

**Knowing More Than Can be Said: Michael Polanyi,  
Tacit Knowing, and New Pedagogical Strategies.**

by

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## Abstract

Tacit knowledge and tacit knowing are intricately bound with one another. They are the background to what is known explicitly. Polanyi's ideas open a way to understanding how knowledge is known and questions the core of dualist thinking. These ideas conceptualize knowledge as constructed from meaning generated by sense data. Moreover, they form part of the mid-twentieth century chorus against logical empiricism arguing, instead, that what is less than certain can be known too. This thesis proceeds in six chapters. Besides outlining the argument of the thesis, chapter one lays out terminological definitions and methodology. Chapter two observes that the literature responding to Polanyi's writings is a confusing jumble and argues for a return to Polanyian sources. The third chapter lays out the hypothesis that Polanyi's embracing pair (tacit knowledge and tacit knowing) can best be understood in terms of aesthetic knowledge. The fourth chapter describes the interwoven nature of the tacit from a logical perspective that partly explains the confusion of the subsequent literature. Chapter five integrates the ideas of three representative theorists to argue that the tacit is learned, not only from the social milieu, but from the physical environment as well. The chapter six summary argues that the built environment can be intentionally designed so as to teach the tacit and that specific pedagogical strategies can be employed to interpret it.

## Preface

This tacit knowledge project originally sprang from an investigation into expertise. That query asked about what it takes to become an expert. A couple of anecdotes might shed light on the direction from that investigation to this thesis.

An old war story, one where you wonder if it is true: a volunteer joins the navy and he is informed that he needs to learn how to swim. The intrepid young man is enrolled in a swimming class. However, the pool has not been completed yet and, it being the prairie winter, the alternatives are frozen. So the young man and his classmates are instructed to lay face down on backless benches to learn and practice the techniques of the front crawl. Dry land practice aids in becoming a swimming expert, no? Any practice is good practice, right? What is it that one learns from practicing swimming technique in water? The answer might be obvious but it is difficult to describe in words. I believe that it is obvious because one comes to know how swimming in water *feels*.

Another story: some years ago I took up the game of chess only to wallow at the bottom of the chess hierarchy. I was out of my depth and completely at sea. I struggled to learn what successful players knew. I asked the experts. But all they could tell me (with verbal pat on the head) was that it takes a long time to learn. One becomes an expert in chess by recognizing the patterns that one sees.

In other words, expertise in chess was no different from expertise in business skill or social skill or swimming skill. How one is deemed to possess expertise can be demonstrated but it seems, much to my chagrin, that one cannot describe how one goes about getting it. One only knows it by experiencing it viscerally.

Anecdotes aside, I continued to search for the essence of expertise. One recurring theme in this investigation was the idea of tacit knowledge, a strange concept. In my reading it would

sometimes show itself as some unexplainable *je n'ai sais quoi* that only experts had or even could have and sometimes it would show up as mere secrets to be forced into the open, some kind of dark art or some such thing. But these explanations were of no help. Other times it would be mistaken for its close cousins: implicit knowledge and socially constructed knowledge, for example. This recurring theme, tacit knowledge, was attached to many kinds of concepts and yet firmly attached to none of them. It seemed both nebulous and ubiquitous, both profound and trivial.

This project continues the investigation into expertise but it sharply zeroes in on the role that tacit knowledge plays in defining it. The project seeks to pinpoint how it is possible that tacit knowledge, as a basic component of expertise, is acquired in light of the fact that it cannot be talked about with any more accuracy than expertise can be. The project will begin by providing a context. By describing the considerable variety of ideas about the nature of tacit knowledge, this context will demonstrate the need to return to its original source. The thesis will then present Michael Polanyi's original conception of the term. But, the project's focal intent is to offer a conceptual path whereby tacit knowledge can be taught and thereby to systematically advance expertise.

So, expertise will not be the subject of this thesis, Instead, I will focus on only one thin slice of it. In my view, if one can assume that tacit knowledge is a philosophically interesting component of expertise, then how one acquires tacit knowledge education is as well. Indeed, how does one come to know what one cannot say one knows? Although this focus started with the epistemological concerns of expertise and concepts like it (knowledge, experience, and mind) my reading revealed a very wide range of explanations, explanations that begged for common ground. But the preliminary reading of this project repeatedly indicated that the candidates

(implied knowledge, implicit knowledge, inferred knowledge, etc.) all pointed to the same logical, predicate-object, propositional formulae that standard, information-type knowledge was made of (i.e., that knowledge was “out there” to be unearthed, discovered and gathered in... like potatoes). These candidates did not address the unexplainable element that made the subject of expertise interesting in the first place. Tacit knowledge stood out as the intriguing outlier. It was an outlier because it required a person to step out of the safe environs of modernist thought (read: inductive scientific verificationism) and into a realm of knowledge multiplicity. One had to accept that *knowledge* was more than just straightforward propositional facts. Ryle’s (1945) idea of the distinction between knowing-that and knowing-how (i.e., between propositional knowledge and procedural knowledge) was an early example of this way of thinking.

Polanyi’s (1958) concept of tacit knowledge divides the knowledge concept differently. He did not see the objective world as the natural residence of knowledge, one where individuals gain awareness of it through propositional statements. Nor did he see that this objectively placed knowledge as split in two like Ryle suggested. Instead, he put forward the notion that knowledge is assembled by individuals. Polanyi’s work suggests that the knowing subject be re-introduced into our calculus of what knowledge is and what knowing is. And because his conception included the knowing subject (as an active participant, not just as a passive recipient) it also incorporated, by implication, the effects of the subject’s life experience, her background and her history. And by further implication, the idea of tacit knowledge (because it re-embodies knowledge in the knowing subject) requires that one challenge the assumptions regarding analytic thought and the dualist conception of mind.

This project will grapple with these issues to some degree but it is not easy to dispense with a view of mind that has held sway for four hundred years or of a concept of knowledge

dependent on it. One might even think that the late modernists (positivists) had it right. Knowledge, as explicitly statable and clearly delineated in language, makes perfect sense if one must insist upon the absolute certainty of that knowledge. And to question a dualist worldview seems only to be looking for a fight where none is to be had. But the Achilles heel of the modernist, analytic tradition and dualist thought is not how it prescribes knowledge but what it proscribes. The converse of knowledge defined propositionally is that anything that is not expressible in language and verifiable is not knowledge. This is a big problem - a problem because we, by this definition, would then know things that are not knowledge. Ryle's distinction is a case in point. One cannot begin to know how to do a skillful activity by studying about it. One can only demonstrate knowing the activity by actually demonstrating its doing. Because it is not propositionally statable and verifiable, knowing of how to do something would not be knowledge. Moreover, everyday observations like emotions and preferences clearly can be known but they have no place in the epistemological world governed by logical positivism and dualist thinking.

Generally speaking, the edifice of this “knowledge as statable proposition” is built on a foundation of empirical observation with an additional qualification that the observations need be verified. By repeating the same observation one infers, by induction, that the given observation truly corresponds to the world as it is. Therefore, any statement that reflects this “repeat and verify” observation procedure is said to be knowledge. Wedded to this particular understanding of knowledge is its rationalist partner - truth as correspondence. But, in spite of heroic efforts and sad admissions by Hume and Kant that this methodology does not square with *deductive* logic, this conception of knowledge and truth has held sway since the early 1600’s. It has continued as the foundation of modern Western philosophical reality. But, while the twentieth century ushered

in the positivist position as the epitome of modernism and dualist thinking, so too grew an ever increasing effort to be unchained of it.

The twentieth century saw a sustained struggle against the strictures of modernism. Heidegger, for example, questioned Descartes' metaphysics by beginning with the fact that one cannot even begin to doubt without first acknowledging one's position to doubt from. Members of the Frankfurt School, moreover, questioned the role of modernist thought in the social sphere. They accused adherents of reifying social constructs as if they were, not just objects of thought, but things in reality. While the modernist/positivist position clearly delineates what we all know knowledge to be, it does not clearly delineate what we all know *all* knowledge to be. In other words, knowledge may start with observations about the world but it does not end there. Knowledge of recognition or familiarity is something all of us experience. How one recognizes individuals in a crowd, for example, is far more difficult to describe than to experience. Moreover, typically many vocational and recreational activities are considered to be knowledge too. In riding a bicycle or playing golf one demonstrates ability, the knowledge of how to do it. These are not knowledge that fits nicely into a modernistic box, nor should they. Modernist knowledge is defined to exclude such ways of knowing. For various reasons, including lack of certainty and notions of non-conceptualist knowing<sup>1</sup>, modernist doctrine would shun the idea that these are knowledge.

The effort of this thesis, however, is not to shoehorn unwanted epistemological notions into that modernist box but to argue for an additional space to it. The premise of this thesis is that Michael Polanyi's tacit knowledge can be understood in such a way that individuals can be taught a wider notion of truth and a fuller notion of knowledge than has been the case. That is,

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<sup>1</sup> For more on this subject see D.H. Heidemann, *Kant and non-conceptual content* (2014) and *Thinking Without Words* (2003) by J.L. Bermúdez. Suffice it to say that this is a rather large tangent that I have not pursued here.

they can learn, by way of intentional arrangement of the environment, what has hitherto been deemed inarticulable. The claim of this thesis is that tacit knowledge can be intentionally communicated *aesthetically*.

In summation, the introductory portion of my argument so far has gone from needing to understand tacit knowledge as component to explaining expertise to a further realization that understanding tacit knowledge entails a better grasp of the controversies of twentieth century epistemology. These controversies have proven to be existentially problematic for epistemology's four hundred year claim of centrality in philosophy. Perhaps Polanyi's notion of tacit knowledge is but an exemplar of this situation. Perhaps, even, tacit knowledge is the avant-garde. In any case, my discussion so far has shown that a wider notion of truth and knowledge must be examined if for no other reason than to find a place for epistemological phenomena that do not fit so neatly into standard epistemology now and, in addition, so that I can come to grips with tacit knowledge well enough to propose a way that it can be communicated.

## **Dedication**

Three significant people made this project possible: Sandra, for her unwavering belief in my ability; Dr. Leendert P. Mos, for his patient coaching and mentoring; and Dr. Jerrold Kachur, for appearing in my hour of need. I would also like to mention the Reverend Dr. Bruce Millar and Dr. Wytze Brouwer for their letters of recommendation without which this endeavour would not have begun. It is with humble gratitude that I am privileged to be given a task so personally meaningful.

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## Chapter 1 - The Chapter Outline, Definitions, and Methodology

### 1. The Chapter Outline

This chapter, the first of six in this thesis, will recount the general direction I wish to go. It will provide the reader with some initial clarity in terminology as well as some methodological approaches. Since much of the discussion contained in these pages centres around the meanings of words as much as what objects might mean, it is important to delineate the grounds upon which the argument will be built. In a sense, I will stake a claim to some philosophical turf.

The second chapter will outline the confusing landscape of the term “tacit knowledge.” The notion has piqued the interest of many authors. Each of them has attempted to explain the phrase in more familiar terms. But the difficulty a reader encounters is that these authors adopt different terminology for similar concepts. They try to explain their understanding of tacit knowledge in what they believe to be more familiar words. Of course, this might occur with good intentions and each instance may, indeed, illuminate tacit knowledge, but when stacked up against each other, these explanations lack substantial similarity. They have commonality only in that they are linked to the tacit knowledge *term* and have, thus, latched onto the halo effect of a term with philosophical “street cred.” Reber (1993), for example, in his book entitled *Implicit Learning and Tacit Knowledge*, is largely writing about implicit knowledge not tacit knowledge. He says “Suffice it to say that the parallels between these two approaches suggest that there is much of the real-world nature in the characterization of implicit learning that I have put forward that could be developed by extending the exploration of Polanyi’s perspective” (p. 160). Unfortunately, this sort of coattail approach is common.

A second source of confusion is the inverse of the first. Authors sometimes adopt similar terminology to describe different concepts, concepts which are each, in turn, referred to as tacit knowledge. In such cases authors have chosen the same replacement term only to describe different interpretations of Polanyi's idea. The purpose of this chapter, therefore, is to indicate why a clearer understanding of tacit knowledge, as Polanyi formulated it, is needed to lay the foundations for a way that tacit knowledge can be intentionally communicated.

