656] The few there are indicate that intuition plays an important role. See Parikh, et al., 1994, p. 81, and Burke & Miller, 1999, p. 91.
[657] Mintzberg, 1994, p. 321. See also Eisenhardt, 1999, p. 66.

Foresight
Hamel & Prahalad who for a long time have researched and worked with numerous outstanding top management teams around the world, argue convincingly for a new view of strategy. "It is a view of strategy that recognizes it is not enough to optimally position a company within existing markets; the challenge is to pierce the fog of uncertainty and develop great foresight into the whereabouts of tomorrow's markets."[658] If we are to believe there exists a genuine skill called foresight, the question about *how it works* arises. I have advocated the view that the philosophical account on intuition corroborates Jung's theory on intuition. He argues that intuition foresees new possibilities because it is connected with *a priori* layers of the psyche, extending beyond the personal aspect of it.[659] *Top management may thus benefit from harnessing, and better integrating these layers and epigenetic rules, in their thinking.*[660] *In this way the emergent strategy is more easily conveyed*.

New Ideas
Innovation, first mover advantage, and creation of new competitive space, are all important in strategy. But where do *new* ideas originate from, if not from intuition? It is the reappearance of changed ideas and images, which affords the strongest proof of the reality of intuition, Diblee writes.[661] This is a *connaissance rèflèchie*, a return of knowledge on itself, a synthesis to a second degree, resembling Bergson's counter analysis. How to foster and to facilitate this *mosaic* activity is more difficult to explain. However, many of those who have tried, emphasize *the orientation and state of mind*. Thus, today it is more common for top managers to spend time in meditation.

Values
A sense of right and wrong was perceived as another particularly important aspect of intuition. Access to core values is indeed instrumental in defining the uniqueness of a company, and what it is to pursue in order to enhance strategic work. According to Føllesdal, we unfortunately tend to focus solely on beliefs, not on values, when we say an agent is rational.[662] Rawls admits that it is not possible to develop a theory of values without relying on intuition, and I rehearsed the argument that intuition is the ontological foundation for any theory of normative rationality. Thus we cannot easily dismiss the view held by these Norwegian top managers, *that intuition provides a reference to intrinsic values of right and wrong*.

The theoretical inquiry indicated that *experience* might be a relevant independent variable in explaining emphasis on intuition in strategic thinking and decision making. In the empirical study, experience was accounted for in *two ways*. First, the top managers were asked to evaluate their emphasis on intuition in an explorative decision situation in which they had *no previous experience*, and then in a situation familiar to them. Whether their emphasis differs across these two distinct strategic contexts was statistically tested. The tests indicated that

[658] Hamel & Prahalad, 1996, p. 25.
[659] Jung, 1971, p. 401. See also McCraty, 2004.
[660] E. Wilson, in Damasio et al., 2001, p. 12. See also Wilson, 1998.
[661] Diblee, 1929, p. 84-99.
[662] Føllesdal, 1982, p. 306-308.

decision makers think they treat both kinds of decisions very much alike, *and thus that experience does not significantly explain different emphasis on intuition, across the two situations*. Secondly, this conclusion did not change much when their age and different types of individual experience in company, industry, and with strategy, were taken into account. *With the notable exception of age,* there were no persuading correlations with the intuition measures. However, in retrospect I have the concern that the two situations did not serve to discriminate properly with regard to experience. Aspects of the respondents' unconscious and *domain specific experience*, may have been applied in *both* decisions.

Personality is a many-faceted construct. In this study the Myers Briggs Type Indicator® was applied. The results indicate *that the top managers have a strong preference for intuition versus sensing*. Although many of the MBTI® questions are work related, neither this variable can here be used to 'explain' emphasis on intuition, in significant terms.

