

THE APPEARANCE OF UNCONSCIOUS CHOICE: INTUITION IN RELATION TO CREATIVE PROCESS

By

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PROJECT
SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF

Master of Arts in Liberal Studies

In the Department
Of
Graduate Liberal Studies

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Simon Fraser University
March 2004

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Abstract

The role of intuition has often been valued in artistic and scientific process, and the moment of creative insight is central to many discoveries. The early 20th century saw a great deal of interest in intuition in art practice, and a variety of approaches, many of which reflected Freudian notions of the mind. In the latter part of the 20th century, models of consciousness, and of unconsciousness or nonconsciousness, and therefore also of intuition, based on cognitive science provide another way of examining intuition and one that may be of use to artists. This thesis, which is an independent companion piece to a series of drawings, is an endeavour to present a synthesis of current ideas of intuition in cognitive science and psychology as they relate to a personal art practice.

Dedication

To my boon companions

Acknowledgements

A graduating project is as much a collective as a singular act, and to that end thanks is due to many people. Stephen Duguid, my Senior Supervisor, made much of this possible through his openness to possibility. Hannah Gay, as second Supervisor, provided me with paths to explore and helped clarify Archimedes' insight. Ashok Mathur, as an External Examiner, gave the work a reading that was both exacting and generous. My friends and fellow students supplied inspiration and support. A special thanks is due to Meg who helped me see Plato in a new light. Finally, I would like to acknowledge the support that my partner Rory has given me through out this project.

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Preface

The form of this paper, a creative examination, borrows from the structure of Plato's *Symposium* to suggest a connection between disparate groups, separated in time, culture and gender representation, as they discuss contemporary attitudes to the life of the mind and the heart.

The Book Club has a single narrator, Nancy, who quotes other characters as if in their own voices. To aid the reader in distinguishing speakers, Nancy's dialogue contains no conversational quotation marks, unless she is quoting herself, in which case single rather than double quotation marks are employed. All other characters' speeches, even though quoted by Nancy, contain quotation marks.

The initial conversation between Nancy and her companion Jag closely follows the formal and somewhat stilted tone of Jowett's translation of *Symposium* in order to convey a sense of the essentially removed nature of a rendition.

The names of the characters come from colleagues and friends of the author, and function to personalize the work. The views of the characters are not necessarily an accurate representation of the views of real people.

INTRODUCTION TO THE BOOK CLUB

The Book Club, modeled on Plato's *Symposium*, presents a conversation of contemporaries as they engage in a shared topic that brings together arts and sciences, reason and nonreason, humour and serious purpose. On one level, like the original, it purports to be a specific conversation while on another, it serves as an overview of current thought and feeling on the subject discussed. Plato's characters concerned themselves with the nature of love. In *The Book Club*, the subject is intuition, in particular, creative intuition, and its relationship to a specific art practice.¹

Intuition, like Plato's description of love, possesses mental, emotional and physical states and certainly neither is free of claims of the spiritual as well. Like love, intuition eludes a tight definition, being both ephemeral and enduring. Both love and intuition exist in popular conceptions and folk tales that often contrast strongly with scientific research. As such, intuition lends itself to discussion and dispute.

Like *Symposium*, *The Book Club* is a dialogue, or, more accurately, both are a series of monologues. Each speaker represents some aspect of contemporary ideas on intuition, the

same way that *Symposium's* spokesmen exemplified beliefs about love in classical Greece. While each participant is based in part on a real person, *The Book Club* mirrors its predecessor in its focus on philosophical positions rather than character development. Both contain some of the conversational confusion and give and take of engaging discourse, a discourse that is one of the hallmarks of the Graduate Liberal Studies program, with its focus on discourse and debate.

The structure of *Symposium* is a complex layering of narrations, a kind of thoughtful gossip, in which the discussion is reported both third hand and in a particular speaker's voice. Apollodorus is recounting to his companion what he heard from Artistodemus, so we are alerted immediately to the fact that this is, at best, a memory of a memory. This structure lends itself to academic writing based on research, which also can exist as a very high level of intellectual gossip. The removed chronicler echoes the academic neutral voice, and at the same time suggests modern concerns with reliable narrators have a long lineage. Thus, the following conversation is set up as the report of a report of a discussion. This in itself could provide reason enough to follow the somewhat mannered organization of the original, but, in addition, the bedrock of verbal strata provides *The Book Club's* speakers a means of expressing a range of diverse opinions and the resultant competing voices hint at current conceptions of the layers within the conscious and unconscious or nonconscious mind. In some cases the structure is followed closely, and situations and phrases are appropriated and modified; in this way, the structure of *The Book Club* reflects the art that S describes in her speech.

Many of the speeches, and most of the characters, in *Symposium* find a reflection in this piece. Barbara is the Phaedrus character, who starts the conversation through claiming a long and somewhat mystical role for intuition in artistic and scientific endeavours, using, as

did Phaedrus, popular literature and myth. Rory is Pausanias, making critical distinctions and refinements on both Barbara's claims and contemporary ideas. Eryximachus the doctor becomes Ken. Where the former provided contemporary medical theories of love, the latter explains intuition through cognitive science and evolutionary biology. Aristophanes takes form in the character of S. This section of the work, which serves in part as an artist's statement, emulates the search for unity in Aristophanes' tale, and like the original, contains a gentle appraisal of idealistic views of creative intuition. Meg stands in for Agathon, and claims a role for intuition overlooked by the others. Roger, takes the place of Socrates and speaks of psychological and intellectual mysteries and argues for a new conception of intuition. The conversation, like most, is not so much concluded as interrupted. The interrupting boisterous revelers of *Symposium* become the uninterested progeny of *The Book Club* members.

There are notable places in which *The Book Club* differs from *Symposium*. Women are present and central in the discourse; they are not dancing girls who provide entertainment before the serious work of manly discussion. The classical dialectic structure of *Symposium*, with its paired oppositions, moving from the physical to the ideal, is followed in some cases but not in all, and the movement of argument is not to any ascendant conclusion, but rather to yet another viewpoint. There is no truly Socratic figure in *The Book Club* in the sense of a central and key individual bent on discovering the real truth through asking a series of leading questions. In this the work, although not the characters, suggests postmodern, rather than classical, attitudes about the relative nature of truth.

THE BOOK CLUB

Persons of the Dialogue

Nancy who repeats to Jag, her companion, the dialogue which she had heard from Catherine, and had already once narrated to Lorena

Barbara

Rory

Ken

S

Meg

Roger

Daniel and friends

Well, Jag, if you really want to know about that, you've come to the right place.² The day before yesterday, I was coming from my house to catch the Sky Train downtown, and a friend of mine, Lorena, recognizing me from behind, called out: "Hey, Nancy, wait!" So I stopped; and then she said, "This is amazing. I had a feeling I would see you today. My

sixth sense must be working. I wanted to ask you about what happened at S's book club meeting when they talked about intuition."

You must have someone else in mind, Lorena, if you think I have time for a book club, I replied.

"Really?" Lorena replied, "I thought you were there."

No way, I said. There was a time when I had time to read, but now I'm like you—too busy being a graduate student.

"Very funny."

I smiled and continued, I do know about that meeting, though. It was a while ago.

"Really. I had the idea it wasn't that long ago."

It was when Meg had her play presented at the university, I replied, on the day after her debut as a playwright.

"That long ago? And so how did you know about it— did Roger tell you?"

No, I responded, Catherine told me. You know her— she is that slender woman who always wears Birkenstocks and looks good anyway. She had been at the book club meeting; and I think she had a bit of a thing for Roger. As well, I did ask Roger about his version of what when on, and he confirmed the story, more or less.

"Then," said Lorena, "tell me; I'll walk with you to the station as I'm heading downtown."