A third chapter will take care of two things. It will outline the main objectives of this thesis and it will provide an argument that what is termed tacit knowledge resides in several locations in Polanyi's theory. This is an important point. It is this feature that not only explains the wide variety of explanations in the secondary literature but also provides the justification that the communication strategy proposed here is not only justified but also wholly sufficient. Polanyi, himself, was almost completely non-committal about *tacit knowledge* per se. He avoided talking about knowledge as if it were an object. Instead, he preferred to speak of the activity of tacit knowing. Yet, objective knowledge "leaked out" from the corners of his argument.

The fourth chapter of this thesis will further flesh out Polanyi's own work. It will establish a firmer ground for the philosophical importance of tacit knowledge especially in regards to providing learners with a fuller understanding of their world. More importantly, an explication of Polanyi's position will reveal a process of mind that is at odds with our dominant, though still very useful, philosophical constructs, a process that sometimes eludes the authors of the secondary literature. An explication of Polanyi's position will accomplish two goals. It will hold the modern Cartesian concept of knowledge up to the light and it will reveal that, according to Polanyi, the pursuit of certainty in knowledge has definitionally excluded much that one can

know from the received corpus of knowledge. An explication of Polanyi's position will also widen horizons by reconceptualizing ideas in terms of awareness, and the known in terms of the tacit.

In the fifth chapter, the idea of “thick description” will be introduced. It is an idea popularized by Geertz (1973) and will be employed as a method of approaching tacit knowledge and of teaching it. Following a discussion of its use and application for understanding ethical value, some further tweaking of this already well-tweaked concept will allow a method to understand what has hitherto been deemed inarticulable and opaque. This part offers a tactical tool for understanding how tacit knowledge forms the basis of both explicit knowledge and the meaningfulness associated with that knowledge. In other words, this part will present a new word-metaphor in place of the familiar and cliché - word as signpost.

Included in this chapter is a discussion that places Polanyi in the company of others who took aim at twentieth century epistemology. Here I will link Polanyi's concerns with positivist epistemology with other efforts to address its shortcomings. Whereas Polanyi's efforts were to probe the empirical/rationalist duopoly from the empirical side, others questioned it on its logic. By way of example, this part will feature Putnam's (2002) reassessment of the fact/value dichotomy, a reassessment that sets in place two things: an argument questioning the basis of the analytic tradition; and an argument demanding considerations of value. The first supports Polanyi's credibility within the wider efforts. The second establishes the notion of evaluative assessment within epistemology.

In addition, this chapter will also discuss the connection between the “thick description” method and the more general application to complex abstract thought. It will do so by adapting a

few thoughts on aesthetics from Hans-Georg Gadamer, Antonio Strati and Mark Johnson<sup>2</sup>; Strati for his ideas regarding the aesthetics of everyday objects, Johnson for his position on aesthetics related to meaning, and Gadamer for his important work regarding hermeneutics as applied to aesthetics. Johnson makes two connections. He makes strong arguments against the separation of the body from the mind and, in so doing, supports Polanyi's idea of indwelling, the unconscious absorption of both tools as well as one's own body as an extension of the mind. Second, he connects the idea of percept (the object of perception) with that of aesthetics. This is analogous to Polanyi's argument connecting tacit knowledge with subsidiary awareness. Strati maintains that the aesthetics of our environment causes us to think in ways akin to it. Changes to the environment will change the way one thinks. Strati's argument justifies a belief that Polanyi's tacit knowledge (subsidiary awareness) can be manipulated with similar results. Gadamer adds the observation that the objects in the environment have historical depth and meaning that give rise to our attitudes and values, that the discovery of historical depth and meaning is tantamount to changing one's environment. My main effort in this project connects Gadamer's hermeneutical historical depth, by way of Johnson and Strati's observations, to Polanyi's notion of conceptual integration (tacit knowledge). The project argues that this connection is reciprocal, that the hermeneutical analysis of the objects in the built environment is the analogous reverse of Polanyi's integrative tacit knowing.

The final chapter will recap the argument and present some of the ramifications of the conclusions. It will present two pedagogical strategies that are applicable to adult learners in

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<sup>2</sup> Gadamer likely needs little introduction. Suffice it to say that he formulated a hermeneutical method which treats works of art and works of literature equally in terms of their historical depth. Johnson has collaborated with George Lakoff in writing about the metaphorical nature of human existence. He argues in *The Meaning of the Body* for a reconceptualization of the body as an extension of the mind. Strati is an organizational theorist who generalizes Gadamer's idea over the rest of the built human environment.

particular. And it will address some of the shortcomings and possible routes by which the argument might be criticized.

Succinctly, the following question will be examined: “How might Polanyi’s own thoughts be understood so as to produce a clear and conceptually consistent understanding of how tacit knowledge can be communicated?”

## **2. Definitions**

Two main questions will frame this thesis: 1) how must *knowledge* be understood if tacit knowledge is to be admitted to its ranks? 2) How must *aesthetics* be understood if it is to act as the vehicle of tacit knowledge communication? While addressing all of the variations of these two broad subjects is not the idea here, I do feel a need to narrow the terms to indicate the ways that I have used them. Not to do so would invite confusion not to mention that clarification, of course, also helps me sort out my own thinking about how Polanyi’s ideas connect.

### ***a. Knowledge***

Since knowledge itself will be the focus of much of the following discussion, using the term within the argument without prior disambiguation may lead to confusion. Therefore, let me say from the outset that when I use the term I intend it in the broadest of senses. I realize that in my definition I am susceptible to the same “cart before the horse” criticisms that my epistemological opponents are: I am defining my term in the way that I wish to prove to be as much as modernists define knowledge for their own convenience. But, while modernists seek certainty as their primary condition, I seek to include those things which one can claim to know as the primary condition. I believe that one can know things that are not certain. One can know

one's own values and attitudes, for example. To recognize familiar faces is a form of knowing too. Newton and subsequent generations "knew" that the universe acted in a mechanical way. This was knowledge until Einstein came along. People can know a lot of things that are not certain. Tacit knowledge is one of them.

Another disambiguation that I should tackle concerns the word "knowledge" itself. It is not enough that I should limit this thesis discussion to technical definitions of knowledge. I do not wish to support or critique definitions of knowledge such as justified, true belief any further than they support common beliefs about knowledge simply being the facts. It is considered what is true as opposed to mere opinion. Knowledge is typically understood to be distinct from value and to conflate the two is to commit the naturalistic fallacy (i.e., One cannot derive an "ought" from an "is.") But this position became increasingly untenable after Searle (1964) who argued effectively against it. One of the main assumptions of this thesis is that the confusion over what tacit knowledge is based on the continued belief that knowledge is completely descriptive and in no way evaluative, that kind of knowledge amounts to brute physical fact and nothing else. In this thesis, I side with Searle.

### ***b. Tacit Knowledge***

There are a few terms that tacit knowledge needs to be distinguished from as well. First of all, tacit knowledge is not common sense. Tacit knowledge has none of its connotations of obviousness. Nor does tacit knowledge hinge on argumentative fallacy, *ad hominem* or otherwise. Second, it is not deep understanding either. While depth and foundation are implied in it, tacit knowledge does not require high cognitive ability that deep understanding implies. The term "deep understanding" can best be understood in light of Bloom's taxonomy. A person's

ability to achieve mental dexterity at the highest levels is to demonstrate depth of understanding. Tacit knowledge forms the background of even the most basic of cognitive acts while deep understanding does not. Third, terms like working knowledge, practical understanding, applied knowledge, etc. do describe knowledge that cannot readily be put into words (the basic condition for tacit knowledge) but the phenomenon that these phrases refer to is one where depth is not implied, one can just as easily stumble upon working knowledge as work it out. Tacit knowledge can be seen at work in such circumstances but only in the same way as in cognitive activities lacking depth. Fourth, there is a temptation to equate tacit knowledge with habitual practice or habitus. While the former has little in terms of thought associated with it, the latter is much more challenging to address. Merleau-Ponty and, especially Bourdieu, used this term to describe peoples' ability to solve problems without deliberate calculation. However, this approach is very close to the phenomenon of expertise that I was originally preoccupied with. Whereas I think that habitus is a broader, more encompassing notion than expertise, I do also believe that tacit knowledge forms the background of the attitudes, intuitions, and the like that form the concept of habitus. Habitus describes the outward phenomena of resident tendencies but runs afoul with respect to tacit knowledge because the concept of habitus presumes an epistemological archeology wherein the most foundational of knowledge can be unearthed and made explicit. Tacit knowledge, in Polanyi's mind, cannot be approached this way successfully; it is a chasing after the wind.

### *c. Aesthetics*

Baumgarten's aesthetics did not match that of Kant. His was a theory that relied on the sensibilities of an observer more in line with Leibnitz's "petites perceptions." So the idea that

there are cognitions that are not really clear is not a new one with Polanyi. Baumgarten's idea was that the concept of a rationally clear idea that developed from Descartes was not an either/or thing. His aim was to convince us that "perception is... a unique mode of cognition that carries its own richness, complexity, and necessity" (Hammermeister, 2002, p. 6). Hammermeister quotes and translates Baumgarten. "Aesthetics... is the science of sensual cognition" (p. 7).

Here is an indication that Polanyi was not the first to wrestle with conceptions of cognition that do not have requirements of certainty. "Baumgarten elaborates on how he understands aesthetic truth by situating it between falsehood and the certainty we achieve through correct employment of our rational faculties" (p. 9). Hammermeister speaks of three criteria on which aesthetic knowledge is to be evaluated "the richness of the imagination," "relevance" and "clarity of presentation."

Baumgarten's position should be contrasted with both Kant and with the British philosophers. Kant strove to prove "the basic distinction between intuitive or sensible presentations on the one hand, and the conceptual or rational on the other" (Burnham, 2019). But for Kant, the aesthetic was cognitive only in a limited way. He believed it to be cognitive only in its form (its shape and contour) but not in its content (shades of colour and qualities of tone). The British tradition (here I generalize perhaps unfairly) maintained that aesthetics was completely non-cognitive.

In this thesis I will maintain a position on aesthetics in the vein of Baumgarten. Though much more could be said about the justifications and criticisms of this position, what it does have going for it is that it works. The pragmatist in me allows me to feel sufficiently justified for adopting the position for this reason alone but, furthermore, the fact that such a position on aesthetics is held by the three twentieth century authors whose work and ideas I quote is

indicative of how the study of aesthetics has come full circle. Indeed, aesthetics could even be seen as a bellwether for the slow and steady truncation of dualist Cartesian modernism.

Therefore, I have adopted the attitude that sensory input is cognitive for no other reason than it can be thought about. But I do realize the limitations of my position in that I would not claim that simple awareness constitutes thought.

Having said this though, to deny Kant's aesthetic position completely is not reasonable. "Kant's usage is based on feeling, in particular on the feeling of pleasure or displeasure" (Ginsborg, 2019). Thus, when I speak later of perceptions as sensory inputs that are felt, and known to be felt, I open myself to criticisms of aesthetic ambiguity. I am comfortable here since Kant's and Baumgarten's ideas are clearly intertwined on this point. However, when the issue arises in the following text, I will speak more to it then.

#### ***d. Value***

This thesis will also address the issue of value. I will not be trying to make a case for an alternative theory but it will be quite evident that how I use *value* in this thesis is not standard philosophical use. Though I adopt an axiological methodology in that "Axiology can be thought of as primarily concerned with classifying what things are good, and how good they are" (Schroder, 2016), I wish to apply the approach more generally by asking questions like "What things are red and how red are they?" In so doing, I make it plain that one major assumption to my argument is that the qualities of things exist in gradients of valuation. One knows these gradients. Hence, one can know value.

### ***e. Ontology***

By and large, I adopt a fundamentally realist ontology similar to that of Polanyi. However, I do not claim to have worked out my own ontological position well enough to distinguish it from Polanyi's position. It is enough to describe what his is here. For Polanyi "reality is hierarchical because the way we know it is hierarchical. Polanyi wishes to model the structure of reality on the structure of knowing" (Margitay, 2010, p. 130). When I discuss Polanyi's epistemological structure later, the reader is, therefore, urged to extrapolate a layered reality that corresponds, not to signifying propositional statements, but to the complexity of thought required for understanding the given object contemplated.