9.3 Limitations and Suggestions for Further Research

In retrospect, many ways of improvement can be suggested. Pilot testing and the research of Epstein, Burke & Miller, and Parikh et al. provided part of the rationale behind my *explicit focus on the first level* of intuition in the empirical study.[663] It is also consonant with the replies given by the respondents. However, the conceptual development suggests three levels of intuition, while the two instruments do not test for multiple levels. Bluntly speaking there is thus a mismatch between the theory and the applied instruments. Therefore, *if* we are correct in assuming the existence of multiple levels and meanings of intuition, there is a need for *more fine-grade instruments* as well as *other research contexts*. Exploring the concept of intuition in only the managerial setting is indeed a limited and biased approach. With a different sample, we may see other results. As intuition is claimed to be perception of the psyche or soul, a comparison group of individuals devoted to the 'spiritual path' could prove instrumental.[664] Leaving these difficulties aside, the more troublesome validity issue in this study is perhaps not the narrowness of the instruments, but rather how well the top managers evaluate their own thinking. Asking them to discriminate between analytical inference and intuition, in decisions that took place some time ago may be a dubious matter. However, I assume this would be equally difficult for other professional groups. There is but one solution to this challenge and it is to start exploring it. This study has been one attempt.

A second concern is that it is still an open question as to *what* determines emphasis on intuition. Thus, we are left in a sort of vacuum. Given the hypothesis that there exist two distinct cognitive talents, we are also curious to know *how* intuition works, and what causes it to work in a more or less skilled manner. Apparently, *experience* and *personality* are not the sole explanatory means in this respect. To some extent, I have thus failed to develop and present theory and models that explains the findings in a fully satisfactory way. Although the main research objective was *firmly restricted* to a clarification of the *concept* intuition and its *role* in strategy, such theory would be much appreciated. In some places, the theoretical account indicates that a promising avenue of research may be found within, *developmental*

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[663] Burke & Miller, 1999, Parikh et al. 1994, Epstein, 1996. See also section 4.3, 4.4 and 6.2.

[664] Laughlin, in Davis-Floyd, 1997, p. 19, writes that: "Among the Tibetan lamas I worked with, I found that many of the meditative techniques they use are intended to evoke and mature intuitive realizations about the properties of consciousness."

psychology.[665] There is for instance in Greek philosophy the implicit understanding that *areté* or *moral virtues* are intrinsic to a mature intuitive state of mind. Likewise, Westcott who is credited with clinical studies on intuition argues that the intuitive type is an *autonomous* individual. Autonomy is by Elster recognized as a precondition for rational behavior.[666]

Developmental Psychology

In order to facilitate further research, and in order to make up for a possible bias in my selection of psychologists, a short note on developmental psychology can thus be made. Loevinger, in her classical work on *Ego Development* writes that: "Before psychology became separated from philosophy our topic was harbored chiefly within ethics, where it appeared as moral development. There were two great schools of ethical thought in the nineteenth century, the intuitionists and the utilitarians."[667] Loevingers' central claim is that many diverse aspects of thought, interpersonal relations, impulse control, and character grow at once, in some more or less *coherent* way.

Kohlberg elaborates this view, and similar to the Greeks, he explicitly links moral stages and cognitive development. A precondition for his higher levels of psychological development is proper acquaintance with the universal principles of ethics.[668] Loevinger also writes that stage and type theories of character development have a long lineage, going back at least as far as Plato's *Republic*, which I did discuss. For a long while they fell into disrepute among psychologists, in part because, so many people seemed to lie between stages. However, recently there have again been a number of such development theories proposed, partly because the strictly behaviorist psychometric alternatives have failed to capture something of the dynamics of character development, she says.[669] *Clearly, the two instruments applied in the current research, are open to this critique*.

An examination of these development theories is therefore useful, and indicates directions for further research. In Piaget's scheme of things, the central importance of consciousness development is highlighted. He elaborates the role of possibility and necessity in cognitive development, and stresses the importance of *equilibrium* in cognitive systems. "Like organisms, the cognitive systems are actually both open in the sense that they undergo exchanges with the milieu and closed insofar as they undergo 'cycles'."[670] He refers to Prigogine's work, on stationary but dynamic states, to exemplify his understanding. The reader should here refer back to my discussion of *reflective and intuitive equilibrium* in section 4.4. The importance of cognition is underscored by the fact that, when specific developmental lines are studied – such as moral development and self development, it has often been found that cognitive development is necessary for these other developments.[671] However, Piaget and Kohlberg, do not move beyond the individual ego and logical-mathematical competence.[672] With Miller and Cook-Greuter, who have refined and extended Loevinger's research, the situation is different. They present theories of human development