And so we walked and talked about that discussion on intuition; and so, like I said, I can tell you what happened at that book club meeting. Well, as you know, S was working on her graduating project and her subject was intuition. She enlisted her book club to help her,

and the discussion of intuition happened like this— but maybe I need to begin at the beginning, and tell you what Catherine said.

She said she met Roger coming out of the wine store, and she asked him where he was going.

“To a book club meeting at S’s,” he replied, “who asked me to come to Meg’s play, but I couldn’t, so I promised I would come today instead; and so I’ve got a really good bottle of wine to help the discussion. Why don’t you come along? We could use an unbiased person at this book club, and since you haven’t read any of the books, you can be the neutral observer.”

“Are you sure that’s all right? If you are, I’ll come along.”

“Come on then, and we’ll say I had a flash of insight in inviting you.”

They were almost there, when Roger stopped by the window of a second hand book store and told Catherine to go on ahead, and that he would catch up. When she reached S’s house, the front door was open, and a funny thing happened, as if her visit had been anticipated. She walked in, calling out hello, and found everyone on the porch, as the book club was about to begin.

“Oh, Catherine,” said S, as soon as she saw her, “you are just in time to join us; no excuses; if you are here just to drop something off, stay, because I kept thinking yesterday that you were meant to be here but you weren’t answering your phone.”

I had to explain that Roger had invited me, and that he had said he would follow me right away.

“Perfect,” said S, “but where is Roger?”

“He was just behind me, so he may still be at the bookstore.”

“Sounds like Roger,” said S. “I just knew he would be late. I’ll phone the bookstore. Meanwhile, Catherine, there’s room beside Ken.”

S phoned the bookstore on her cell phone. The bookstore owner said Roger was examining a book and seemed lost in thought. When S asked him to tell Roger to hurry, the owner said he had seen Roger do this before, and that he would get him to come along soon.

Turning to us, her guests, S said, “We can start eating without waiting for him. Help yourselves.” So we started—those book club members always brought great food—and we had almost finished when Roger entered with his wine and a book on perception.

Roger was about to open his bottle of wine, when Rory said, “Maybe we should delay this and get to the discussion of the books. I feel the effect of yesterday’s celebration of Meg’s play, and need time to recover; and I suspect most of you are in a similar state, for you were at the party yesterday.”

“I entirely agree,” said S, “that we should, by all means, practice moderation, for I myself was one of those who had one too many yesterday.”

“I think that you are right,” said Ken, “what about you, Meg?”

“I am not up to it,” said Meg. “One cider is enough for me.”

“It is a relief,” said Ken, “for the delicate heads like myself, and the others who never imbibe, when the stronger ones are not in a drinking mood. I do not include Roger, who can drink or desist, and will not mind, whatever we do. As none of us is drinking much, I can be excused for mentioning the fact that as a doctor, I know the effects of

drinking, and as a book club member, I know the effects of drinking too much before we begin a discussion.

“Well then, we will follow the doctor’s orders,” said Meg.

“Then I also order that we turn off the CD player and begin our discussion of creative intuition. Barbara was just telling me how she thinks rational consciousness gets more respect than intuition, and that she wants to redress that imbalance. We were chatting about the history of the nonconscious— by the way, I prefer to call it that, as the word unconscious has too much Freudian baggage, and the word subconscious implies a layer we cannot prove, although of course we use those words interchangeably in casual conversation.³ The same goes for insight, which so many authors use as a synonym for intuition that we can use either term. Anyway, I think we agree intuition is a part of nonconscious mental processing— and that although it has been sorely neglected and even to some extent denied in the twentieth century, the current model now suggests the nonconscious forms the larger part of our mental life.⁴ I know there will be no lack of conversation, as we each agreed to read at least two of the books that S suggested, or parts of the books, I suspect in some cases. Did anyone else read *Archimedes Bathhtub* by Perkins? He claims one way to achieve or promote insight is to range widely, and as we have done that in our reading, I predict that we may encounter insight in our discussion.⁵ Barbara wants to start— and I want to remind you that we agreed in our last meeting to not interrupt anyone this time, for a change.”

Catherine did not remember everything everybody said, and I don’t remember everything she said; but I will tell you what I thought most memorable, and the general idea of what people discussed.

Barbara began by affirming that intuition is central to artistic and scientific discovery and process. Both scientists and artists work with models of a process that begins with problem definition, moves to research, pauses with incubation, explodes with insight and finds resolution.⁶ “I think one of the first authors to really tackle the similarity of artistic and scientific insight was Koestler, in *The Act of Creation*. He argues that science and art share many similarities in their creative processes, and that scientists value their intuition as much as do artists.⁷ Certainly the early 20th century saw a great deal of interest in intuition in art practice, and a variety of approaches, many of which reflected Freudian notions of the unconscious mind, although, interestingly enough, Freud himself was not fond of the artistic work he inspired and appreciated classical art more.⁸ The French Dadaists and Surrealists considered intuition as a central part of their artistic process. Breton, De Chirico and other Surrealists valued revelation that came from— well illogic is not quite the right word, alogic? surlogic?— and prized the unconscious or subconscious over the conscious. Dubuffet and the members of Art Brut, as well as the Dadaists and Duchamp, sought to create art based in non-intellectual knowing, as did Joseph Cornell in his constructions of evocative juxtapositions.⁹ We all know stories of artists having flashes of inspiration, so I think it is more relevant to talk about the role of intuition in scientific discovery. I found so many stories of scientific intuition in the books I read for this meeting. One of the earliest is that of Archimedes, who, while trying to determine the amount of gold in a crown, steps into his bath and has a Eureka! moment concerning the relation of weight to displacement of water.¹⁰

“Actually Barbara,” said Ken, “the scientific principle is relative density and it has to do with the displacement of— ”

“That’s beside the point. Now, where was I? Right, Gutenberg. Gutenberg, although not strictly a scientist, bases the form of his printing press on a moment of insight

in which he connects the technology of the wine press with developments in the process of movable type faces.”¹¹

“I thought relatively little was known about Gutenberg,” said Rory. “What was that source?”

“No interrupting, remember? I’m not sure. I’ll look it up later. Newton gets hit by an apple and suddenly comprehends the nature of gravity. And how many of you read the story of Friedrich von Kekulé, the chemist who intuited the structure of the benzene ring through his dream about twisting, twining snakes? I found that story repeated in all three of the books I read.¹² Einstein also credited his unconscious intuitive processes with his scientific discoveries. The source for that, Rory, is *Fiction, Intuition and Creativity*.¹³ Here’s another example: the mathematician Henri Poincaré worked unsuccessfully on a problem and finally decided to go on a holiday and to forget about it. He was about to board a bus when he suddenly realized the solution to his problem. He said, just let me find the spot, he said “the moment when I put my foot on the step the idea came to me, without anything in my former thoughts seeming to have paved the way for it”. Poincaré had a similar experience later in life when the answer to another problem came to him suddenly as he walked along a beach.”

“Which book was that?” inquired Ken.

“The same book, page 73.¹⁴ Meyers in *Intuition*, said Andrew Wiles spent thirty years trying to solve Fermat’s theorem— ”

“What is Fermat’s theorem?” asked S.

“Oh, some big math problem— anyway, he worked and worked on it for years with no progress— and then he has his insight, he sees the whole solution, and feels intense

excitement. He talked about feeling that it was so beautiful and elegant. That aesthetic response really shows the connection of art and science in intuition.¹⁵

We think of scientific thought as rational, orderly, and step-by step but these examples show that intuition plays a crucial role in science. These discoveries are not rational and not based in the logic of words or numbers. They emerge suddenly, often as images, a kind of a waking dream. Again, that is an obvious connection to artistic process. Edward de Bono, in *Parallel Thinking*, tackles the idea of what he calls traditional “Socratic thinking’ and suggests it can cause problems, that its insistence on an objective truth might limit how you think and especially might limit creativity, especially if what you want is insight. I liked this part so much that I wrote it down. ‘Traditional thinking places the emphasis on judgment and the need to be right at every step. With creativity, you do not need to be right at every step so long as the final idea has value.’¹⁶

Intuition is a way to connect to greater things, to dissolve the constraints of the ego and to be open to the powers of the universe. I have one more quote, from Koestler, that intuitive thinkers possess “a craving to transcend the island boundaries of the individual, to enter into a symbiotic communion with a human being or some higher entity, real or imaginary, of which the self is felt to be a part.”¹⁷

“Barbara, “ said Meg, “I think Koestler was talking about weeping there, not intuition.”