### ***f. Secondary Literature***

In several sections I refer to what I call the secondary literature. By this term I mean the article literature written in response to Polanyi's theory. Usually the term would include larger monographs, too, but in the case of the analysis regarding tacit knowledge a palpable difference exists. The article literature is primarily analytical but is highly varied in its analysis. The book responses are as much surveys of that variety as analytical in their own right. This is why I note the difference calling them the landscape and the meta-layer. Part of this thesis offers an explanation why this variety persists.

## **3. Methodology**

### ***a. Structure***

This thesis is a hypothesis statement for a future, larger, and structured experiment. To be sure, by the end of this thesis I will have some fairly good ideas about how to put its proposal to

the test. But, since I am more interested in the philosophical structure of such an experiment than the experiment itself, I would like to iron that out first. What this thesis amounts to be is a thought experiment whose purpose is to justify follow-up experimentation. The question of this thesis is about how to convey tacit knowledge. To reiterate from a previous paragraph, it is not primarily about what tacit knowledge is or what it is not. The thrust is not to join that debate but, instead, to examine how one might communicate tacit knowledge to someone else.

The thesis consists of two halves: Polanyi's position and how to communicate it. But before the first part can begin I need to provide a fair amount of context. What follows as a fairly lengthy preamble will provide a literature context as a justification to avoid its conclusions or to explain them; and to have a better understanding of what Polanyi meant by the "tacit knowing" process as opposed to "tacit knowledge." The state of the dialogue regarding tacit knowledge, as I shall presently describe, begs for a return to the source in Polanyi. Only after that can I move on to discuss what to do with it. The subsequent part of the thesis will begin that discussion by expanding the notion that Polanyi himself began from, namely that he took issue with the assumption that knowledge had an existence apart from human involvement. In order to move to that place, however, some housekeeping matters need to be dispensed with.

Because tacit knowledge is a bit of a cryptic term to begin with and because the pedagogical approaches that will be suggested here are not instructional in the standard sense of delivering information, the argument presented in the sections following the one containing the exposé on Polanyi's ideas may not be intuitively obvious. But without lines of reasoning outside of Polanyi's own, experiments along the lines of what this thesis will propose would be a hard sell. No clear connection exists between Polanyi's ideas and ways to use them in education. Without a clear analogous rationale for a way of doing so, Polanyi's theory would remain...

“theoretical.” Without an analogous way to teach using tacit knowledge as a basic epistemological assumption, Polanyi’s theory cannot but remain as an item of ivory tower obscurity. But with an analogous way to teach, the process of teaching becomes one where a different set of epistemological assumptions prevails and with it a different view of the world. So, the second half of this thesis will present a methodological construct or, shall we say, a fleshed out method to get the job done - as a way to put Polanyi's theory to the test.

Along the way, a few epistemological beliefs might be questioned. Some questions about the place of justified, true belief will be held to the light, for example. Verificationism and the correspondence theory of truth will be touched on. But more importantly (this is a secondary point of this thesis) a few at first seemingly unrelated ideas will be juxtaposed all in hopes of conveying how the tacit is arrived at by a learner. Not only will the following arguments present a hypothesis to the issue of how tacit knowledge might be transferred, it also presents, by way of example, an indication of how our imaginations already carry the seeds of an endlessly rich sea of knowledge - part of which may be linguistically expressed and part of which will remain inexplicably beyond articulation.

So, how might one now go about describing a way to show its teachability? This project's stated objective is to formulate a way that tacit knowledge might be taught but, as will be seen, given that tacit knowledge is not articulable with words, such an objective will not be attained in a simple way. And, as mentioned above, tacit knowledge is not a Rylean knowing-how either so it is not “articulable” by way of action either. There is no easy way out of this explicatory dilemma. Tacit knowledge is neither demonstrable with words nor is it demonstrable with actions. But, on the other hand, since phenomena like judgements of expertise, moments of “aha”, and strokes of intuition, though not commonplace in each of our lives individually, they

are common enough that they should command epistemological consideration and they should also command an understanding of the method by which they are attained. Polanyi has argued that tacit knowledge/knowing is at the root of all such phenomena. He argued that tacit knowledge is at the root of all knowledge. Therefore, finding out how it is learned is critical. But if one cannot tell it and one cannot show it how, then, how does one convey it without recourse to the ineffable?

Here I need to be clear that how Polanyi described the tacit aspect of knowing is quite subtle. He did in not categorize knowledge into two mutually exclusive types. He did not claim that all explicit knowledge is based on some inexplicit tacit knowledge. His is not a foundational theory. Much of what is tacit can with effort be described. Polanyi only said that there will always be a remainder that cannot be. "For just as, owing to the ultimately tacit nature of all our knowledge, we remain ever unable to say all that we know, so also, in view of the tacit character of meaning, we can never quite know what is implied in what we say" (Polanyi, 1958, p. 99). In the same way, for example, that to be familiar with Galileo's problems with the church also implies some knowledge of medieval cosmology too. And, given that one knows about medieval cosmology, one also knows about the biblical description of the creation of all things. And on it goes - to the point that one cannot distinguish between what is true and what one simply knows about. So, if understood this way, the reader can sympathize with all of the attempts in the secondary literature to formulate the tacit in different words. For the most part, those authors are not wrong but reflect the precarious intricacy of Polanyi's idea.

This instability complicates how the tacit can possibly be communicated. Perhaps the best methodological approach is to leave it and steer clear of that debate, an approach that I will speak to presently. But this road does not get us anywhere. The how-problem is, of course, a

methodological one but this project is about the how-problem on two levels. The challenge is to describe the proposed methodology for teaching tacit knowledge on one hand and, at the same time, to engage in a different methodology employed in its presentation. In the most general sense, the ways that I propose for showing how tacit knowledge transfer can be described using two metaphors: aesthetic narrative and hermeneutic design. By “aesthetic narrative” I mean that the objects encountered in individuals’ environments have a visceral effect on them and that the description thereof is limited to that of the immediate. By “hermeneutic design” I mean that into every made object in individuals’ environments went intentional presentation. Every made thing is there with a purpose and that that purpose is hermetically or archeologically excavatable in degrees. The methods used to convey this proposal are argumentative and speculative. The above mentioned appearance lies in the complicated intertwining of the philosophical methods employed in this project. There is, however, no clear methodology per se. As Dever (2016) dryly says, "There *is* such a thing as philosophical methodology - it's the study of the rules of good philosophical practice. But there are no rules of good philosophical practice... There's only skillful receptiveness to possible fruitful interactions" (p. 20).

Dever's tongue-in-cheek approach to philosophical methodology is certainly freeing but I still feel a need to speak to the running guidelines that this paper will follow. I will go forward with an attitude that this thesis will be more of a "working-hypothesis" than anything else. It will be like conjuring up some water for our aspiring sailor to either swim or sink. So, in regards to the speculative nature of what follows I freely admit to a bit of “testing the winds.” If one calls this speculative philosophy I am not sure but there is a healthy dose of “what if” in the following pages. “What if” the claim that tacit knowledge cannot be taught is ignored? A question perhaps not at the level of “What if God does not exist?” but almost. “What if” one assumes, as many

have argued, that fact and value do not exist on mutually exclusive planes? Indeed, “what if” one thinks of thick concepts as more than descriptive burls on stalwart evaluative trunks and fashioned them into definitional clouds of juxtaposed value and knowing? What I write in the following pages is certainly speculative in the “what if” sense. But basically what I describe is a thought experiment combined with the laying out of the parameters for a full-on scientific experiment or practical project. The premise of this paper is that the claim made by Polanyi that tacit knowledge cannot be taught is false. My counter claim is that tacit knowledge can be taught given the right conditions and the right way of looking at some ideas that are analogous to Polanyi's formulation. The question that remains afterward is whether or not it is tacit knowledge in the Polanyian sense that is transferred in the way that is described.

***b. Value***

Another idea that I will focus a fair bit on is the nature of value. It has puzzled me for a long time why this term has remained the sole domain of moral philosophers when it is clear to me that there is economic value and aesthetic value as well (not to mention epistemological value and a whole host of other values too). I realize that the word is not used in economics and aesthetics in the same sense that it is in ethics but I think that there is a commonality among the applications of the word that is significant. Even discussing concepts like the labour theory of value or the symbolic value of products I think plays into this commonality. To say the obvious: value is valuable. Even in ethics, one does not really have bad values. Such a notion would only invite relativism. One can only have values or not. In economics, value can be quantified either positively or negatively and to varying degrees. The same goes in aesthetics where tonal qualities of shade, hue, and lustre, can also be quantified, again in varying degrees. Typically, though, in

ethical discussion this is not done. Perhaps this is because discussions of a good/bad value binary are supposed to be analogous to the true/false knowledge binary. But such a binary seems to me to be contrived given that hedging words can almost always be used in ethical discussions.

### *c. Knowledge and Gradient Value*

A third concern regards the idea of definitiveness. Polanyi tends toward a position in which the result of sensory input data processing, something he calls integration, amounts to be explicit knowledge. Unfortunately, this position opens him up to calls of relativism since each person constructs such knowledge in her own way. The methodological concern, however, is that when one focuses more narrowly on pedagogy and the philosophy of education, as Heyting (2002, p. 5) points out, the problem becomes more acute in that not only does one face Hume's problem (the difficulty in concluding certainty from an inductive procedure) but also one that conflates a problem of knowledge applicability with a problem of knowledge truth. The notion of whether distinct truth or falsity is ascertainable in a pragmatic sense or even in an analytic sense is far from a closed case. Educators must do double duty when it comes to philosophy because they must define for others what the parameters of truth and knowledge are yet struggle with such conceptions themselves. Heyting quotes Quine (1989) as he observes that knowledge is fraught with problems of definition. Far worse - knowledge, by Quine's admission, can exist one day and vanish the next. One hitherto unexpected counterargument can falsify what yesterday was certifiable fact. Quine suggests that knowledge be thought of in the same way as *bigness*, that the truth of knowledge be comparative rather than categorical. The problem with knowledge, the product of the verb "to know." is that there is no way of speaking of comparative or superlative knowledge. It is a limitation of language. But, having pointed this out, I will not

proceed from an implied position of skepticism in either the radical sense of questioning everything or in the benign sense that I think that postmodern thought has gone: that since knowledge certainty seems to be unattainable one should remain agnostic as to its existence. I wish to make it clear that my goal here in this thesis is to formulate a way to gain knowledge and certainty in degrees. So my project implies that I do not consider that a skeptical position in either way makes sense.

In any case, if the understanding of the world starts by way of sensory inputs (like Polanyi said) that people integrate into knowledge, then a fairly high importance should be placed on the initial inputs that start the integration process. Of course, one cannot control life's circumstances in every aspect but one can influence the environment in such a way as to affect subsequent integrations. In this sense, it is important to place oneself in front of the kinds of sensory input that will lead to the kind of knowledge that is desirable. It stands to reason, then, that if one can intentionally start a collection of specific sensory inputs, then one can intentionally direct oneself toward the specific kinds of integrations that one seeks.

## Chapter 2 - The Literature Context

This chapter is not specifically germane to the argument laid out in this thesis. The following three sections are presented for contextual balance and also to indicate why only a return to Polanyi's own writing would provide a sure enough ground for discussing tacit knowledge, tacit knowing, and how to teach it. The reader may choose to continue at chapter 3 without loss of content or substance to the argument.

### 4. The Landscape

Tacit knowledge has been a much commented on subject for more than forty years. In spite of this, there is still much that is ill-defined about the concept. It is, in large part, because of terminology. Haron (2005) lists no less than ten groups of tacit knowledge monikers and cognates each of which contains several specific descriptors that convey different aspects of this so-called tacit. Moreover, these descriptors have considerable conceptual overlap as well as repetitive application. It is a very tangled puzzle and, while it is not our intent to resolve it, examining ways that that might be done will shed light on two things. First, it will reveal the profound nature of the Polanyi's thoughts. More importantly, it will make obvious the futility of trying to describe the notion satisfactorily for the notion is, in some sense, itself tacit. At best, the literature can only triangulate an epistemological vicinity for tacit knowledge.