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[665] This is the case in Greek and Buddhist philosophy. See also Westcott, 1968, and Bastick, 1982.
[666] Westcott, 1968, p. 137, 143. Elster, 1983, p. 20. See also Diblee, 1929, p. 84-99.
[667] Loevinger, 1976, p. 262. See also Karterud & Monsen, 1997, p. 113, 123.
[668] Kohlberg, 1976, and 1981.
[669] Loevinger, 1998, p. 49. See also the same author, 1987, p. 239-242.
[670] Piaget, 1977, p. 4. See Piaget, 1987, p. 32, on geometric intuition. See Prigogine, 1977, 1984, 1997.
[671] Wilber, 2000, p. 20-21. See also Karterud & Monsen, 1997, p. 113, 123.
[672] Piaget, 1977, p. 170-177. True formal thought is defined as construction of all possible combinations of relations, systematic isolation of variables, and deductive hypothesis-testing.

that offer a comprehensive view of our potential as participants in an integrated, unified field of *transpersonal* consciousness, *resembling the previously discussed second level of intuition*.[673]

Kegan, a student of Kohlberg, also has worked on these *transpersonal* stages of human development. His research on the evolving self is deeply inspired by Piaget and Erikson.[674] Kegan proposes an interesting postmodern, fifth order of consciousness, characterized by trans-ideological, trans-system, and trans-complex properties. In addition, this elevated order of psychological development is characterized by inter-individuation and interpenetration of selves.[675] However, he doubts that the majority are ready for the fifth order of consciousness. "Those who understandably champion its merits, and who disdain the limits of modernism, might consider that before people can question the assumptions of wholeness, completeness, and the priority of the self, they must first construct a whole, complete, and prior self."[676] Kegan's optimistic endnote though, is that we will see more adults working on a qualitatively different order of consciousness than did adults one hundred years ago because we live twenty or more years longer than we used to.

A critical question here is whether the *transpersonal* stages themselves, can be conceived as higher levels of cognitive development. That issue is hotly debated and will not be settled in the near future. However, we may take note of the long list of modern Western pioneers who have studied these higher realms. It includes among others; Fichte, Schelling, Hegel, Schopenhauer, Bergson, Nietsche, Heidegger, Jung, Jaspers, Husserl, Fechner, James, Emerson, Steiner, Solovyov, Royce, Besant, Myers, Berdyaev, Huxley, Fromm, Habermas, Assagioli, Jaspers, Baldwin, and Maslow.[677] When the classical psychological development theories are outlined, and compared with a wide range of acknowledged philosophical development theories, the former are found to cluster around a fairly narrow band. The interesting point, however, is that in these contributions Wilber discovers and describes *a shared basic structure in psychological development*.[678]

He argues that for the last three thousand years or so, perennial philosophers have been in nearly unanimous agreement as to the basic developmental levels. Typically, they relate to matter, body, mind, soul and spirit.[679] In Wilber's view, each of these basic levels transcends and includes its predecessors, ending with the *non-dual* state of mind, that is, *the previously suggested third level of intuition*. Some of its key features are discussed and researched in this current work. "These basic levels are *holons* of consciousness. A *holon* is a whole that is part of other wholes. For example, a whole atom is part of a whole molecule, a whole molecule is part of a whole cell, a whole cell is part of a whole organism, and so on."[680] Wilber's view is consonant with the work of Laszlo, Beck & Cowan, Greek philosophy and basic Buddhist teachings.[681] The question, then, which might facilitate further research, is this: *According to*

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[673] Miller & Cook-Greuter, 1994, p. xi.
[674] Kegan, 1982, preface. See also Karterud & Monsen, 1997.
[675] Kegan, 1994. For an overview of his developmental stages, see p. 315.
[676] Ibid. p. 351.
[677] Wilber, 2000, p. 24, 44, 78, 82. As for the cognitive line itself, it has been carried forward by Commons, Richards, Fischer, Pascual-Leone, Sternberg, Koplowitz, Powell, Benack, Arlin, Sinnott.
[678] Ibid. p. 197-217. Wilber discusses and pictures the work of classical contributors such as Piaget, Erikson, Kohlberg, Loevinger, Baldwin, and Fischer, as well as numerous others along relevant dimensions of psychological development.
[679] Ibid. p. 6.
[680] Ibid. p. 7.
[681] Laszlo, 2003, p. 83, 121, 133. Beck & Cowan, 1996, p. 286. They apply and elaborate the notion *holon* and

what principles, are these hypothesized higher levels of intuition and cognitive development transmitted?