“Well, if you would let me finish, I would explain what I meant. I think that statement is the essence of intuition. It is a moment of transcendence.”

“Before we transcend,” said Rory, “I think we need to look at the issue more closely, and distinguish what it is we are talking about when we talk about creative intuition. We

might be cautious to praise intuition in such an indiscriminate manner, and we need to define our terms. I shall try to amend this. 'Is creative intuition a particular kind of thinking, and if so, what are its characteristics? Can we determine that there is a creative intuition, as opposed to other kinds? Some of what I read suggests we might be wise to be a bit more skeptical about the nature of any intuition. I don't know who else read *The Intuitive Edge*, but I couldn't help noting Goldberg defines intuition as that which is accurate — and if it is wrong, or inaccurate, it is not intuition, just a bad guess.¹⁸ I would add that if intuition is incorrect, we forget it. In a definition of creative intuition, I think we need to do better than a bunch of hunches, only some of which turn out to be correct or valid.

And as to the claims for 'genius intuition'— Goldberg lists the same ones that Barbara mentioned, as well as Linus Pauling, Jean-Jacques Rousseau and Conrad Hilton.¹⁹ Yes, the hotel magnate, so the implication is that intuiting the nature of gravity and making business decisions are somehow equivalent, which I must say I rather doubt. These flashes of intuitive genius are just as suspect if they are to be considered unusual and singular, arising mysteriously in the mind. For example, I've marked it, let me find it, here it is, Chapter 12 in *The Nature of Insight*. Gruber points out that Galileo, whom I think we can safely consider as possessing some expert knowledge, wrote that the Archimedes' folk tale was just that. Based on his reading of Archimedes' writings, Galileo thought it was more likely a matter of scientific reasoning rather than any 'Aha!' insight. Archimedes had worked to resolve the problem of mass and displacement for some time before he stepped into his apocryphal tub.²⁰

He— Gruber, not Galileo— also makes a very detailed argument that Poincaré's sudden insight is taken out of context, as are Kekulé's and Einstein's. Poincaré, for example, originally had no place for intuition in any reasoning process, and his story came about— and

was developed— as he changed his views. So that story may not be evidence of an intuitive insight, but a story created to reflect his changed outlook. Even then, he postulated that intuitive insight only came about after a process of hard work and analysis. Still, I admit that both of these scientists gave weight to the importance of intuitive insight.²¹

So what is this creative insight or intuition? Intuition in its common meaning has no discrimination and can occur to anyone, and creative intuition is a subset of intuition in general, so right away I would challenge the genius quality, even for creative intuition, and say that to the extent it exists at all, it exists at every level of intellect. Intuition appears to be part of the normal process of problem solving. I know that in our last meeting we were divided between three approaches to creative intuition. One, insight does not exist, or is just thinking as usual— my stance I might add, but I was voted down. Two, insight has a supernatural quality, or the genius approach, which I think Barbara has already addressed. Three, insight is a particular kind of thinking of thinking or mental process.²² If we are to go with that last, can we agree to limit our discussion to creative intuition, for example, that moment of inspired insight where everything seems to fall into place? In what we've been reading, such a moment possesses these qualities: it consists of a realization of immediate knowing, without any memory of reasoning— all right, all right— without any direct reasoning, and that, in addition, it is sudden, spontaneous, unexpected, and emotionally satisfying.²³ Researchers disagree whether the Aha! moment is the necessary component of insight, or whether the essential nature of insight is a mental reframing of a problem, so we might consider either as necessary.²⁴ It is based on tacit, nonconscious, procedural knowledge rather than deliberate reasoning, knowledge we cannot consciously recall at will, but which seems to come to the surface during moments of, well, I want to say pattern recognition, although I know there is disagreement on this. Take, for example, that which

we are now doing, eating, drinking, and talking— these actions are not in themselves conscious actions, but they become conscious only as we notice them and give them conscious attention, and therefore weight and importance; in like manner not every intuition is apt or productive, only those that we choose to remember and to reify. I think we need to bear it mind that the function of this kind of intuition— scientific or artistic— is sudden and spontaneous only in the moment of realization, and does not occur without expertise in a field, the result of long hours and, I suggest, much rational thinking and problem solving before the moment of insight.²⁵

I did notice, by the way, an increase of scientific interest in intuition within the last decade, and many people are examining the phenomena through empirical testing. This approach contrasts notably with the majority of writing about intuition, most of which seems to suggest the promise of wealth, happiness or self realization through the development of intuition. I suspect this scientific interest follows the studies of consciousness that took place in the last decade, and consequently we have people staking out new territory. *The Nature of Insight* is a good overview, by the way, of some of the this work happening, and a good balance to Meyer's recent but more populist *Intuition*.”²⁶

This, or something like this, was Rory's contribution, and then there was some talk which Catherine did not remember; the next which she repeated was that of Ken.

Catherine said that S's turn was next but as she was eating, Ken took his turn first.

“Be careful, S, cautioned Ken, “that you don't try to talk while you eat, as you could start to hiccough. Back to our subject. I think that Rory made a good beginning but a lame ending, and clearly I need to rectify that. He was right to distinguish types of intuition, and to clarify our discussion, and even right to question intuition. I happen to have the answers

to some of those questions, and these answers are based not only on the texts for this book club discussion, but also on years of medical training and scientific reading.

First of all, we need to consider the nature of the mind. My admittedly quick review of some of the seminal texts of the last decade showed that most of the scientists and thinkers are in the materialist camp when it comes to the mind, that is, they regard any properties of the mind as arising from the physical nature of the brain. The dualist camp, those who think that mental and physical activity are separate, is so small as to be of no real consequence. The Churchills, Crick, Fodor, Edelman, Searle, Pinker, Dennett, even Penrose, who is a bit of a maverick with his notions of Platonic ideal forms, all base their ideas in biology, in chemistry, even in mathematics, in short, in science. It's true that Chalmers argued that thought and the physicality of the brain are separate, but his zombie argument is flawed and he more the mathematician than the biologist."²⁷

"Zombies?" queried Barbara.

"Read the book. Better yet, save time and read the debate between Searle and Chalmers in the New York Times Review of Books from the nineties.²⁸ I've got a file you can borrow. To go back to where I was before being interrupted—

"Sorry. Won't happen again."