#### *a. Kinds of concepts*

The first way to view the puzzle is in terms of concepts, the kinds of concepts that form the mix of what is known as tacit. After Polanyi (1966), several attempts were made to contextualize "tacit knowledge" (Baumard, 1999; Nonaka, 1991; Reber, 1993). These authors

borrowed the term and applied it to concepts that only partially remained true to Polanyi's intention. Reber, for example, writes about tacit knowledge in terms of implicit learning. But far more egregiously, Nonaka and Takeuchi (1995) changed the meaning in applying Polanyi's terminology to the context of business practice. They speak of a conversion process (p. 6); whereby, tacit knowledge is converted into explicit knowledge. Here the term "tacit" does not have even remotely the same meaning as Polanyi intended. Polanyi was openly skeptical of anyone's ability to articulate tacit knowledge. In Nonaka and Takeuchi's view, tacit knowledge can and should be articulated. So, Nonaka and Takeuchi are not talking about the same concept as Polanyi was. Yet they use the same term.

Nonaka and Takeuchi's formulation led to the development of a knowledge management industry. The idea that businesses had hidden resources within them became intoxicating and the attempt to gain competitive advantage by systematically trying to convert any and all available "tacit" knowledge into usable and transferable explicit knowledge became a knowledge management fad. This has led serendipitously to the wide dissemination of the "tacit" concept but in a trimmed-down version with much of its philosophical sophistication stripped off for utilitarian purposes. However, this rise in the visibility of the term also made it very popular as a word to be used for its convenience and caché.

### ***b. Choices of words***

The second way to visualize this tangle is to recognize that much of the difficulty over what tacit means centres on choices of words to define it. After the ten year fixation on trying to convert tacit into explicit, there was more effort put into coming to grips with what Polanyi meant by "translating" it into layman's language. As we already have seen, Reber (1989; 1993)

used “implicit.” Eraut (2004) uses “informal.” Fuchs (2001) views tacit knowledge as implicit or procedural “schemas of interactions” (p. 324). Puusa and Eerikäinen (2010) reiterate this confusion but cogently present the descriptors as several components of tacit knowledge instead of different types. Their approach helpfully generalizes the many monikers but still leaves us with a sprawling idea whose components would just as well be understood if left standing independently. But even if this is done, where one idea stops and another begins is difficult to determine. This snag shows that the state of the tacit is still in considerable disarray even though the ideas have been somewhat corralled by the words chosen to describe it. The point here is that once authors came out from under the simplistic shroud of Nonaka's (1991) definition of tacit knowledge as “yet to be made explicit” knowledge, the confusion about what Polanyi meant was still there except that, afterwards, “tacit knowledge” as a term became just one of several phrases that could be used interchangeably. It is little wonder, therefore, that the recent attempts (Adloff, 2015; Collins, 2010; Gascoigne and Thornton, 2014) to organize the tacit knowledge concept have so far done a superb job. They have at least codified the complexity of the term.

### *c. Expertise*

Third is the most prevalent conceptual metaphor - expertise. These attempts to understand the term focus on the conditions under which one might encounter tacit knowledge. Kurti (2011) says that in social arrangements like apprenticeship one gains implicit knowledge (p. 15). An “apprentice becomes a master through the mechanism of acculturation into the world of the expert. Actual participation is critical for two reasons: the majority of the knowledge that the master transmits to the apprentice is tacit, and the knowledge often varies with context” (p. 16). Kurti equates implicit with tacit. Winch (2010) adds that expertise can be seen in two ways:

subject expertise and procedural expertise. Though these are closely related, there are some critical differences. Winch names one of these “the degree problem” (p. 5). A person may certainly know how to do an activity better or worse but it would hardly make sense to say that one knows something is the case in degrees. One either knows it or not. This observation becomes a critical point in our later attempt to give substance to a teaching technique. The recognition that knowledge comes in partial or incomplete *certainty* is key. This is a point that Winch seems to have missed.

A second related aspect that distinguishes subject knowledge from practical knowledge is the idea of appraisal. Practical knowledge can be assessed on the basis of quality. Once again, subject matter expertise would not be appropriately appraised in this way. But this quick perusal of expertise provides three ideas that begin to show the landscape of “the tacit”. Dreyfus and Dreyfus (1996) point to a hermeneutic-like working-out of the unspoken to describe the secret ingredient of expertise. Kurti (2011) claims that social engagement is the key. She implies that this mechanism is a kind of acculturative osmosis. Winch wades in by adding that expertise is based on a qualitative notion akin to knowledge by acquaintance. This hermeneutic-like, acculturative osmosis type, knowledge by degree of acquaintance is summarized by the term “tacit.” This is not exactly a clear idea.

#### ***d. Examining articulation***

A fourth way to see this complicated mash is by examining articulation. The assumption is that articulation of the tacit must be through language but this may not be the case. Yu (2003), observes that the use of words is not the only way knowledge might be articulated. It can be articulated by demonstration as well - articulation by action. This is what Gascoigne and

Thornton (2013) were driving at, too. Thus, the normal mechanism of transferring knowledge from one to another is rendered one of many rather than unique. In a similar vein, Kurti (2011) talks about focal awareness as opposed to subsidiary awareness regarding tool use. She observes that in one's focus on a nail driven by one's hammer, the knowledge of the activity transferred from hammer to hand goes unrecognized. She refers to Polanyi's "from-to" structure as an example of this kind of non-language articulation - articulation by feel (p. 10). Casselman and Samson (2005) say that tacit knowledge is the key to the process of revealing truth (p. 3). While it is not clear how Heideggerian this comment is intended to be, it does suggest yet another avenue for articulation. There is something to be said for this view in that it provides the background or the underlying foundation for the meaningfulness of explicit knowledge. Yu (2003) says that "giving meaning to and understanding...linguistic symbols" (p. 16) are themselves forms of tacit knowing. Therefore, explicit knowledge relies on tacit knowledge for its articulation. Thus, many kinds of graphically presented information can be given but without the tacit ability to comprehend no knowledge would be transferred. The upshot of this formulation is that knowledge is available to us in a multimedia kind of way and that the tacit component of that knowledge comes to us by way of non-linguistic articulation. Zappavigna (2013) even argues that it can come to us via deeply couched linguistic propensities, too. It seems that there are more avenues for the unsaid to be communicated than the said, an odd twist to intuitively straightforward thinking.

## **5. The Meta-Landscape**

Several book-length works have also been written on the subject of tacit knowledge. Individually, each represents the kind of thinking of their time period. Reber (1993) stands alone

in his representation of a psychological understanding of tacit knowledge. Nonaka and Takeuchi (1995), Sternberg and Horvath (1999), and Baumard (1999) reflect a kind of thinking associated with a focus on the efficiency mindset the late twentieth century business world. They, as a group, recount the ways that better understanding tacit knowledge could result in higher productivity and profitability. Four recent books, Collins (2010), Gascoigne and Thornton (2013), Adloff et al. (2015), and Zappavigna (2015), should be mentioned separately for two reasons. Not only do they reflect a far more comprehensive view of tacit knowledge but they also show the reader that tacit knowledge is a philosophically viable and epistemologically grounded concept to stand up to any lingering positivism. A clearer explication of these four volumes shows the present state of authorship regarding tacit knowledge; that is, we now have a better grasp of its complexity but, at the same time, a better feel for the nebulosity of the concept, a feel that the article literature above makes all too plain.

Collins (2010) examines “tacit” sociologically. He does this because he believes that epistemological support is untenable. He believes that tacit knowledge is parasitic on explicit knowledge. His position is that prior to efforts to codify knowledge in the last couple of centuries, all knowledge was essentially tacit and that only after these codification efforts did explicit knowledge come into being. As a result, our society has, according to Collins, lost contact with what was formerly considered knowledge and have assumed that explicitly stated factual knowledge was the norm all along. The fact that a category of tacit knowledge exists now is due to the creation of explicit knowledge as a category and is a harking back to what was commonly understood as knowledge in centuries past. So, rather than trying to come to grips with how tacit knowledge fits into the epistemological puzzle, he focuses on describing how it

fits into a social web. He focuses on examining the role of the tacit as it acts as a kind of undercurrent glue in social relationships.

Collins sees tacit knowledge as a group of related things, not as a common characteristic of them. He lists three types: relational, somatic, and collective tacit knowledge, the last of which he calls social Cartesianism. The relational type is mainly about social interactions and involve situations where information is not shared because of moral prohibition or for reasons of maintaining or changing social power structures. This type is not true tacit knowledge (Yu, 2003). Even though the withheld information is both unspoken and knowledge, it is not withheld for epistemological reasons. It is withheld for sociological reasons instead.

The second type of tacit knowledge that Collins considers is somatic. It has to do with the activity of the body and involves the standard examples commonly associated with discussion about tacit knowledge, i.e., bicycle riding, chess playing, and as per Polanyi, Polynesian navigation and chicken sexing. Collins calls upon Dreyfus and Dreyfus (1996) in this regard to discuss it in terms of expertise. Moreover, this is the type that is commonly associated with Ryle's knowing-how.

Collins' third type of tacit knowledge is collective or social Cartesianism. While the somatic type of tacit knowledge focuses on the immediate vicinity of the body and its relationship to what is being acted on, collective tacit knowledge takes into account the environment in which the somatic is performed. It is, for example, the traffic that car driving or bicycling is performed in. It is the economic conditions in which work related activities are performed. This context determines how the activity is to be performed. It is dynamic and, to the uninitiated, unpredictable.

Gascoigne and Thornton (2013) begin their work by posing the question: can tacit knowledge be both tacit and knowledge? This is a gnarly problem considering that if tacit is defined as beyond words to describe, then one would have difficulty maintaining a claim that tacit knowledge was knowledge. On the other hand, if knowledge is defined as that which is codifiable, then the phenomenon that tacit describes would be called into question. But the phenomenon is well documented (Polanyi's chicken-sexing and open water Polynesian navigation being prime examples). So, one is left with either having to redefine knowledge, a rather daunting challenge, or redefining what Polanyi meant when he said "We can know more than we can tell." Gascoigne and Thornton choose the latter. They focus on the word "articulate" rather than the word "tell," concluding that although one cannot "tell" what one knows tacitly one can articulate it through actions. Their conception of the root condition of tacit is, therefore, essentially knowledge-how since it is always associated with the ability to do something. It is always associated with some level of expertise.

Adloff et al. (2015) offer a volume assembled from contributors' essays. It is an eclectic work that draws from a variety of academic fields. Its point of view is the reverse of the position held by both Collins or Gascoigne and Thornton. Whereas the latter authors attempt to define tacit knowledge as a conceptual entity, Adloff imports all the ideas that might be considered tacit and discusses the commonality among them. A running theme throughout the book is that very often ideas that are commonly known as separate concepts are relabeled as tacit (e.g. implicit knowledge). But while this relabeling does ease the challenges associated with picking through the ideas in search of specific characteristics, it also broadens the notion of tacit knowledge itself to the point that it is endangered of losing its meaning. Adloff recognizes this challenge and mitigates it by identifying three main categories of "tacit." The first category seeks to find out

where or from what studies tacit knowledge typically arises. The second concerns itself with the problems of explicating the tacit when it is defined to be inarticulable. The third category is most adventurous and is the aspect of the book that identifies its unique contribution. It addresses the problematic knowledge claims of such things as metaphors, intuition, hunches, and the like - slippery territory for epistemologists. Adloff's volume specifically combines the thoughts of three authors: Dewey, Polanyi, and Bourdieu and what is notable here is the inclusion of Bourdieu. His theory of power and practice seems to say something similar to what Collins has. This volume has the distinction of having been published in the non-Anglo world, so typically Bourdieu would not be considered as a source of contributions regarding tacit knowledge. Therefore, this book's origin being from the heart of continentalism makes its perspective somewhat more interesting, yet, at the same time, too all-inclusive.

The Adloff et al. (2015) volume identifies the subject of what follows in this chapter, namely that the origins of today's debate about tacit knowledge have a long and complicated history. He offers as examples Geertz's (1992) concept of local knowledge as a precursor to Lakoff and Johnson's (1980) work on metaphor as well as to the considerable contributions in the seemingly separate field of knowledge management initiated by Nonaka (1991). These diverse sources make for dense reading. They make it difficult for the reader to get a handle on exactly what is being discussed. Moreover, his difficulty leaves one is left with the feeling that no one else knows either. This is not encouraging. The book concludes that tacit knowledge is a spectrum.