Intuition and Holographic Models

In order to build on, and possibly explain some of the key findings of the current research I will conclude by suggesting a tentative model of *how* intuition may work, that future research might investigate. At the outskirts of developmental psychology and research on cognition and consciousness, we find the subjects of holistic realism, reflexive monism, and the principle of holography, discussed earlier on.[682] Gabor won the Nobel Prize for his discovery of the mathematics of holography.[683] In our context, then, it is of special relevance to note that the cells in the visual cortex apparently respond as if they were performing according to the principle of holography. Pribram *equates intuition with these principles* and writes: "It is no great leap to suggest that a holographic-like organization characterizes the network of cortical cells. The evidence abounds, and readily accounts for the capability of cortex to construct perceptual images and for the distributed nature of the brain's memory mechanism."[684] Penrose locates Pribram's work in a modern context. "A strong early proponent of global (essentially quantum) large-scale coherent 'hologram' activity in the brain was Karl Pribram."[685] In advocating large scale, quantum coherent action in brain function, Penrose is embracing the principle of quantum holography in his search for the missing science of consciousness.[686] Bradley, drawing on Piaget and Gabor's work, provides an excellent discussion, of how non-deterministic quantum holographic processes may operate in both individual and social information processing.[687]

In proceeding from the potential domain of energy and momentum to that of *space* and *time*, one is actualizing or unfolding the potential stored in the implicate order. When one proceeds in the reverse direction one enfolds, by virtue of the holographic Gabor function, space and time into the frequency domain, Pribram writes.[688] Holography thus preserves space and time as *a priori* Forms of intuition, as Kant proposed. In addition, it is a peculiar fact that any illuminated slice of the photographic film used in a holographic image, still contains the whole object. The whole is enfolded in every single part, this also being *a key property of intuition*. The holographic model thus potentially elucidates our reading of Plato's exposition of intuition, where the *harmonic* and *intrinsic* relation of original to image figures prominently.[689] The more difficult notions addressed were the *immediacy* and *singularity* of an intuition. How can *non-inferential* knowledge arise? Kant tries to convey that an intuition is a representation or mental picture of the undivided whole, which is immediately present in

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MEMES in their spiral dynamics.

[682] Velmans, 2000, p. 233, Resnik & Orlandi, 2003, p. 305, Laszlo, 2003, p. 83-133.

[683] Gabor, 1946, p. 431-437. See also Gabor, 1948, p. 777-778.

[684] Pribram, in Gunter, 1987, p. 168, 171. See also Pribram, 1971, 1991, 1998, and Talbot, 1991.

[685] Penrose, 1994, p. 348, 368.

[686] Feynman, 1995, p. 36, 117. Non-locality and wave-particle duality are at the very heart of quantum physics. "When the frequency is low, the field aspect of the phenomenon is more evident. As the frequency increases, the particle aspects of the phenomenon become evident. Quantum mechanics unifies the idea of the field and its waves, and the particle, all into one." It thus *transcends dualism*.

[687] Bradley, 1998, p. 471-504.

[688] Pribram, in Gunter, 1987, p. 170. Bohm, 1981, p. 144, 150.

[689] Cornford, 1955, p. 217-218. "Will you also take the proportion in which the visible world has been divided as corresponding to degrees of reality and truth, so that the likeness shall stand to the original in the same ratio as the sphere of appearances and belief to the sphere of knowledge."

every part of the whole. As such, these immediate and singular representations, precedes any *part*, with representations *in it*, not under it. Again, this resonates well with holography.

A fourth point is the subtle *non-local* and *non-dual* aspects of intuition. *If* our intuitive perception is embedded in and intrinsic to a global *field*, just like a particle of light is to its field, or a cell to its body, holography has the potential to explain *how* this works. Researchers at the HeartMath Research Center have recently designed experiments where they discovered the surprising EEG and ECG results that both the brain and the heart receive intuitive information *before* exposure to stimuli, *demonstrating foresight* at the neural level. They also discuss a holographic explanation.[690] The ancient doctrine of 'as above so below' may thus be transformed and interpreted as a holographic relationship between *a priori* and *a posteriori*, *episteme* and *doxa*.[691]

Finally, the huge storage capacity of a hologram makes it more plausible that our mind has access to all our accumulated personal experience and knowledge, as well as the entire ancestral memory, as envisioned for example by Jung. Under this explanation intuition is a *perception*, distinct from judgment, which is also in agreement with Jung. This was not taken into full account in the design of my research instrument. However, a picture tells more than thousand words, 'for those who have eyes to see', the saying goes. Holography transmits the picture of the whole, due to its application of *coherent* laser light. The access key then, to these deeper layers of the psyche, is perhaps the *coherent* or mature intuitive state of mind.[692] Reflective *and* intuitive *equilibrium* may thus be a prerequisite, in order to avoid automatic, biased application of intuitive or analytical heuristics.