"We need to think of the mind, and the mental activity of the mind, in scientific terms. The mind is the brain, and any mental activity is the result of physical activity within the brain, the outcome of neurochemicals and electrical impulses acting within cellular structures. Edelman, for example, uses the idea that we are born with certain neural pathways, and as we grow, neurochemical units and patterns develop, and these are altered by time, experience, disease, and in some cases, drugs. Some part of our neurochemical

processing is universal among all humans, and some is particular to each of us as individuals. This explains why intuition can occur in all humans, because it is a universal trait our species shares through genetic coding, and why some humans may be more intuitive, which could be a combination of genetic mutation and environmental influence.²⁹

I think the model of the computer, and this is not, of course, my idea, but common in the current discourse, serves us well in any discussion of the mind. Lewicki, a scientist working with nonconscious processing, says of his research that it demonstrates “that our mind works like a multi-tasking computer”, able to work in complex ways.³⁰ In its most basic form, our mind receives inputs, performs calculations, and produces outputs. Our mind is an information acquiring, processing, and generating machine. Consciousness is the outcome of one of those information processing functions, and the nonconscious is another, and intuition is just part of the working of the neural network that comes to our attention. We have determined that the nonconscious has the lion’s share of the work of the brain. The function of the nonconscious is in part to deal with procedural memory, what Rory referred to as our tacit knowledge, to take care of the business of going about our lives, so that we can pay attention to the things that matter. It is possible that we do this on an instinctual level, as when we know we are thirsty, and on a basic level, as we recognize that we are near a store, and on a sophisticated level, at which point we decide on the bottled water over the soft drink. Hogarth explains it very nicely.³¹ By dealing with most parts of our day in a nonconscious manner, we are able to free our conscious to attend to new stimuli in the environment. The information that is stored nonconsciously— and here I’ll simplify the process— is coded into patterns, and as new information is processed, patterns are compared and matched.³² A Canadian researcher, Donald Hebb, by the way, first suggested that idea, in 1949, and posited a model of how the brain makes associations and

he was particularly interested in insight.³³ Intuition results from the activation of certain patterns. Barbara, you suggested that intuition cannot be readily explained without reference to a mystical transcendence, implying that science falls short of a comprehensive explanation, so clearly you are a dualist. But in reality, intuition is computation, and any feeling of knowing is the result of computational activity. Intuition is not a thing in itself, but, like consciousness, simply the emergent property of biochemical function, in the same way that sneezing is an emergent property of ingesting an irritant.³⁴

Why do we have intuition? Well, we need look no further than evolutionary biology. Clearly intuition has helped us be successful in survival and reproduction. The ability to process information nonconsciously permitted our ancestors to focus their conscious efforts on problems of survival and reproduction, with the end result that there were more of them around to pass on this ability. Those who, in addition, could exploit their surroundings by taking a new approach to a problem in nonconscious ways—having a creative intuition—had an evolutionary advantage. They could adapt more readily to environmental challenges and therefore had increased chances of passing on the ability to be intuitive.³⁵

In closing, I just want to say a thing or two about ‘women’s intuition’—because I want to head off any discussion of that from Meg or S. There have been numerous studies, and there is no evidence of an intuitive predisposition based solely on gender. Any superiority in nonverbal sensitivity to the environment that women may possess may be the consequence of social roles as much as any factor relating to the X chromosome. Women are taught they are more intuitive, hence they regard themselves as such, develop any abilities they have through practice, and their subordinate social position may compel them to be better at reading subtle clues.³⁶ Like Poincaré, they create an intuitive history as much as live

it. In any event, such intuition is more social than the insight of the creative moment we are discussing. On to you, S.”

S said she had taken the pulse of Ken’s conversation but would open another vein of discourse, and discuss intuition in another way, one which embodied intuition within a connection of science and art. She herself had experienced creative intuitions many times, and the genesis of her graduating project, and of the book club’s current discussion, was the result of one of those moments.

“Intuition can be a powerful experience, with potentially potent results, but is only part of the creative process and perhaps not even the most important part. Four years ago, at the end of my first term in the Graduate Liberal Studies program, I woke early one morning and experienced an intuitive vision of what I would be doing in my last term, and in the years following my graduation. This vision, a kind of waking dream, was very clear, and filled me with a sense of purpose and clarity, the kind of thing Poincaré would recognize. I think most of you know that I had entered the program at a time when, as an artist, I felt blocked, and I had hoped that through studying the liberal arts I would find something to say, and therefore, to have a reason to draw. The very set up of the first year, with its division of passion and reason, seemed to be a mirror of the balance I had sought between those two themes in my life. Now I would suggest the truer idea is the balance of intuition and reason, or of the nonconscious and the conscious. But enough about me— let’s talk about my work.

In my creative insight, for I realized later that is what it was, I saw that I would be creating drawings and leaving them to be found. I realized it made complete and perfect

sense, and I was certain that this was the right thing, and that my studies would lead me to this place and practice.

Unfortunately, although that insight filled me with joy, I did not have a clue about the content of the drawings, nor what they would be like, apart from small, and more importantly, I did not know how to explain what I needed to do. I could not logically communicate what I knew to myself, let alone to someone else, let alone give reasons why it might be valid. I imagined that the courses I took might play a role in giving me ideas for drawings, or lead me to the final work, and they have, but of course that could be because I created that meaning for them. My intuition very clearly showed what I would be doing, but what lay ahead was to determine why and how, and it is this part of the nature of intuition that I found to be lacking in the books we read for this discussion. Immediate knowing is one thing; the work of figuring out that knowing and putting it into practice is something else. And I do mean practice, because much of the work of realization is trying, repeating, struggling to find an ideal form. Without that work the intuition cannot be fully realized. Intuition and reason are like those ball people in *Symposium*, they long to be joined and need to be in order to bring an insight to fruition.³⁷

I felt compelled to trust that initial intuitive vision and to follow it, but at the same time I was curious and skeptical, and I realized that intuition, the very thing that started me on a path, could be a rich subject of study. The challenge was to balance reason and non-reason— or intuition and non-intuition. I decided— and this would be what Rory said Hogarth considers deliberate, not tacit, focus— that intuition could serve as the subject matter of a series of drawings and be the subject of written commentary. That decision made good logical sense, but it did not give me insight into creative form, and somehow I

knew there needed to be a form that in itself would connect the intuition and reason, as well as drawing and writing.

For months, as I read, I struggled with determining the form the drawings could take, for I wanted a form that could relate to the topic, a form that could join— or rejoin— immediate apprehension and considered knowing. One day, I was writing down a quote from Penrose, ‘Mathematical thinking is a very tiny area of conscious activity that is indulged in by a tiny minority of conscious beings for a limited fraction of their conscious lives.’³⁸ I thought it would a good slogan for a T-shirt, and imagined just where the words would go on the body of the shirt.

Suddenly, I immediately saw and knew what form the drawings must have. When I say I saw it, I mean just that. There appeared in my mind an image of the English emblem, a form that would readily permit the incorporation of word and image. This direct perception was whole— that is, I saw immediately what it would be and at the same moment realized how completely perfect a fit it was.”

“What is an emblem? A kind of drawing?” asked Ken.

“Emblems were usually prints, very popular in Western Europe in the 1600s and 1700s. They generally had an image, which was often symbolic, and below that a Latin motto and a little verse that explained the image.³⁹ So you can see how that would fit for what I wanted to do.

As I saw all this, I was filled with emotion, and began to laugh. Without intending to, I had just gone through the classic procedure that precedes creative intuition: long hours of work, experiments with possible problem solutions, followed by focusing the mind in another direction.⁴⁰ In retrospect it is possible to see how my nonconscious might have

connected the concepts of word and image with other previously existing associations, and in that case Rory would be right to say that creative intuition is just a form of thinking and reasoning. However, this does not take into account the affective quality of insight. Out of many possible ideas only one felt right. We cannot cause creative intuitions, only experience them, so we still, I think, do not understand their deeper nature. Solutions are understood to some degree after the fact, but not before. Nothing that happened prior to the moment of insight predicted it.

It is this open-ended process, I think, that makes creative intuition so difficult to observe through experimental research. There is no assurance that going through the process will result in any insight, and the insights, if and when they come, are completely unpredictable. Most of the research I read that studied the nature of intuition consisted of experiments to which there was one possible and predictable right answer, and while that research can inform us about some aspects of problem solving, it does not address the self-created amorphous quality of creative problems which have many possible right answers.⁴¹

A person who picked up and looked at one of the drawings could have an instantaneous— and therefore somewhat intuitive— understanding, and then the text would add to that, so the work would communicate to the conscious and nonconscious both. Word and image— each needed the other to be complete, and each would illustrate the other. Of course, there is nothing new in this process, nor of using science as a subject for art. If there is any new twist, it is that I am creating that possible communication in a very conscious fashion and then leaving them for others to discover, and possibly replicate the serendipity of the intuitive moment.