Zappavigna (2015) starts with Polanyi's famous quote "We can know more than we can tell." Her claim is founded on the principle that tacit knowledge is ineffable, that is, too great, too obscure, too mysterious to be put into words. Her thesis is that this ineffability can be partly

overcome by the intense examination of tacit knowers' grammar. This course of action would reveal unconscious intention and disclose primordial expertise. She wishes to illuminate rather than explain Polanyi's idea for she observes that, though not precisely the same, similar ideas have been around for a very long time. Zappavigna mentions the Basque language in this regard. In keeping with her soft approach of illumination, she concedes that a "strong standpoint on ineffability is a superficial reading of Polanyi's theory" (p. 5). And following this concession she provides an explication of Polanyi's theory touching on not only his main ideas of subsidiary and focal awareness, but also of the very specific concepts of "indwelling," integration, and tacit coefficients as well. And these she coordinates in a way that conforms to a Peircean semiotic (p. 12).

Furthermore, she adds psychometric considerations founded on "systematic functional linguistics" (SFL) and applied to the transcripts of interviews she conducted for this purpose. In her conclusion Zappavigna (2015, p. 185) discusses the different types of tacit knowledge gleaned from her interviews. Unsurprisingly, the first has to do with subject expertise. The second concerns the power relations between those interviewed and their work team members. She observes that her methodology reveals a much richer tacit world than the somatic type portrayed in the literature, *vis.* Nonaka's bread maker or even Polanyi's favourites, facial recognition and bicycle riding. On one level, then, she agrees with Collins (2010). The term "tacit knowledge" is an umbrella term for different types of events. But on another level, she both transcends and digresses from Collins. By examining the very language used ostensibly to convey the explicit, she conveys a profound depth to language that transcends Collins' understanding of it as well as Polanyi's. She digresses from Collins and from Gascoigne and Thornton, however, in that she has adopted the knowledge management understanding of tacit

knowledge - that it is merely present, resident, to be mined like a resource. She underestimates the fleeting nature of the tacit. Polanyi's piano player, for instance, knows tacitly where his fingers need to go but if he examines them instead of the music that he is playing, their movements become explicitly known and something else becomes tacitly known. One can never catch up to what is specifically tacit. Zappavigna's misses this fact. Her approach is either a way of unearthing the subliminal or a way of demonstrating it but either way she misses the primordial nature of tacit knowing/knowledge. Polanyi's idea is that tacit knowledge is "lost" to expressibility, not hidden from it.

These are four recent major works on the subject of tacit knowledge. They are diverse and each takes up the topic from a different perspective. Most notable is that the four works taken together display a macro-view of the same diversity found in the academic journals. The tacit knowledge concept lacks clear definition.

## 6. Summary

To review: So far, there is a range of competing conceptions of "tacit." Roughly speaking, they range from borderline explicit knowledge (Nonaka and Takeuchi, 1995) to some proto-property (Eraut, 2004) of knowledge. Moreover, the literature reveals not only a complicated substructure but a meta-layer of disunity as well. So, what is not tacit knowledge?

Schwitzgebel (2015), writing the entry on "Belief" for the *Stanford Encyclopedia of Philosophy*, goes so far as to say that "the traditional analysis of knowledge... takes knowledge to be a species of belief—specifically, justified true belief." But Davies (2015) cites several reasons that tacit knowledge is not belief at all. First, one is usually unaware of tacit knowledge. Although many people carry on without explicit knowledge of their beliefs, it is a simple matter

of self-questioning to discover them. This is *not* the case with tacit knowledge. Second, tacit knowledge is not causally significant. Whereas individual beliefs are at the root of a wide variety of decisions, tacit knowledge emerges as significant only in highly specific instances. For instance, an expert judges unique problem situations in ways that she herself is not even aware of. Third, belief requires the possession of concepts while tacit knowledge does not. For example, “where every normal speaker has tacit knowledge of rules but only people who have studied linguistics grasp all of the concepts that are needed to specify the rules” (Davies, p. 77).

In addition, Casselman and Samson (2005) talk about four “dimensions” of knowledge. These are four issues where the standard definition of knowledge might also run into some difficulty. The first issue is knowledge validity. To what extent are statements said to be true based on commonly accepted rules of logic? Is knowledge limited to the area within the perimeter of these rules? The second, the social aspect of knowledge, attempts to stop the tendency toward an infinite regress of justification, by establishing a system of credentials and recognition of authority. This issue raises the question of how much justification, or justification by whom, is required for belief to become knowledge. The third is the temporal aspect of knowledge. “Knowledge is path-dependent in that the acquisition of certain pieces of knowledge opens up an ability to acquire other pieces of knowledge” (p. 5). The fourth is knowledge heterogeneity, the fact that no two pieces of knowledge are the same. “Even seemingly identical pieces of knowledge have different implications” (p. 6). Two people can know the same fact but have different associations connected to it.

Two things then. First, since, in just a few hundred words, there are several notions of *knowledge* that are assumed to be explicit, one can see that the issue of profusion and confusion is not unique to the *tacit* landscape. It typifies the epistemological world in general as well.

Second, tacit knowledge is not merely unjustified belief. It is not proto-knowledge. It is something else. So, to reiterate, we now have a hermeneutic-like, acculturative osmosis-type, knowledge by acquaintance that is summarized by the term “tacit.” We also have a hard distinction form of tacit and a soft conversion form as well. We have “tacit” as a property and a “tacit” as a function of a common origin. Now, in addition, we have a wider context that is equally diverse. And there are still several more views on knowledge that can be described as tacit. Pertinent to the theme of this thesis, however, is that whether there are actually many distinct forms of tacit knowledge or whether one kind of knowledge goes by many names is interesting in itself but, either way, the confusion grows.

As mentioned earlier, Eraut (2004) also talks about different kinds of knowledge is not clear, however, as to whether he considers them tacit or not. His “codified knowledge” looks suspiciously like Polanyi’s explicit knowledge. But he also talks about “cultural knowledge” (p. 263) and points out that there is some debate as to its ability to be converted into explicit terms. He seems to imply that it is somewhere in between. In this way, he hints that this type of knowledge may at least be viewed as the “gestalt” interpretation as laid out by Yu (2003). Eraut also focuses on “informal” learning. He observes that the knowledge gained from informal learning is considered either tacit or as part of a person’s natural ability, not as something learned (p. 249). This is a strange combination but it amounts to yet another conception of the tacit, namely that the tacit is innate, like a personality trait.

In conclusion, what one has here is a brief decision tree. Either one has, on one hand, a topological issue in which the overlapping and convoluted concepts need to be bounded and defined (and terminologically disambiguated) or, on the other hand, one has a definitional issue that places tacit knowledge as an umbrella-term over many type concepts (Haron, 2005). Neither

alternative seems appealing. There seems to be no consensus for a nexus of meaning for the term. Neither does there seem to be any point to untangling the terminology. The recent attempts to do so have only shown this to produce a further layer of competing meta-theories. Perhaps Perraton and Tarrant (2007) are on the right track in suggesting that “tacit knowledge is merely a term given to a phenomenon the observer does not understand” (p. 353), a flippant but understandable sentiment.

But rather than write off the study of tacit knowledge as an unbridled mess, maybe stopping to consider another possibility is in order. Often forgotten is that language has meaning in different ways and, for that matter; meaning is gleaned from sources other than language, too. So, what the confusion of tacit knowledge sub-terms indicates, and what the widespread disagreement among recent authors on the subject of tacit knowledge indicates, and what the sentiment represented by Perriton and Tennant (2007) indicates, is that the term “tacit knowledge” is not particularly useful if it is viewed only as by those caught up in Cartesian reductionism. Perhaps the impasse can be resolved by asking about tacit knowledge from a hermeneutic perspective, a perspective more in keeping with Polanyi’s thinking and one advocated by Adloff et al. (2015) and hinted at by Dreyfus and Dreyfus (1996).

I contend that the term persists because it is still useful, not as a dump for all that is not clearly understood about knowledge as Perraton and Tarrant construe (p. 336), but as a receptacle for all that is nuanced about knowledge. Therefore, what is it that one can know without being able to articulate? Indeed, what does one come to know that one does not have the words to describe?

### Chapter 3 – The Terms of Polanyi’s Tacit Knowing

#### 7. Introduction

When I speak to others about “tacit knowledge” they look at me blankly. They know they have heard of the term but they do not really know what it is. They've heard of the term “tacit” in the context of “tacit assumption” and “tacit agreement.” They think that tacit refers to something like the non-existent water that our rookie sailor must practice in. So to them it means something closer to “left unsaid” or imagined. For this reason they become wary when the word is conjoined with “knowledge” to form “tacit knowledge.” They become skeptical that such a concept is viably understood or even legitimately used. To most people there is something incongruous about a form of knowledge that is not sayable. So, “tacit knowledge” is usually met with skeptically wrinkled brows if not with open resistance.

However, when I explain to them that tacit knowledge is the sort of knowledge that might be passed on to others by way of mentorship and apprenticeship they perk up. When our rookie sailor realizes that he is not learning to swim as much as learning military obedience, he gets the point. Business people especially grasp the idea when it is pointed out that something like tacit knowledge is lost when senior employees retire. “The way things are done around here” is lost as well. Businessmen know right away that it is very difficult to put a finger on and, even more importantly, they know that they lose something valuable. Suddenly, they become really interested. Scientists, educators, and philosophers perk up too when I explain to them that tacit knowledge has implicit appearance in hunches, intuition, and cognitive leaps. They see that the grasping of new concepts, the “having” of new ideas, does not just happen by itself. They have a source. There is an undercurrent that precedes them - a tacit undercurrent - a tacit knowledge.

While it is tempting in this thesis to pursue explanations regarding the mechanisms of apprenticeship, say, or the subtle intricacies of mentorship or, even more generally, tackling the roots and sources of expertise, this is still not basic enough for my liking. I prefer to think of tacit knowledge, not as some wonder concept to explain the unexplainable, but to understand what is learned when fingers are burnt on the stove. One doesn't just learn that stoves are hot. One learns to be careful. One learns to move in certain ways and to be aware in certain ways. One learns a way of being. Polanyi's concept of tacit knowledge opens a window into *this* world.

As a term, “tacit knowledge” was first employed by Michael Polanyi in 1958. His book *Personal Knowledge* profiles the formulation and justification for believing that one relies on “much wider cognitive powers than an objectivist conception of knowledge would allow” (p. 249). The structure of these “wider cognitive powers” is the structure of tacit knowledge or, as Polanyi more commonly preferred, tacit knowing. *Personal Knowledge* and subsequent books explore two avenues. Polanyi’s first motivation was a critique of positivist epistemology. His line of thought was part of a wider effort among mid-twentieth century philosophers to counter the trend toward a reductionist and counter-intuitive verificationist understanding of the kinds of things that one can know and how one can know them. The verificationist position, after all, prescribed a limited scope to what could be held as meaningful (i.e. only that which could be objectively verified). Everything else was not knowledge. Polanyi's second line of thinking at first centred on similar observations made by Ryle (1949) who distinguished between knowing-that and knowing-how. Polanyi even shares Ryle’s assumption that the behaviour observed in demonstrated knowing-how accurately reflected an actor’s mind. Where Polanyi disagreed, however, is in the assumption that a second person’s observation of the first person’s behaviour produces the same mental state in both persons. His central idea, what is commonly known as

“tacit knowledge,” describes the difference between the two and, moreover, bluntly undermines the logic of verificationism.

In the most general sense, this central idea describes knowing as more in line with constructivist thinking. It does not dismiss the positivist view but builds a formulation inclusive of it in addition to what one is sure one knows but cannot verify. Polanyi defended an even stronger position: all that one knows, he says, is either tacitly known or is founded on the tacitly known. In other words, *all that one knows is either unverifiable or is founded on what is unverifiable.*

## **8. The Main Objective and Matters of Clarification**

### ***a. Recapitulation***

The goal of this thesis is to adopt Polanyi's understanding of tacit knowing (that which is known but unverifiable), then explain that concept in terms of aesthetics, that is, in terms of our visual, aural, and tactile environments. After all, burning fingers on the stove is a thoroughly sensory (i.e. aesthetic) experience.