In summarizing, the suggestion from the preceding lines of investigation is that further research on intuition may benefit from at least two other sources of knowledge. First, developmental psychology appears to provide us with perspectives that might explain why certain types of cognitive development accentuate. Specifically, research can be designed in such a way that a reliable and valid personal development test is included, serving as means for measuring key developmental variables. The Washington University Sentence Completion Test may be one research option.[693] Secondly, holography and related issues may usefully inform theory and research on intuition. Specifically, EEG and ECG measures in tandem with multiple measures of intuitive perception could be instrumental. At Princeton University, there is the Engineering Anomalies Research Laboratory (PEAR), directed by Bob Jahn and Brenda Dunne.[694] They work creatively and in an *interdisciplinary* way on human consciousness and intuition. It is a likely future source for new ideas and inspiration on intuition research.

The more challenging part is to develop a test that can discriminate between the suggested first, second and third levels of intuition respectively. Admittedly, in this I have not conducted any empirical tests. *Clearly, the two decision situations applied in the current research are in this sense, not exhaustive*. However, in section 3.4 I discussed the particularly promising research of Hammond et al. where they focus in on how expert highway engineers apply

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[690] McCraty, Atkinson & Bradley, 2004, p. 2. EEG = electroencephalogram, ECG = electrocardiogram.
[691] Penrose, 1994, p. 368. Laszlo, 2003. See also Henden, 1998, p. 41-57.
[692] Govinda, 1969, p. 74. The intuitive state of mind "represents the stabilizing and central point of balance, upholding the *coherence* of its contents, by being the center of reference."
[693] Loevinger, 1998, p. 103.
[694] Davis-Floyd & Arvidson, 1997, p. 121. Jahn & Dunne, 1987.

intuition and analysis in their *visual* fieldwork.[695] In the final analysis, it may not be easy to design research and instruments to measure the suggested second and third level, although a *stratified sample* might here be useful. In other words, we may as Bergson did, call for a blend of paradigms, not only in theory, but also through simultaneous application of intuitive and analytical *methods*, discussed in this research.

I end with a poem by the eminent mathematician and geometer R. Buckminster Fuller on intuition, which capture something of the further depth of this construct.

Intuition

Key to humanity's scientific discoveries,
Technical inventions,
Design conceptioning
And production realizations
Has been a phenomenon
Transcendental to humanity's
Self-disciplined,
Objective concentrations of thought
And deliberate acts -
A phenomenon transcendental to humanity's
Consciously disciplined inventive capabilities.

That key is the first and utterly unpremeditated event
In all discovery, invention and art.
It is humanity's intuitive awareness
Of having come unwittingly upon
An heretofore unknown truth,
A lucidly conceptual,
Sublimely harmonic,
Regenerative relationship
Of a priori universe -
An eternal principle -
And then moments later
A second intuitive awareness
Regarding what the conceiving individual human
Must do at once,
To capture the awareness of
And secure the usefulness of
That eternally reliable generalized principle
For all humanity,
For now and henceforth.[696]

[695] Hammond et al. p. 172.
[696] Buckminster Fuller, 1973, p. 55-56. See also the same author, 1975.

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Appendix A Interview-guide

The opening question in the interview is:

Would you please elaborate on two recent SDM-situations that you have thorough experience with, and in-depth knowledge of. One should be characterized by exploration, that is search for new possibilities, experimentation with completely new alternatives & technology, variation, risk taking, innovation. In short you are to have ***no previous experience*** *with such a situation. The other situation is to be characterized by exploitation of old certainties, refinement, improvement & increased efficiency of existing production & technology* ***that you are familiar with****. Can you please focus in on how you arrived at* ***your specific choice*** *of strategy, that is, on your* ***perception and judgment****?*

The respondent is encouraged to describe in detail, the context, the development and maturation of the decision, as well as any detail that may throw light on how and why he/she perceived, judged, and decided the way he did. If he hit the wall, when struggling with the decision, it is of interest to understand what kept him from proceeding, what enabled him to cross the hurdle, that is, the emphasis and importance of intuition and analysis.