In reading *Intuition*, I came across the fact that we apprehend very directly. There is a neural pathway that goes from the eye to the thalamus to the amygdala, a part of the brain that helps deliver emotions, and that path does not connect to the cortex, so we have emotional reactions to what we see before we might know what we see. As well, the amygdala sends out more signals along neuronal paths to the cortex than it receives from the cortex, so not only is the response immediate, and more emotional, it is also capable of superceding reason. The evolutionary biologists suggest that this helped us react to something we perceived as dangerous before we fully knew what the danger might be.⁴² Most of the books tend to go for the drama of the danger model, but it could also be that we react to the safety, or the pleasure, of what we see before we know what comfort or delight lies ahead. The person who found one of my 'left' drawings could experience an immediate form of knowing not based in reason. I liked that, even if there was a chance the emotion might be apathy, although I think we are attracted to the intuitive moment and long for the delight it provides. It would be like a double whammy—first the drawing speaks to your emotions, then you see the words. The first intuitive response would be layered under an intellectual one, provided the person did not toss the drawing away before reading it. If it were to be ignored, or tossed away, it could still act as all those ignored intuitions.

I had encountered emblems ten years earlier, and at that time had tried to use the form, but the results were unsatisfactory, and so I had put them out of my mind. When I returned to emblems to study them in more depth, they turned out to be an ideal form. I experienced my intuition shortly after reading Penrose's suggestion that Plato's discussion of ideal forms might have validity as a model of consciousness, and I had been struggling to find an ideal form, so perhaps my nonconscious processed that information in some way that suggested a connection.⁴³ I suppose, Barbara, that you would say my intuition

connected me to something greater, but I would counter with Rory's and Ken's argument that my nonconscious recognized a pattern.

The emblem form would work not only for the subject of intuition, but would suit other subjects as well, so I could use emblems in the future. Still, in their particulars, emblems connected to my purpose. They had a humble quotidian nature, often showing up not just in mass produced prints, but also on textiles, glass, jewelry, a populist form of art that connected with my vision of art found in everyday settings. Some of the names of the printers and engravers names have come down to us, but some were signed in ciphers, and the other emblems are anonymous, so that built on the vision. They expressed cultural ideas of the self and the spirit, or political and social ideas. My current choice of subject matter could reflect that tradition, and the form can work for future series of drawings. Dominant motifs were often reworked. This could translate into a building an idea in a series, or using the same drawing with different text, or the same text with different drawings. Images were often appropriated from one work to another, reflecting fluid notions of artistic authorship.⁴⁴ In several of my course projects I had experimented with borrowing the structure of one form when creating a new one, both as a way to honour the original and to, if not subvert, then play with it. Had I apprehended all of this intuitively all those years ago, or was I finding reasons? Certainly there is enough research to suggest a human tendency to invent logical reasons after experiencing intuitive knowing.

Classic emblems have three parts— a picture, a motto, and a verse. I wanted, in this series, to follow that form, and create tripartite drawings. Classic emblems can contain bits of common sayings, can have verbal/visual cross referencing puns or words images, can be so interdependent that one is needed to understand the other.⁴⁵ Each of these is interdependent upon the others, and integral to understanding. Gardner might point out

that such forms appeal to three different ways of communicating and processing information: visual, verbal, rhythmic.⁴⁶ Stock characters, and symbolic images were common, and as I began to develop my drawings, these aspects appeared, without my conscious intention. The mottos I chose in a random, intuitive fashion, by reading over mottos from traditional emblems and picking the ones that resonated. I ended up with so many, in part due to the motto's quality of being specific, yet general enough to work in a myriad of contexts. The emblems tended to express general truths and while mine might be more evanescent, there was still remained an urge to convey thoughts. For example, one emblem has an image of a lily growing in a thorn bush.⁴⁷ As soon as you see it, you immediately know the theme, of delicacy and danger, of flourishing in challenge, and as you read the verse, the meaning becomes more precise, so when you look back at the image you now see it with more layers. In like fashion, one of my emblems shows a group of people at a supper table surrounded and served by shadowy figures, and suggests two states of being. In both cases, there is an element of the real combined with elements that might be real as well, but which do not appear together in our material world, but in our mental one."

"That sounds like dualistic thinking to me," interjected Ken.

"Well, am I a dualist? I don't know. It does seem to me that they have twice the chance of being right. Anyway, back to intuition. Barbara has already mentioned that intuition has often been a part of artistic process. It is interesting to note that during the time when, especially in North America, the behaviourists held sway, and the only scientists who felt comfortable discussing intuition were the Gestalt psychologists, artists often followed an intuitive credo. Not only the Surrealists, but abstract expressionists like Pollock and de Kooning had faith in creative intuition.⁴⁸ During the 1940s and 1950s, the dominance of positivism was challenged with the emergence of cognitive science, which connected

neuroscience, artificial intelligence, psychology, philosophy, linguistics, and anthropology.⁴⁹ As cognitive science blossomed in the 1960s, art practice became more intellectual and conceptual, more dualist than materialist in a sense. Although cognitive science, with its multidisciplinary approach, seemed to offer much that could connect to art, artists seemed less inclined to pick up this multifaceted science of the mind than their predecessors had with the models offered by Freud and Jung. It might be that that Freudian and Jungian thought offered the artist more rich imagery than did cognitive science, even with its multidisciplinary approach, did. The first presents layers of powerful urges locked in dynamic struggle; the second offers a Turing machine.”

“What is a Turing machine?”

“It is a an imaginary machine that, given sets of rules, could carry out computations. Turing was a mathematician and he came up with this concept years before the first real computer was created.⁵⁰ Cognitive scientists often refer to it as they develop an argument about how the brain functions. Layers of complex symbolic meaning versus inputs and outputs. Which would you chose?

In the 1960s, as cognitive scientists were focusing on developing their science as a discipline, artists were turning their gaze away from Freudian psychology and towards popular culture. It might be that cognitive science, as a fledgling multidisciplinary science, combining soft and hard science, and struggling to be accepted as equal with older, singular, hard sciences, was not eager to encourage any association with art. That is, I know, oversimplifying a complex subject, but there is something to it. Matching the growth of the cognitive science were various developments, such as computer technology and advanced neuroscience technology, which became central models within cognitive science and greatly

affected the discussion of consciousness and nonconsciousness. This approach has recently been challenged by Penrose and Dodwell, each of whom think that a physiological and biological explanation of mind does not necessarily provide all the answers.⁵¹ Perhaps once again there may be room for artists to connect with new models of unconscious process and intuition.

I don't fully know why the drawings are to be left. That is part of the puzzle it may take years to determine. And now that I've read the studies that show how we tend to create reasons for intuitive responses after the fact, I will be more than a bit skeptical of any reasons I discover.⁵² People would come across them in unexpected situations, that is to say, not in a traditional art venue, and therefore, when first seeing them, might see them with fewer expectations, perhaps more immediately. Of course I have no more control over that than I do over my own intuitive process. Leaving the drawings creates a randomness to art, and in this I could argue that it mirrors life and the experience of intuition. I did come across one book that related art to Heisenberg's Uncertainty Principle, and there are authors who suggest a connection between the unconscious mind, intuition and quantum physics. Although that neatly combines the randomness with the act of viewing altering the nature of the perceived, it seems a bit of a stretch.⁵³ Leaving the drawings also reminded me of my experience in teaching. I doubt I am alone in the experience of having a student insist some chance offhand remark I made changed her perception in profound ways and the unpredictability of teaching is like the act of leaving the drawings. There could be a connection to the found art, of naming everyday objects as art, both in the sense of what Duchamp did and what Davy Rothbart, the originator of *Found* magazine, is doing.⁵⁴ I'm more interested in the leaving, but found or left art does question the traditional practice of art.