My objective in this thesis is to reach beyond mere discussion of what tacit knowledge is or is not. Instead, it is to present an answer to the following question:

How might Polanyi's thoughts be interpreted so as to produce a clear and conceptually consistent understanding of tacit knowledge *communication*?

In other words, I will not be repeating what has been amply covered by the existing literature. I will only do two things. First, I will discuss if and how Polanyi's conception of tacit knowledge

is plausible. Second, assuming that it is plausible, I will discuss how tacit knowledge might be passed from one person to another.

Given that Polanyi did not believe that tacit knowledge could be taught I will ask if the question of tacit knowledge transfer is even realistic. After all, what one might term as tacit knowledge might just as easily be seen as mere socialization or putting two and two together in conscious reflection. One even might consider tacit knowledge to be what is sometimes called the hidden curriculum but I want avoid the issues of psychological bias between teacher and student. What justifies a belief that this is the wrong direction? My early thinking was that it would seem odd that one could have knowledge yet not receive it in some way. And if it is received, is it not delivered in some way as well? Such was my thinking.

As I read the post-Polanyi literature I noted that it amply illustrates multiplicity and confusion. It is rife with competing attempts to explain what Polanyi meant. Several authors (see chapter two) have provided book-length attempts to corral the definition of tacit knowledge but even they differ substantially in their conclusions. Nonaka and Takeuchi (1995) borrowed the term and applied it to a business management idea and completely misconstrued Polanyi's conception of tacit knowledge. Overall, these books merely add a meta-layer to the confusing landscape of the article literature. Not only are there many different monikers that refer to tacit knowledge but there are different concepts sometimes described with the same alternative term. In short, the literature implies that Polanyi's work needs translation. It implies that "tacit knowledge" can and should be understood in more familiar terms but, as will be seen, this implication is based on a complete disregard for Polanyi's terminology. To wit, the term "tacit knowledge" is used exactly twice in the five hundred page *Personal Knowledge* (1958) and only three times in Polanyi's explanatory follow-up volume *The Tacit Dimension* (1966). So, the issue

is not whether any of the concepts or terms used actually explains what tacit knowledge is. The real issue is that most of the claims are based on an assumption that *tacit knowledge* is the concept that Polanyi mostly talked about and that it is simply some form of knowledge that is just undercoded. But this is not true. Tacit knowledge is but a peripheral idea in Polanyi's work.

***b. Where is Tacit Knowledge Within the Tacit Knowing Framework?***

To be clear, Polanyi did speak of tacit knowledge occasionally and sometimes fairly explicitly. In his 1964 article *The Logic of Tacit Inference*, for example, he spoke in depth about tacit knowledge and made it clear that there was a definite “thingness” about his epistemological construct but it certainly wasn't his main idea. When I left the secondary literature behind and navigated back to Polanyi's own writings, besides feeling a little duped, I discovered that Polanyi emphasized a more verbal conception instead. He spoke more of tacit *knowing*.

What I found was a far more sophisticated conception of knowing than the re-objectified notion that subsequent authors have presumed as their subject material. Perhaps unwittingly or, heaven forbid, intentionally, these authors have conflated the “personal knowledge” of Polanyi's first work with the “tacit knowing” of his second major work to produce a hybrid unlike either of its progenitors. The idea of tacit *knowledge*, therefore, becomes more a part of what Polanyi argued against than a conception he would have espoused. Yet he uses the term and, though it is not often explicitly detailed, it most certainly is strongly implied, even within the discussion about tacit *knowing*. Clearly, Polanyi meant that tacit knowledge belonged in the discussion but did not know where or how it should be included without making it sound like tacit knowledge was simply a naïve, delusional, or fictional form of explicit knowledge, or one that reflects inaccuracy or error.

There is both a verbal and a nounal aspect to Polanyi's notion. Where the nounal aspect (tacit knowledge) lies is not obvious and maybe it is not even important in Polanyi's scheme of things. Tacit knowledge is not what Polanyi mostly talked about, anyway. Mostly he talked about tacit knowing and personal knowing. In *Personal Knowledge* he spoke of personal knowledge as "an intellectual commitment" (p. 5) and "the appreciation of probability and order" (p. 27). And in *The Tacit Dimension* he spoke of tacit knowing as "integration" and as a process "from" one kind of awareness "to" another kind of awareness. Both of these ideas imply being able to be taught. Polanyi described them as normal everyday functions of being alive, of knowing one's environment. But even the content of these functions, according to Polanyi, is not necessarily construed as quantifiable. The concept of tacit knowledge per se seems more to be buried somewhere in Polanyi's logic. The majority of Polanyi's writing describes and justifies a cognitive *process* that individuals engage in constantly. Yet the loose-end of "what" still lingers.

Tacit knowledge is an entity within Polanyi's construct but it is so intricately tied to the knowing of it that it seems illegitimate to extract it from its active context. It seems illegitimate to re-convert it into a type of propositional knowledge (justified, true belief) that Polanyi argued against. (He actually argued against its exclusivity.) So, it will be my assumption that where it is within Polanyi's construct is as important as what it is. And since trying to understand what tacit knowledge is still completely up for grabs, trying to understand where it is would be a more fruitful ground. Furthermore, I think that discovering where the corners of objectivity lie will provide some sympathy for the disarray of the secondary literature. Therefore, this section will examine Polanyi's ideas in order to find the logical corners where tacit knowledge might reside. It will examine Polanyi's writings so as to better understand the locations of the corners of his construct that allow for the possibility of tacit knowledge, the possibility of a nounal aspect

within his argument for the activity of knowing. I will concentrate on what allows a conception of tacit knowledge to be formed. It is a logical allowance and this allowance exists because Polanyi could not formulate his theory tightly enough to avoid it. Nor do I believe he wished to.

### *c. Aesthetic Knowing*

"The highest forms of integration...are manifested in the tacit power of scientific and artistic genius." (Polanyi, 1966, p. 6)

Unfortunately for us, Polanyi did not speak to how either tacit knowing or tacit knowledge can be communicated. His program was strictly to lay out the theoretical, not the pedagogical. So, I was faced with the challenge of making the leap from one to the other myself. Converting his theory into a kind of pedagogical practice required a way to think of it in analogous terms. Pursuing the pedagogical from the tacit knowledge side rather than the tacit knowing side seemed more straightforward despite tacit knowledge being a peripheral notion in Polanyi's writing. It offers a candidate that allows for a view on how instruction might happen within his construct. I needed to find an analogy to Polanyi's theoretical construct if I was to understand how tacit knowledge is conferred to others. The analogy that I found was "aesthetic knowing." But by this term I do not want to imply a fawning reverence for artworks, the kind experienced when visiting the art gallery or the symphony. By aesthetic knowing I mean the way in which it was originally used by Baumgarten, as De Bolla (2002) writes, "Baumgarten's use of the term was not primarily angled at what today might be unproblematically called 'artworks' - say, paintings in the European grand master tradition - since his new kind of investigation was to

be a ‘science of sensual recognition,’ that is, a general inquiry into how we come to know the world from the evidence of our senses” (p. 19).

I want to make it explicit that I am not casting Baumgarten’s position as an antidote to Kantian aesthetic theory. There is no doubt that the intentionality that I will be speaking of later has clear overtones of the teleological component that is tied to Kant’s aesthetic theory (see Guyer, 2016). My main concern here is that the conception of aesthetic knowing used and modeled after Baumgarten should specifically steer clear of the notion of “aesthetic disinterestedness,” a notion long associated with Kant (Stolnitz, 1961, p. 131). Indeed, some of what Kant had to say about aesthetics is appropriate to this discussion and will be acknowledged in due course.

The latter part of this thesis, then, will be concerned with building a parallel construction that follows Polanyi's reasoning but one that uses terminology and concepts more amenable to verbal description and also more amenable to visualization. Four ideas will be incorporated to form this tool. The first is the idea of “valuation” and its cognates. Some time will be spent developing a visualization of how nuanced detail might be captured as knowledge of a sort. The second idea “aesthetic knowledge” broadens the definition of what might be considered aesthetic objects within the environment. In doing this, I wish to convey a meaningful intimacy<sup>3</sup>. The third idea extends Polanyi's concern with the body's ability to project into the world. The world, in a sense, also penetrates into our bodies in a reciprocal manner. The fourth idea defines our relationship with the aesthetic objects of our setting in a hermeneutic way. My plan is to show that this multi-layered meaningful relationship is not cognitive but tacit.

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<sup>3</sup> Although I take my cue from Strati (1999) another interesting source is Bachelard’s *The Poetics of Space* (1994) that we have with our surroundings.

#### *d. Limitations of the Thesis Scope*

Limitations of space and utility prevent this thesis from pursuing Polanyi's responses to the following analysis. The secondary literature deals adequately with those responses and shows rather ably that such a direction lends itself to a wide array of conjecture. Generally speaking, the response of the secondary literature is that each of the ways within Polanyi's theory that could be defined as tacit knowledge are defensible. The many theories about what tacit knowledge is are guided by justification from Polanyi. That is precisely the problem. Understanding that tacit knowledge as socially constructed knowledge, for instance, is defensible in that Polanyi believes that there is some requirement of social ratification of what can be known. He does not consider knowledge to be relative. Viewing tacit knowledge to be implied or implicit knowledge also makes sense because one can never encounter everything that is implied, hence, some implied knowledge must be tacit. But that is not the issue of this thesis. My job is to figure out a way to communicate the tacit parts of implicit knowledge and those of socially constructed knowledge.

For example, one of the commentators (Yu, 2003, pp. 12-14) sums those construals in the following way. He relates four interpretations of tacit knowledge each of which is implied by Polanyi. "The first interpretation can be called the thesis of conscious under-articulation." In workplaces, this can be seen when it is disadvantageous for an employee to divulge certain information. Here it comes out as intentional undercoding. But, as Yu points out, this form of sociological interest is not epistemological. Collins (2010) deals with this aspect extensively. "The second is the Gestalt thesis of tacit knowledge." It is the kind of knowledge that forms the background to what can be stated. It is important to note that this interpretation of tacit is not necessarily inarticulable. It is inarticulable but only during the activity for which it provides a

background. The most common example of this type occurs when playing a musical instrument. “The third interpretation can be characterized as ‘the thesis of epistemic regionalism’” (p. 14). In this understanding of tacit, the background is the totality of the vast quantity of articulable knowledge that a person possesses, only a part of which is articulable at any given moment. From any given position, one can only see to one’s own epistemological horizon. “The fourth interpretation is the strong thesis of tacit knowledge” (p. 14). That is, “there are specific kinds of knowledge that are in principle verbally inarticulable” (p. 14). This “strong” type of tacit knowledge differs from the “gestalt thesis” and the “epistemic regionalism” in that the tacit knowledge within it is never articulable whereas in the other two, tacit knowledge is potentially so. “According to Polanyi, not only is there knowledge that cannot be adequately articulated by verbal means, but also all knowledge is rooted in tacit knowledge in the strong sense of that term” (p. 14).

That being said, I do not make the claim that the analysis below of Polanyi's thoughts is particularly novel. The novelty that I do claim is that tacit knowledge can be communicated or taught even if it is not uniquely defined. Admittedly, this may border on advocating some sort of relativism. Undefined knowledge implies that each person defines what knowledge is for herself. But this not what I have in mind. I mean merely that tacit knowledge could be defined as one or the other of the monikers described in the tacit knowledge landscape above. Tacit knowledge, for example, can be described as implicit, or socially constructed, or practical or a host of other ways most of which are partly true and none of which is completely true. One might know *that* something is without knowing exactly *what* it is. Indeed, if it were to be defined it would either lose its tacitness or its ontological status as knowledge. And if it is left undefined, remaining an amalgamation of its possibilities within Polanyi' system, it would more reflect, first, our inability

to pin it down and, second, how carelessly we abstract meaning from our environment. So, once the corners in Polanyi's construct have been located, this thesis will seek to show how tacit knowledge, in whatever hypothetical form it might present itself, might be communicated.

The limitations also prevent a thorough address of epistemological concerns regarding education. An interesting aside could explore how school buildings affect learning, for example. Alternatively, my examination of the tacit could also probe the so-called hidden curriculum. Although this thesis is ostensibly about the teaching process (how one comes to know what one knows) it is not about a product or a practice. It is not about how specific learning objectives might be achieved. Specificity is the antithesis of what will be discussed in this paper. If an analogy may be permitted here: if explicit knowledge may be learned in the same way that one drinks a glass of water, one's relation to tacit knowledge is like swimming in the sea. This, like our rookie sailor, is what I am preparing for.