1 Not emphasized 2 Little emphasized 3 Somewhat emphasized 4 Emphasized
5 Quite emphasized 6 Considerably emphasized 7 Heavily emphasiszed

A The described **explorative** SDM situation in brief (**A**);

B The described **exploitative** SDM situation in brief (**B**);

To what degree did you emphasize; (In the interviewing the sequencing of the items are mixed according to a fixed pattern; A-K)

Analytical Thinking

1 A ***controlled*** study and break down of explicit data, using i.e. quantitative models? H
A Not emphasized 1 2 3 4 5 6 7 Heavily emphasized
B Not emphasized 1 2 3 4 5 6 7 Heavily emphasized

2 ***Evaluation of alternatives***, in terms of their consequences for preferences? J
A Not emphasized 1 2 3 4 5 6 7 Heavily emphasized
B Not emphasized 1 2 3 4 5 6 7 Heavily emphasized

3 ***Dividing*** the whole situation into sub-areas, dissecting & scrutinizing them? E
A Not emphasized 1 2 3 4 5 6 7 Heavily emphasized
B Not emphasized 1 2 3 4 5 6 7 Heavily emphasized

4 ***Analysis*** of facts, figures, reports, data & evidence? C
A Not emphasized 1 2 3 4 5 6 7 Heavily emphasized
B Not emphasized 1 2 3 4 5 6 7 Heavily emphasized

Intuitive Thinking

5 Correct ***timing***? (Knowing when to take the right step or action in e.g. the marketplace.) A
A Not emphasized 1 2 3 4 5 6 7 Heavily emphasized
B Not emphasized 1 2 3 4 5 6 7 Heavily emphasized

6 Perception of ***cycles***? (Foreseing emerging trends, patterns and recurring events.) F
A Not emphasized 1 2 3 4 5 6 7 Heavily emphasized
B Not emphasized 1 2 3 4 5 6 7 Heavily emphasized

7 Perception of ***the larger picture***? (A holistic view and apprehension of the sit.) B
A Not emphasized 1 2 3 4 5 6 7 Heavily emphasized
B Not emphasized 1 2 3 4 5 6 7 Heavily emphasized

8 ***Synthesis***? (The ability to perceive many factors and variables as a coherent whole.) D
A Not emphasized 1 2 3 4 5 6 7 Heavily emphasized
B Not emphasized 1 2 3 4 5 6 7 Heavily emphasized

9 ***Gut feeling*** rooted in the sum total of your previous experience? I
A Not emphasized 1 2 3 4 5 6 7 Heavily emphasized
B Not emphasized 1 2 3 4 5 6 7 Heavily emphasized

10 Perception of ***possibilities***, and the innate idea? G
A Not emphasized 1 2 3 4 5 6 7 Heavily emphasized
B Not emphasized 1 2 3 4 5 6 7 Heavily emphasized

11 ***Intuition***? K
A Not emphasized 1 2 3 4 5 6 7 Heavily emphasized
B Not emphasized 1 2 3 4 5 6 7 Heavily emphasized

12 How would you define **intuition***?*

A

B

C

13 What are the pros and cons of **intuition** *and* **analysis** *in strategic thinking and decision-making?*

Analysis:

Intuition:

14 The respondent is asked to rank the items, using cards on the table

Rank	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***
A											
B											

15 What is your normal emphasis on analytical and intuitive thinking in SDM?
Analysis: Not emphasized 1 2 3 4 5 6 7 Heavily emphasized
Intuition: Not emphasized 1 2 3 4 5 6 7 Heavily emphasized

The Quality of the Thinking and Decision Making

16 To what degree would you say it was good strategic thinking?
A Little degree 1 2 3 4 5 6 7 High degree
B *Little degree 1 2 3 4 5 6 7 High degree*

17 To what degree would you say the decision itself turned out to be a good one?
A Little degree 1 2 3 4 5 6 7 High degree
B *Little degree 1 2 3 4 5 6 7 High degree*

Please list the criteria you have in mind.