This, of course, I determined after the moment of insight, and through logical reasoning. It complemented the intuition, in the full sense of being necessary to complete. It will take years to fully develop this, and this first series is just that.

Well, that was the easy part. Intuition is quick, but practice is slow. Knowing what the form would be did not solve the problem of production, and I made several false starts and wandered into many blind ends as I attempted to connect art and science. For example, I was doing something else when suddenly the line “Like Archimedes in his tub” suddenly came to me. Intuition perhaps, but creating the rest of the work to go with it was just that—work.

“How can I possibly follow that?” demanded Meg.

“Meg,” said Roger, “you forget your courage and strength in presenting your first play. Surely you will not succumb to an attack of nerves with a small group of friends.”

“Well, then,” replied Meg, “let me begin by saying what I think I should say, and then speaking what I feel I must say. The previous speakers, in discussing intuition, have all focused on the power of intuition within the mind of the individual, and perhaps I ought continue in this manner, but I think we need to look at it not as an isolated singular phenomenon, but as part of social structure. The tacit knowledge within an individual, that same tacit knowledge that can give rise to pattern recognition, or if you prefer, a connection to something outside your self, is created through our interaction with other people. From earliest infancy on, we develop our ability to comprehend what one thing means in relation to another, and whether that is innate or learned is not of concern to us in this discussion. Much of that learning occurs before we possess language, and so begins and remains nonverbal, and of the body. There is a physicality to intuition that we tend to overlook,

although Damasio certainly incorporates the mind and body.⁵⁵ Reading these books, I suddenly thought of Connerton's *How Societies Remember*, and his argument that we express memory and cultural ideas through not only words and logic but also through social physical acts.⁵⁶ Shortly after that, I came across the chapter in *The Nature of Insight* that discusses the social aspect of intuition. In it, creativity is defined as a psychosocial process that involves not only the individual who has the intuition, but also a process involving culture and colleagues. In fact, the intellectual and emotional support of colleagues may be a necessary component for a moment of solitary insight.⁵⁷

Perhaps as babies we begin to learn to interpret and commune both nonconsciously and physically as our mothers play with us, and to depend on social interaction and non-verbal communication as a way to solve problems. Perhaps we learn the delight of the unexpected through play.⁵⁸ Maybe intuition has its genesis in peek-a-boo. Maybe that's why we value the moment of creative insight—it connects us to our history as social beings.

I think the fact that Barbara could find so many tales of the power of intuition, and that some of these, such as Archimedes and Newton, have the character of folk tales, is evidence of the fact that society values those moments of insight. Even if Rory—I mean, Gruber—is correct about Poincaré, there is something in the fact that we want to believe in that moment of insight. Where in the past intuitive flashes might have been considered divine, and are now described as breakthrough thinking, parallel thinking, or connectionism does not lessen their importance. Given that society thinks them important, we would do well to foster intuition. In *Educating Intuition*, Hughes describes model of fostering intuition. I found that part of his model was very much like the form of creative process. He suggests a more scientific approach to intuition would consist of a stepped process of observation, speculation, analysis, and generalization. Students in art and design schools learn this

process, or some variation of it, but generally in isolation from any connection to cognitive science, and that is something that I think really needs to be addressed.⁵⁹ Cognitive scientists have been studying creativity as a mental process and writing about creative cognition, so clearly the link is possible.⁶⁰ Our school curriculum separates art and science, and we need to create ways to connect them. Rational deliberation is so strong a part of the school curriculum at every level: it is now time for intuitive knowing to take its rightful place alongside reasoned thought.”

When Meg finished, Catherine said, everyone agreed, but perhaps that was only because so many of the book club were teachers. Roger said it would be a challenge to follow what had gone before but that he would try his best.

“Creative intuition, “ he began, “is an expression of eros.”

“Oh, Roger, you say that about everything,” interjected Ken. “ You speak that way because you are a Jungian analyst with Freudian leanings— you’ve admitted as much before.”

“Hear me out. I will address each of you in turn, and in doing so, build my case. For Barbara, who told us such entertaining stories, I will reply with a story told me by a friend, a story illustrating our knowledge of the mind. Two men were walking on the beach, looking out at the ocean.”

“Why does it always have to be two men?”

“OK. Two women were walking on the beach, looking out at the ocean. One turned to the other and said ‘Just think of all that water.’ To which the second replied, ‘And we’re just looking at the top of it.’

There, Barbara, is the current focus on what can be seen and measured, and the caution that there is something else beneath it all. When we look at the ocean we see the rhythms of the patterns of waves. The ocean is our unconscious mind, and the waves the cresting of consciousness. That, by the way, is also a Buddhist thought.⁶¹ Intuition may be the breaking of the wave rhythm as the wind changes direction. Or the movement may come from deep below the surface, and intuition may be the cresting of unconscious thought as it reaches the surface. We can observe, analyse, measure, and study this ocean all we want, but because it is always moving, we can never capture it.

Barbara, you spoke of transcendence, and although no one else picked up on that, I want to return to it. I also read *Fiction, Intuition and Creativity*, and kept a quote. Hague writes about creative intuition that “The movement of intuitive consciousness is always toward the annihilation of the distinction between Self and Other; intuition challenges the very notion of Otherness, just as the creative process seeks knowledge and fusion with Otherness that eliminates the boundaries between subject and object.” Some of you may dismiss that as romantic, and Hague acknowledges her premise differs from current critical theory, but she’s not alone.⁶² Peat entertains a similar idea when he talks about artists and mystics entering the void, a void that is larger than any of us, and that may relate to quantum physics— which brings in Penrose in some ways.⁶³ The idea that there is something beyond our immediate world, something we can enter, is part of Buddhist and Taoist teaching, and it may be that intuition is one possible path. Dodwell points out that transcendental experiences, such as those moments of creative insight that Barbara cited, have often been treated as either not worthy of scientific study or the result of a biochemical malfunction and that each of these is more reflective of values than truth.⁶⁴

Rory, this story can work for you as well. With all those cresting waves, it is not odd that some should work as moments of intuition. Bollas claims that every day we have hundreds of psychically intense experiences coming up from our unconscious, so out of those hundred, surely a few will be able to lead us to new ways of viewing the world.⁶⁵

As for you, Ken, with your computational model of the mind. In the 1970s Julian Jaynes pointed out that historical metaphors of mind say as much about the individual and the society as the mind. As technology developed, the mind seemingly morphed alongside, so that in the 17th and 18th centuries it was a clock. The birth of geological science in the 19th century saw the mind described as layered, and it is here, by the way, that unconsciousness begins to emerge as the bedrock of the mind. As the vogue for geology gave way to an interest in chemistry, the mind became a compound form. Later, the power of the steam train brought forth the image of the unconsciousness as a pent up force.⁶⁶ And now we have a computer, only now, we don't say the mind is like a computer; we say the mind is a computer.