The limitations also preclude much argument past a straightforward comparison between Polanyi's theory and the analogy presented here. There are, doubtless, issues surrounding the legitimacy of conflating valuation with evaluation, or with seemingly abandoning Kant's view of aesthetics in favour of one more like Baumgarten's, or with how the body's interaction with world can be meaningful in the most basic of senses let alone in a symbolic one or in a metaphoric one, or, finally, with the type of hermeneutic analysis that ought to be used as a structure to aesthetic knowing. All these are admissible concerns. But if they are to be entertained in the future, the basic structure of the thesis must be assumed. So, wobbly as it might seem, the structure still stands.

***e. About Ambiguous Terminology***

***i. Polanyi's terminology.*** In *Personal Knowledge* Polanyi worked exclusively with term "personal knowledge" to describe human involvement in acts of knowing. He described that involvement as "an intellectual commitment" (p. 5) and a "passionate participation" (p. 27) toward and in the act of knowing. Eight years later, in *The Tacit Dimension*, he stated that "viewing the content of these pages from the position reached in *Personal Knowledge* and *The Study of Man*... I see that my reliance on the necessity of commitment has been reduced by working out the structure of tacit knowing" (Polanyi, 1958, p. x). Polanyi abandons "personal knowledge" in favour of "tacit knowing." Moreover, in his 1964 paper *The Logic of Tacit Inference*, he equates "tacit knowing" with the more descriptive term "integration" (Polanyi 1969, p. 140). This thesis will, therefore, favour the term "integration" unless the need arises to include a "thingly" aspect to knowing, an inference that Polanyi often implies.

At any rate, Polanyi does not see tacit knowledge to be ontologically distinct from the explicit. It is not different from propositional knowledge in this sense. Neither tacit nor propositionally explicit knowledge has existence outside of the knower. In his 1970 article *Transcendence and self-transcendence* Polanyi irons out some of the criticisms of reductionism and determinism leveled at his theory. In it he disavows that knowledge can be reduced to a Laplacean calculation in which all that is known consists of some finite amount of tacit particles together with their trajectories. For Polanyi, it is the other way around. "Subsidiary awareness is controlled by focal awareness" (Polanyi, 1970, p. 3). In other words, it is not that the elementary subsidiary awarenesses make up the focal but the focal awareness determines what is to be considered as subsidiary. This can neither be reductionist nor deterministic. For Polanyi, the world is given but what is known about it is not. Apart from the simple observation that the

world (the universe, all that is before us) moves, there is also the notion that each person has a unique vantage point from which to engage with that world. So, though Polanyi denies that the world presents itself as different to each person, he does acknowledge that the world is coloured according to each person's vantage. Furthermore, he believes that a definitional arbitration as to what knowledge is, as is the case with the Cartesian epistemology requiring clarity and certainty, fails because it constitutes a fallacy. Knowledge, thus constrained, becomes what the definition defines it to be, not what can be known.

“Tacit knowledge,” moreover, is an ambiguous phrase itself. It engenders confusion on two fronts. Polanyi uses the term “tacit knowing” far more often than “tacit knowledge” but because people usually think in terms of epistemological nouns and not in terms of epistemological verbs, tacit knowledge seems to have caught on better. But, even taking verbs to be “doings” is a type of “noun-ification,” if you will. Conflating tacit knowledge with tacit knowing works better. It leads to a more complete approximation of what Polanyi was trying to accomplish. This is probably why he continued the practice even in his later writings.

“Tacit knowledge” also introduces a lot of confusion in a different sense. Tacit knowledge implies an epistemological object that can be manipulated in the same way that physical materials can be and, indeed, this happens all the time. This project is just one example of this kind of creative “knowledge manipulation.” Such a nounal understanding, however, is restrictive in that it disregards the fact that knowledge must continue to be known in order for it to remain such. “Tacit knowing” avoids this unfortunate direction by implying, as Polanyi had intended, that knowing is an ongoing activity rather than a short punctuating event that brings knowledge into existence. To use Polanyi's terminology, “tacit knowing” is the inductive and ongoing apprehension of sensory awarenesses, the ongoing integration of them, and the ongoing

grasping of the resulting wholes as well as the subsequent grasping of the meaning associated with them. “Tacit knowing” implies, therefore, that this apprehension, integration, and grasping is a completed conceptual result of an activity held in stasis. It is an activity guided, held in place, and adjusted by the propensities and proclivities of individuals with respect to their world. It is not, as one might be tempted to surmise, a static entity apart from a knower.

Another temptation should be also be put to rest. Polanyi often used activities to illustrate both tacit knowledge and tacit knowing. The temptation is to relate these to the distinction between knowing-that and knowing-how as per Ryle (1945). The distinction exemplifies Polanyi's claim that the integration process (namely, tacit knowing) is universal to all acts of knowing. The tendency for authors to associate Polanyi's tacit knowledge with practical knowledge or skill is easy to do but mostly misses the point. Polanyi's thinking is that all knowledge, no matter what it is, has a centre-periphery structure. Whether the centre is an activity or a fact, it has its attendant tacit periphery. What is examined or done overtly is supported by or composed of what is known only tangentially. In this sense there is a “vectoral quality [to] tacit knowing” (Polanyi, 1964, p. 141). An epistemological impetus passing from subsidiary awareness to focal awareness transposes what could be within one's focal awareness but is not. A virtuoso piano player, for example, is focally aware of the music that she is playing but is only subsidiarily aware of the individual movements of her fingers. If she were to focus on the finger movements instead, they would become the focal awareness, something else would then become the subsidiary awareness, and the music would then become irrelevant. The demonstration of knowledge, whether that knowledge is demonstrated by way of propositional speech or some other skilled action, depends on this ever-receding tacit aspect that lies behind and through which that knowledge is demonstrated. It matters not whether one distinguishes

between knowing-that and knowing-how, the point is that tacit knowing, what Polanyi calls integration, is the process of both knowing-how as well as knowing-that.

*ii. Philosophical terminology.* There are several terms used in this thesis that may have overly broad meanings. Two come to mind immediately. The first is the conflation of the terms “modernist,” “positivist,” and “Cartesian.” In a sense, I do use these terms interchangeably for all three refer to the dualist separation of mind and body. By modernism, specifically, I mean not-classical. I take my thinking from Michael McCarthy’s *The Crisis of Philosophy* (1990) wherein he distinguishes the classical mindset as emanating from tradition. The classical works of Aristotle and Plato as well as those of the early church fathers were taken to be authoritative. To the classical mind, reason was applied to the given world. Modernism, in contrast, is the mindset initiated by Descartes based on reason. To the modern mind, then, rationality is the given. By positivism I refer specifically to the early twentieth century epitome of modernism. My use of positivism is to imply both the extent to which the modernist position could be taken as well as its impending demise.

## Chapter 4 – Presenting Polanyi’s Theory

### 9. Polanyi's Tacit Knowing

This chapter’s purpose is to better understand the subtle distinctions between tacit knowing and tacit knowledge. Arguably, since Polanyi largely avoided the use of “tacit knowledge,” this term would seem only peripheral to any discussion of Polanyi’s theory. But to speak of tacit knowing without something that is tacitly known seems rather contrived. Perhaps this is why so many authors have tried to define it. This chapter will take a different tack. It will present the candidates for tacit knowledge from the points in Polanyi’s theory *that cannot help but imply an objective epistemological entity* however subtle these candidates might be. The chapter will argue that, given the many locations for such implied entities, there is reason to believe that an amalgam of the candidates might profitably translate into a pedagogical analogy.

#### *a. Tacit Knowing / Integration*

Polanyi's project started with a conception of knowing that tried to overcome the epistemological separation of subject and object. He stated in the preface to his book *Personal Knowledge* (1958) “I have shown that into every act of knowing there enters a contribution of the person knowing what is being known, and that this coefficient is no mere imperfection but a vital component of this knowledge. Around this central fact I have tried to construct a system of correlative beliefs” (p. viii). In other words, Polanyi’s thinking begins as a critique of the Cartesian way knowledge is typically conceived. “I deny that any participation of the knower in the shaping of knowledge must invalidate knowledge...” (Polanyi, 1959, p. 13). Instead, his program is to show that all knowledge - even explicitly stated factual information - is rooted in

the participation of its knower. For Polanyi it was logically inconsistent to divorce the knower from the known for to do so would be to say that the known is not known...by someone. Therefore, the issue to be resolved for Polanyi was the resolution of the radical dualist gap between the knowing subject and the objective world. His project was to understand knowledge and knowing in such a way as to resist divorcing the knower from the process.

His formulation begins with a rejection that knowledge was “out there” as if it were things to be “gathered in.” Instead it is assembled by people. Knowledge is not received. It is made. For Polanyi, knowledge is produced from the sense impressions of a person’s past and present together with the knowledge he already has. Tacit knowing is an activity, a sense-making activity that is wielded by persons to, in a sense, make order of the world. And here I use the term “tacit knowing” intentionally for I wish to convey explicitly that tacit knowing is an activity and that Polanyi wishes to imply that this activity itself has an objective quality; its verbal essence has a nounal quality of a “doing” for however long it lasts.

But there is a caveat. This ability to compose, assemble, or produce knowledge should not be confused with a concept of knowledge as the output of a thinking process. It is the key concept of *contextual process* that gives all of his other ideas their substance. It is the activity itself. Said in a different way, what is composed, assembled, or produced is not propositional or explicit knowledge. Tacit knowing is not simply a stand-in source of knowledge conceived in a Cartesian manner. It is not simply an alternative way that standard propositional statements about the world can be made. It is an active sense-making relationship to the world.

The tacit knowing structure that Polanyi relates is a relationship between two things: what is *central* to an individual's attention and what is *peripheral* to it. Polanyi describes this tacit knowing structure with three sets of terminology. Each pair conveys the relationship in

subtly different ways. In his earlier writings, he referred to “focal awareness” and “subsidiary awareness.” What one is focally aware of harks back to what one is subsidiarily aware of. With *this* pair he indicates two characteristics of tacit knowing. The first characteristic is the phenomenon that is focused on with the intent of understanding. It is on par with the phenomena that is assembled in order to accomplish that understanding. They are not fundamentally different. They are just phenomena; one happens to be focused on while the others are not. The second characteristic of speaking about tacit knowing in terms of awareness is the strong implication of perception and of the body's role as intermediary. Polanyi implies that thinking in terms of awareness and perception as bodily inputs to epistemological construction begins to undermine the concept of *res cogitans*, that is, the ghost in the machine. By emphasizing the participation of the body as the medium through which the world is apprehended, he blurs the distinction between the mind and one's own body. In this sense, the eyes are no longer the windows to the soul. Nor are they the apertures through which the mind apprehends the world. They are simply detection devices on par with hands and ears.

In Polanyi's later writing he talked about a different pair: “the proximal” and “the distal.” These terms continue to emphasize bodily mediation with the world. The proximal is what is near to us, that which is in contact with us, a tool, for example. Whether that “tool” is a hammer or a football, one acts upon it in order to affect the distal world. The relationship between the accuracy of striking the nail or the accuracy of the shot on goal and the infinitesimally subtle nuances of the body's contact with the tool is tacit knowing. Additionally, “proximal” and “distal” also call to attention a characteristic of purposeful intention. Tacit knowing, therefore, has a teleological component that would require discussions about value within the context of knowing (Polanyi, 1969, pp. 31-35). More on this later.

The third pair of terms Polanyi uses are “attending from” and “attending to.” He summarizes these with what he referred to as the “from-to” relationship and, with it, he once again revealed a directional or vectoral quality of intentionality while at the same time conjuring images of passivity. Knowing, for Polanyi, is not only intentional. It is also an easy, natural, and constant assembly of attendings from in order to form what is attended to. It is the assembly of subsidiary awarenesses into focal awarenesses. It is the integration of the proximal into the distal. In each pair, one term refers to what is front and centre in one's attention and the other refers to what is peripheral, supportive, and constitutive. Tacit knowing is the integration of many peripherals to form what is focused on.