18 To what degree would you say your thinking and decision making was **efficient***?*
A Little degree 1 2 3 4 5 6 7 High degree
B *Little degree 1 2 3 4 5 6 7 High degree*

19 To what degree would you say you were **certain** *when making the decision?*
A Little degree 1 2 3 4 5 6 7 High degree
B *Little degree 1 2 3 4 5 6 7 High degree*

20 Which of the **logics** *was more emphasized?*
Logic of appropriateness*, that is, the decision was seen as appropriate to, and matched the situation in which you were. Or* Logic of consequence*, that is, the decision was a result of evaluation of alternatives, in terms of their consequences for preferences.*

A *Logic of appropriateness % …….. Logic of consequence % ……*
B *Logic of appropriateness % …….. Logic of consequence % ……*

Demographical Data

21 How many years of experience do you have in this industry? …. 22 Industry type?
23 How many years of experience do you have in this company? …….
24 How many of these years have you worked with strategy? …… 25 Your age …..
26 How many other industries have you experience from (more than one year)? …....
27 How many employees are you all together? …… 28 Sex ……..
29 What is your highest level of education: Undergrad. ..… Grad. ..…. Ph.d. …...
30 What subjects: Business/Economics …… Engineering …… other(s) ……
31 Current position and responsibility: ……..……..

Appendix B Sample Presentation

Company	Industry	Employees	Respondents
Aker Offshore	Offshore	2600	11
Widerøe Flyselskap	Aviation	1250	10
BBS	Banking/IT	800	10
BI	Private University	800	8
Volvo	Trucks & Machines	130	6
Telenor	Telecom	20000	5
Aas Bryggeri	Brewery	130	5
Norgesgruppen	Retail	12000	4
Leif Høegh	Shipping	2000	4
Teknologisk Institutt	Consulting	240	4
Andersen Consulting	Consulting	70	3
Nordea	Banking	38000	3
Radisson SAS	Hotel/Travel	230	3
Byggmakker	Carpenter	80	3
COOP	Retail	1600	3
Posten Norge	Postal Services	25000	2
TV2	TV/Media	500	2
Herstad Eiendom	Lawyer	3	2
Ovtun Eiendom	Real Estate	8	2
Wilhelmsen	Shipping	12000	1
Norsk Stål	Steel Production	300	1
Veritas	Certification	4500	1
Meditalklinikken	Health Services	3	1
BNP	Banking	90	1
Jan Lorentzen	Investment	1	1
Lunde Arkitekter	Architect	7	1
Brøvigs Rederi	Offshore	50	1
Hewlett Packard	IT	500	1
Antares Gruppen	IT	45	1
Ergogroup	IT	2300	1
Norrøna Sport	Retail	35	1
Statoil	Oil	15000	1
A. F. Klaveness & CO.	Shipping	10	1
Torvald Klaveness Group	Shipping	1140	1
34 Companies	**22 Industries**		**N = 105**

Data from Dun & Bradstreet: 2001

Sectors	Nr. of Firms	Sales in kr.	Wages in kr.	Equity in kr.	Tot. Capital kr.	Employees
Agriculture & Fishing	2 413	26 569 630	4 490 645	13 312 984	43 770 590	11 521
Oil and mining	853	351 341 245	20 679 928	127 279 263	474 589 813	30 180
Industry	11 767	533 129 849	89 286 615	199 890 397	519 183 636	187 036
Electricity, Gas & Water	497	39 463 016	3 698 710	82 373 800	173 209 702	8 619
Construction	10 562	125 267 876	35 815 468	17 942 529	75 741 852	68 116
Wholesale & Retail	33 095	703 239 916	75 421 671	90 923 792	320 279 834	190 825
Accomod. & Restaurant	4 441	31 019 450	11 128 012	3 938 314	20 881 521	35 740
Transport	7 814	256 068 124	38 540 470	155 956 939	506 375 982	82 787
Real Estate & Business	55 536	525 714 228	96 378 018	814 835 540	3 054 492 719	228 532
Others	7 971	60 491 906	17 190 090	20 886 922	58 100 475	49 485
Total	**134 951**	**2 652 311 214**	**392 631 935**	**1 527 341 417**	**5 246 631 611**	**892 852**