Ken, we might also consider that the present materialist stance of so many cognitive thinkers may be an anachronism some day, and the materialistic versus dualist argument is far from over. Dodwell points out that physicists had rejected a purely materialistic view of the world by the 1920s, yet this view is still upheld in cognitive science. The materialist proponents of cognitive science face a challenge that few of them address. They work from a principle that matter is the basis of mind, and therefore work from a belief, a mental construct, not from matter itself, a conundrum they do not fully acknowledge.⁶⁷ Moreover, they work from a model of the mind that assumes regularity and predictability in everyday functioning, but the creative intuition we have been discussing is not regular, nor predictable. The mind is capable of novel and unexpected responses for which we currently have no

science. Penrose, whom you labeled a maverick but whom others regard as visionary, builds on this when he suggests that we need a new form of science to study consciousness, in the same way that Newtonian physics could not explain quantum phenomena. I think you mislabel him as being strictly in the materialist camp. He imagines a Platonic world of ideals, somewhat related to Socrates' speech in *Symposium*.⁶⁸ The first, the world of things, is the world of matter. The second, the world of consciousness, of thought and emotion, is the world of our mind. The third world is the world of ideal forms and ideas and for Penrose that world is apart from us. All three worlds inform each other.⁶⁹ I think that for him, creative intuition would have its source in the ideal world, become conscious in the mind, and find form in the physical world, although the physical world may have influenced the world of the ideal in the process. In this respect Penrose, who, by the way, is a mathematician, is closer to Barbara's notion of a transcendent universe than to Ken's neurochemical coding. Dodwell goes further in arguing that knowing about a physical reality, say neurons, does not describe a psychological reality, or as he might put it, correlation is not explanation. The description of a cause is not the explanation of a reason.⁷⁰ The jury is still out, and we would do well to keep our minds open.

And S, who started this discussion through your vision. Freud believed that artists, in their creative work, may come as close as humanly possible to experiencing the pleasure instinct, the erotic drive of the unconscious mind. As Bollas says, "The eros of form is the pleasure of creation."⁷¹ Based on our discussion, we could well add scientists in their creative work. As creative intuition is part of the creative act, it is an expression of eros.

I realize it has been unpopular to mention Freud in some circles, and I still remember our discussion of four years ago, when we read Steiner's *Nostalgia for the Absolute*. I was in the minority in my position that Steiner was wrong to suggest Freud was outdated

and of little use to the modern psyche.⁷² Tallis, in *Hidden Minds*, argues that while we might not completely follow all of Freud's work, the essence of his main contribution, that the unconscious mind is the dominant mind, is valid.⁷³

Meg, to you I respond, let us not only educate intuition but let intuition educate us. Emotional experience is the basis for intuitive ability, and even our old friend Poincaré suggested emotional links to intuitive realization.⁷⁴

We need a new form of reason that encompasses the emotions, that acknowledges all of our mind and our brain. We can have Barbara's longing for the intuitive moment, observe it with Rory's skepticism, analyse it with Ken's science, use it, as S might, as inspiration for art, embrace it physically and teach ourselves to foster it, as Meg would have us do. There needs to be time for a new form of reason that connects to the emotions. We have a science of cognition, and we need to remind ourselves of the need for its counterweight, an art of cognition."

Roger was about to go on, but at this point, Rory and S's son Daniel appeared with a group of his friends. Daniel immediately asked if there was anything good left to eat. The book club members invited the young men to join them but Daniel and his friends has no interest in joining what they identified as a boring discussion and went off to play video games. Catherine said that soon after, the guests left as they had work the next day.

Endnotes

¹The version used for this examination is the classic English translation by Jowett. Benjamin Jowett, trans., *The Dialogues of Plato*, vol. 2, *The Symposium & Other Dialogues*, by Plato, (London: Sphere Books Limited, 1970).

² As readers familiar with *Symposium* will recognize, this section, and some of the following takes its tone from Jowett's text. Jowett, *Dialogues*, 185.

³Robin M. Hogarth, *Educating Intuition*, (Chicago and London: The University of Chicago Press, 2001), 67.

⁴ David G. Meyers, *Intuition: Its Powers and Perils*, (New Haven: Yale University Press, 2002), 15-17.

⁵David Perkins, *Archimedes' Bath tub: The Art and Logic of Breakthrough Thinking*, chap. 5 "Thinking's Big Bang," (New York: W.W. Norton & Company, 2000), 91-109.

⁶Hogarth, *Educating Intuition*, chap. 7 "A Framework for Developing Intuition," 214-247. Charles Wallschlaeger, Cynthia Basic-Snyder, ed., chap. 2 "The Problem-Solving Process and the Generation Model," in *Basic Visual Concepts and Principles for Artists, Architects, and Designers*, (Dubuque: Wm. C. Brown Publishers, 1992), 7-11.

⁷Arthur Koestler, *The Act of Creation*. (Hutchinson & Co. 1964; reprint, London: Arkana, published by the Penguin Group, 1989), 299. (page references are to reprint edition).

⁸ Frank Tallis, *Hidden Minds: A History of the Unconscious*. (London: Profile Books Ltd, 2002), 86.

⁹Henri Bergson, from "Creative Evolution" in *Art in Theory 1900-2000: An Anthology of Changing Ideas*, ed. Charles Harrison and Paul Wood. (Malden: Blackwell Publishing, 2003), 142-3. André Breton, from the "First Manifesto of Surrealism," in *Art in Theory*, 447-53. Giorgio de Chirico, "Mystery and Creation," in *Art in Theory*, 58. Jean Dubuffet, "Notes for the Well-Lettered," in *Art in Theory*, 603-05. Jean Dubuffet, "Crude Art Preferred to Cultural Art," in *Art in Theory*, 605-08. Marcel Duchamp, "The Richard Mutt Case," in *Art in Theory*, 252. John Canaday, *Mainstreams of Modern Art*, 2nd ed., (New York: Holt, Rinehart and Winston, 1981), 465-68.

¹⁰The prevalence and the longevity of the Archimedes story in writings on intuition shows in the following examples. Philip Goldberg, *The Intuitive Edge: Understanding and Developing Intuition*, (Los Angeles: Jeremy P. Tarcher, Inc. distributed by Houghton Mifflin Company Boston, 1983), 46. Hogarth, *Educating Intuition*, 13, 251. Koestler, *Creation*, 105-6. Meyers, *Intuition*, 61. Perkins, *Archimedes' Bath tub*, 6-7.

¹¹Koestler, *Creation*, 121-24. Perkins, *Archimedes' Bath tub*, 44-46.

¹²Koestler, *Creation*, 124-130, 169-70. Meyers, *Intuition*, 61. Tallis, *Hidden Minds*, 166.

¹³Angela Hague, *Fiction, Intuition & Creativity: Studies in Bronte, James, Woolf, and Lessing* (Washington, D.C.: The Catholic University Press, 2003), 73-74.

¹⁴*Ibid.*, 73-76.

¹⁵Meyers, *Intuition*, 69-61.

¹⁶Edward De Bono, *Parallel Thinking: From Socratic Thinking to de Bono Thinking*. London: Penguin Books Ltd., 1994), 126.

¹⁷Koestler, *Creation*, 299.

¹⁸Goldberg, *Intuitive Edge*, 39.

¹⁹*Ibid.*, 64.

²⁰Howard E. Gruber, chap. 12 "Insight and Affect in the History of Science," in *The Nature of Insight*, ed. Robert J. Sternberg and Janet E. Davidson. (Cambridge, Mass.: The MIT Press, 1995), 406-07.

²¹*Ibid.*, 13-18.

²²Colleen M. Seifert and others, chap. 3 "Demystification of Cognitive Insight: Opportunistic Assimilation and the Prepared-Mind Perspective," in *Nature of Insight*, 65-119.

²³*Ibid.*, 67.

²⁴Mary L. Glick and Robert S. Lockhart, chap. 6 "Cognitive and Affective Components of Insight," in *Nature of Insight*, 197-228. Maria F. Ippolito and Ryan D. Tweney, chap. 13 "The Inception of Insight," in *Nature of Insight*, 433-462. Robert W. Weisberg, chap. 5 "Prolegomena to theories of Insight in Problem solving: a Taxonomy of Problems," in *Nature of Insight*, 157-96.

²⁵Hogarth, *Educating Intuition*, 16-23.

²⁶Sternberg and Davidson, ed., *Nature of Insight*, passim. Meyers, *Intuition*, passim.

²⁷Jerry Fodor, "The Big Idea: Can There be a Science of the Mind?," *Times Literary Supplement* 3 July 1992, p. 5-6. Jerry Fodor, "West Coast Fuzzy," review of *The Engine of Reason, The Seat of the Soul: Philosophical Journey into the Brain*, by Paul M. Churchland, In *Times Literary Supplement* (August 15, 1995), 5-6. John R. Searle, "The Mystery of Consciousness: Part II" review of *The Astonishing Hypothesis: The Scientific Search for the Soul*, by Francis Crick, *Consciousness Explained*, by Daniel C. Dennett, *The Remembered Present: A Biological theory of Consciousness*, by Gerald M. Edelman, *Bright Air, Brilliant Fire: On the Matter of the Mind*, by

Gerold M. Edelman, *Shadows of the Mind: A Search for the Missing Science of Consciousness*, by Roger Penrose, *The Strange, Familiar and Forgotten: An Anatomy of Consciousness*, by Israel Rosenfield, In *The New York Review of Books* (November 16, 1995), 54-60.

²⁸John R. Searle, letter, In *The New York Review of Books* (March 6, 1997), David J. Chalmers, letter, In *The New York Review of Books* (May 15, 1997).

²⁹John R. Searle, review of *The Remembered Present: A Biological Theory of Consciousness*, by Gerald M. Edelman, In *The New York Review of Books* (November 2 1995): 54-6.

³⁰Pawel Lewicki, n.d., "Conclusions of the Research on Nonconscious Information Processing," *Nonconscious Information Processing Laboratory*. Tulsa: Psychology Department, University of Tulsa, At <<http://www.personal.utulsa.edu/~pawel-lewicki/index.html>> Accessed January 14, 2004.

³¹Hogarth, *Educating Intuition*, 21-24.

³²Steven Pinker, *How the Mind Works*. (New York, London: W.W. Norton & Company, 1997), 98-114.

³³Donald O. Hebb, "Organization of Behaviour," (New York: John Wiley & Son: 1949), quoted in Janet Metcalfe, *Nature of Insight*, ix-xiv.

³⁴Tallis, *Hidden Minds*, 176.

³⁵Meyers, *Intuition*, 45-50. Perkins, chap. 13 "Evolution breaks through," In *Archimedes' Bathtub*, 232-251.

³⁶Meyers, *Intuition*, 49-50.

³⁷Jowett, *Dialogues*, 203-06.

³⁸Roger Penrose, *Shadows of the Mind: A Search for the Missing Science of Consciousness*. (Oxford: Oxford University Press, 1994), 52.

³⁹Peter M. Daly, *The English Emblem Tradition*.)Toronto: University of Toronto Press, 1988), passim.

⁴⁰Mihaly Csikszentmihalyi and Keith Sawyer in Chapter 10 "Creative Insight: The Social Dimension of a Solitary Moment" in *Nature of Insight*, 351.

⁴¹Hogarth, *Educating Intuition*, 100-115.

⁴²Meyers, *Intuition*, 37-8.

⁴³Penrose, *Shadows*, 414, Jowett, *Dialogues*, 222-5.

⁴⁴Peter M. Daly, *The English Emblem and the Continental Tradition*, ed. Peter M. Daly, (New York: Ams Press, 1988), 34.

⁴⁵John Manning, "Geffrey Whitney's Unpublished Emblems: Further Evidence of Indebtedness to Continental Traditions" in *English Emblem*, 88.

⁴⁶Howard Gardner, chap. 10 "Creativity across the domains," In *Creating Minds: An anatomy of creativity Seen through the Lives of Freud, Einstein, Picasso, Stravinsky, Eliot, Graham and Gandhi*, (New York: Basic Books, a division of Harper Collins Publishers, 1993), 359-405.

⁴⁷Geffrey Whitney, "Aculei Ittiti", Emblem, *Emblems*, 1536, 221, as reproduced in Peter M. Daly, ed., *The English Emblem Tradition*, (Toronto: University of Toronto Press, 1988), 326.

⁴⁸Peter Dodwell, chap. 5 'Brain and Mind, A Many-Layered Enigma' in *Brave New Mind: A Thoughtful Inquiry into the Nature and Meaning of Mental Life*, (New York, Oxford: Oxford University Press, 2000) 23-24. Jackson Pollock, "Two Statements," "Interview with William Wright," in *Art in Theory* 570-1, 583-86. Willem de Kooning in "A Desperate View," *Art in Theory*, 583.

⁴⁹Howard Gardner, *The Mind's New Science: A History of the Cognitive Revolution*, (New York: Oxford University Press, 1985), 37.

⁵⁰Steven Pinker, *Mind Works*, 67-69.

⁵¹Penrose, *Shadows*, passim. Dodwell, *Brave New Mind*, passim.

⁵²Meyers, *Intuition*, 128.

⁵³F. David Peat, chap. 4 "Silence and the Void," in *The Black-winged Night: Creativity in Nature and Mind*. (Cambridge, Mass.: Helix Books Perseus Publishing, 2000), 89-113.

⁵⁴Duchamp. "The Richard Mutt Case," in *Art in Theory*, 2003, 605-08. Davy Rothbart, n.d. "Notes," *Found Magazine*. At <<http://www.foundmagazine.com>> Accessed January 10, 2004.

⁵⁵Antonio Damasio, *The Feeling of What Happens: Body and emotion in the Making of Consciousness*, (London: Vintage, 2000), passim.

⁵⁶Paul Connerton, *How Societies Remember*, (Cambridge: The University Press, 1989), passim.

⁵⁷Mihaly Csikszentmihalyi and Keith Sawyer in "Creative Insight," In *Nature of Insight*, 329-64.

⁵⁸Bollas, *Cracking Up: The Work of Unconscious Experience*, (London: Routledge, 1995), 242-3.

⁵⁹Hogarth, *Educating Intuition*, 227-43. Wallschlaeger, Busic-Snyder, "Problem-Solving Process," In *Basic Visual Concepts*, 7-11. Charles Hampden-Turner 'The Two Cultures Controversy: Getzels, Jackson and Hudson', "The Paradox of Creativity: Frank Barron and Jay Ogilvy', 'The Structure of the Intellect: J.P. Guilford's cubic factors', in *Maps of the Mind: Charts and concepts of the mind and its labyrinths*, (New York: Collier Books Macmillan Publishing Company, 1981), 104-7,112-13, 114-15

⁶⁰Ronald A. Finke, Thomas B. Ward and Steven M. Smith, *Creative Cognition: Theory, Research and Applications*, (Cambridge, Mass.: A Bradford Book, The MIT Press, 1992), 189-98.

⁶¹Tallis, *Hidden Minds*, 180.

⁶²Hague, *Fiction, Intuition & Creativity*, 7-8.

⁶³Peat, *Black winged Night*, 91-96.

⁶⁴Dodwell, *Brave New Mind*, 187-88.

⁶⁵Bollas, *Cracking Up*, 37.

⁶⁶Julian Jaynes, *The Origin of Consciousness in the Breakdown of the Bicameral Mind*, (Boston: Houghton Mifflin Company, 1976: reprint, Boston: Houghton Mifflin Company, 1990.), 2-3. (page references are to reprint edition).

⁶⁷Dodwell, *Brave New Mind*, 9.

⁶⁸Jowett, *Dialogues*, 222-5. Penrose, *Shadows*, 412-17.

⁶⁹ Penrose, *Shadows*, 412-17.

⁷⁰Dodwell, chap. 5 'Brain and Mind, A Many-Layered Enigma' in *Brave New Mind*, 82-106

⁷¹Bollas, *Cracking Up*, 43.

⁷²George Steiner, *Nostalgia for the Absolute*. Massey Lectures 14th series. (Toronto: Canadian Broadcasting Corporation, 1974), 12-23.

⁷³Tallis, chap. 10 'The Third Blow' in *Hidden Minds*, 171-82.

⁷⁴Hague, *Fiction, Intuition & Creativity*, 75-6.

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