For the purposes of this thesis the three sets of terms will be considered equivalent. Polanyi did not make distinctions between them. And although further questions about the subtle differences between the three could prove illuminating, these differences are not germane to this study. In all three cases, though, the peripheral term plays an integral role in the formation of what is central and relational: the distal is known through the proximal; what is attended to is known by what is attended from; our focal awareness is formed from our subsidiary awarenesses.

What are these components then: that which is attended from, the proximal, and those things called subsidiary awarenesses? In tacit knowing, discrete components come together but what are they? Polanyi called them “particulars,” and they come in several forms. First, they are sense impressions that are not usually given attention. They are moments: the subtle, moment by moment, record of visual stimuli. They are the myriad variations in the pitch and timbre of sound. They are the tastes, smells, and tactile sensations too numerous to mention. They are the shapes of clouds, the smells of a room, and the subtle change of sunlight over the day. Second,

they are mechanics. They are the bodily mechanics involved in any given activity, fine motor movements and involuntary actions that aid in the acquisition of sensory input. They are the minute adjustments in the control and operation of tools. Third, they are calculations. They include logical deductions and inferences, mathematics, and reasons. And finally, they are memories and guesses, beliefs, imaginings. Particulars include tacit knowing of past events, the assemblings both long forgotten and recently formulated. In short, particulars are a sea of indeterminate epistemological wealth to be drawn upon at a moment's notice to form our knowledge of the present. Tacit knowing is the putting together of these forms of inputs to form unified conceptual wholes, to form concepts and objects.

Describing Polanyi's basic structure, as I have just done, already exposes an ambiguity between tacit knowing and tacit knowledge. Polanyi consistently aimed to portray man's epistemological relationship to the world as an activity, not simply the possession of content. But he lacked the language resources to describe the actors in that relationship in any other way than as things. Hence, content. So, at this point, I should state openly that the process of describing Polanyi's theory will suggest more points where the reader may construe an objective quality to what is being discussed. This is my intent. Polanyi's idea about peripheral tacit components is just the first case in point. It might be tempting to simply call all of these peripheral entities tacit knowledge but there are some yet to be exposed distinctions that cloud the issue considerably. In summary, then, the idea of this chapter is not only to describe Polanyi's theory but to show that there are many ways how the thingly aspect of tacit knowing cannot be explained away. This thingly aspect is what commentators have latched onto in spite of Polanyi's efforts to de-emphasize it. In what follows several more locations of this phenomenon will be indicated: in the

integration process itself, in the concepts of meaning and of hermeneutics, in Polanyi's so-called four aspects, and finally in six specific places where Polanyi is unclear.

The existence of these locations where tacit knowledge, as an object, occurs offers a justification for the wide variety of definitions within the secondary literature. It also provides the reason for my pedagogical approach using the analogy I propose in Part IV.

### ***b. Integration***

Polanyi calls tacit knowing "integration" (Polanyi, 1969, p. 140) and does so for a couple of reasons. Although the term "tacit knowing" leaves intact the implication that knowledge is produced as it is normally understood (perhaps as justified, true belief), it also unfortunately leaves the impression that the process is one of logic, deductive or inductive. But given that tacit knowing is like multiple unconscious inferences at the same time and that one draws conclusions about aspects of the world based on the impacts of sensory perceptions, body mechanics, logical procedures, and memories, it would be clearer to use a more neutrally descriptive term.

Secondly, given that one parses the implications of the conceptual wholes along with their naming words and integrate again forming an ever-widening network of meaning, a word that reflects this fluidity would be a better choice. This is why Polanyi preferred the term integration rather than tacit knowing. Integration is also less mysterious. It implies a capacity to build on previous efforts. But, more importantly it sets aside a peculiar sense of self-absorption that tacit knowing has. The term integration provides a sense of equanimity that seeks and appreciates feedback from others.

Moreover, Polanyi's notion of integration also highlights two boundaries regarding how one is able to communicate a personally involved form of knowing. The first boundary involves

determining what one intends to communicate as knowledge. One can describe the knowing of the world in terms of an activity in a fairly straightforward way but, when it comes to communicating that knowing, one is hard-pressed to do so without resorting to entities of some sort or other. Therefore, determining the difference between the knowing of the world and the communication of that knowing is problematic. It becomes an “apples and oranges” thing that Polanyi did not seem to want to address. The second limitation of the term integration is that our conception of “words as signifiers” of an external world is not entirely appropriate for Polanyi. It is contrary to his conception of integration that only through words can knowledge of the world be gained. He believes that knowledge of the world is gained by experience and by being in a certain place. Words are, however, an adequate conception of how knowledge is transferred. Polanyi, therefore, is faced with how experientially acquired knowing is converted into words for communication. Perhaps those words can only do so inadequately. In any case, without addressing this communication problem, Polanyi is faced with overcoming radical epistemological “silencing.” It simply leaves each knower as an epistemological island, a position that is at odds with experience.

Instead, Polanyi offers integration as a process whereby a person abducts heuristically to form knowledge. This is a bit arbitrary. Knowledge has been cobbled together, not consciously but over time and through many instances of acquaintance. In a sense, the vectoral quality moves “from” individual components “to” the core of the knowledge. But in another sense, each core integration stands ready to be vectorally integrated into another yet-to-be-determined future integration. Knowledge becomes defined less as a pursuit of certainty and more as an ever-growing aggregate of meaning. According to Polanyi, all knowledge happens this way.

## 10. The Significance of Meaning

### *a. Introduction*

I have tried to steer clear of the seemingly manufactured debate as to what tacit knowledge is or isn't. Instead, I have tried to find the places in which Polanyi's thinking is receptive to the notion of tacit knowledge and I have endeavoured to find a way to understand its communication without resorting to having to define it. Since the aim of this thesis is to search for a plausible way in which tacit *knowledge* is communicated not how tacit knowing is communicated, the challenge, as mentioned above, is not to defend Polanyi but to find the pockets in his theory where tacit knowledge might actually be considered to reside and, by examining these locations, come to an understanding of how this communication might occur. I have already mentioned some of the candidate locations in the "integration" subsection but there are a few more ways that can make Polanyi's position clearer. It has become rather evident to me that although tacit knowledge is a common subject of discussion regarding Polanyi's thoughts, it is difficult to pin it down as a single definable entity in his system. A more fruitful way of understanding it would be to identify the different hints from the different theoretical locations suggested in Polanyi's writings and come to an aggregate notion of how one comes to understand the implied objectivity of tacit knowing, that is, tacit knowledge.

As I mentioned in the last section, the idea of this chapter is not only to describe Polanyi's theory but to show that there are many ways in which the *thingly* aspect of tacit knowing shows up. Polanyi could not get rid of it. Although he was concerned to emphasize the *activity* of tacit knowing so that he could maintain his non-Cartesian epistemological stance, the nounal object always lingered. So, in spite of his efforts to understate tacit knowledge, Polanyi could not prevent the notion from persisting. In order to address this ambiguity, this section will

pursue one particular explanation by adopting Polanyi's own strategy for coping with it. By envisioning tacit knowledge as meaning, Polanyi was able to navigate between the poles of objectivism, on the one hand, and ambiguity, on the other.

Seen in this light, this section will offer a brief examination of Polanyi's concept of meaning. This is the strategy adopted in his posthumously published book entitled *Meaning* (1975). Understanding the development of meaning within Polanyi's thinking explains, in part, how he could circumvent the radical difference between the experience of knowing and the communication of it. It seems that Polanyi's ideas can remain plausible only by indicating that, in the end, he had to resort to *this "non-knowledge" concept* in order to describe the product of tacit knowing integration. The idea of meaning, therefore, takes on an increasingly larger role as Polanyi develops his thoughts.

The concept will be approached in two ways. The first way is by examining Polanyi's idea of the relationship between the constituent parts and the integrated wholes they compose. The relationship clearly implies a hermeneutic-like understanding of tacit knowing and will be the subject of the next subsection. This observation makes for interesting comparisons with how others view the making of knowledge.<sup>4</sup> The second method of understanding meaning is by way of what Polanyi calls the "aspects" of tacit knowing. These shed light on the ability to transfer tacit knowledge over a range of philosophical levels and will be the subject of the subsequent subsection. One should keep in mind that these two paths suggest that there is a case for assuming that Polanyi intended that tacit knowledge was no more than a subtle type of *meaning*. The case is not a strong but "subtle meaning," in a Peircean semiotic sense, is also implied in the "aesthetic knowledge" section below, so this discussion will have relevance there too.

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<sup>4</sup> Piaget, who Polanyi quotes frequently, is the quintessential theorist of constructivism but in regard to hermeneutics see Shaun Gallagher's *Hermeneutics and Education* (1992).

### ***b. Meaning and the Hermeneutic***

In explaining the conceptual process he called integration (tacit knowing), Polanyi also described the manner or style in which that process happens. An idea that crops up repeatedly is that of the relationship of the whole to the parts. Over time, in recognizing commonalities in experience, not only does one become increasingly adept at identifying minute and specific aspects and instantiations within those experiences, one also gets better at describing the relationship between those tiny parts and the details which recede even beyond attention and beyond the time needed to consider them. But if one actually did take the time to examine these tiny parts in further detail, returning to the recognizable and familiar portions, although phenomenally the same, would show them to appear meaningfully altered because of the conceptual foray one has just returned from. Thus, details appear different within different contexts of conceptual background. The details of thought and experience do not change in themselves. One merely colours or prejudices them with the direction from which those thoughts and experiences are approached. Foreground colour, for example, may appear to change according to the colour of the background. The relationship between details and the whole is a matter of perspective. There seems to be a reciprocal relation between the parts and the whole. Polanyi observed that when paying attention to the parts something is temporarily lost of the sense of the whole and regained, with interest, upon its return to the attention. The same thing goes the other way. Repeating the change of focus increases the understanding. The hermeneutic "alternation of analysis and integration leads... to... ever deeper understanding (Polanyi, 1969, p. 129). It behooves us, therefore, to pursue this angle in order to understand the development of meaning in Polanyi.

How might this be better understood? When integrating subsidiary awareneses, whether they are perceptual instances or previous integrations or even just the residual background that forms the basis of social agreement, a world is constructed. From our nameless earthy surroundings we create a multi-storied structure (Polanyi, 1958, p, 345). It is not merely the substance of the environment that interacts with us through integration. It is also the meaningful layers are constructed over it, layers that are not possible to remove or circumvent. The very attempt to do so would only add yet another layer. In a hermeneutic-like spiral of ever-increasing complexity and richness, the integration of meaning lends itself to a profound inability to take it all in. The meaningfulness of even the simplest of things goes beyond our cognitive capacity. Focal awareness and subsidiary awareness each inform the other. These are the layers of meaning.

Thus, Polanyi's idea of meaning develops from integration. Recall that integration involves the assembly of subsidiary particulars into a focal whole. This whole does not cause the particulars to become meaningful but the integrated whole shows the particulars to already be meaningful. The act of integration shows to ourselves and to others that which one already has placed value upon. There is, then, the relationship between the particulars that are meaningful to someone and those that are valuable to them. Polanyi said it negatively: "All particulars become meaningless if we lose sight of the pattern they jointly constitute" (p. 57). In other words, meaningful things become evident only when they are integrated into wholes. The integration process brings out the meaning of both the integrated wholes and their constituent particulars. In this sense, meaning is strongly linked to the purpose of the individual who is doing the integration. Each of the inarticulable bits that sustain a complex and nuanced focal whole requires itself teleologically.

This conception of meaning is distinctly different from the conception of meaning normally encountered. Normally, one thinks of meaning as where one thing means another thing, a word and an object, for example. Normally, one sees meaningful things (words, for example) as signs of other things, as a correspondence to the world. So, it is interesting that Polanyi did not dispute this sort of meaning. He just thought that this was only the “clear cut” version (p. 60). The kind of things that he talks about, in addition to the clear cut ones, are personal and situational. They may have specific signifiers or words associated with them in the familiar sense but the personal and situationally integrated event is more than objectively meaningful. Such an integrated event shows itself to be meaningful in a richer and deeper way because it affects us personally.

Polanyi believed that meaning was of two main sorts. He called them representational meaning and existential meaning. “All kinds of order, whether contrived or natural have existential meaning; but contrived order usually also conveys a message” (p. 58). Here Polanyi specifically said that contrived order is meaningful.

The upshot of this position is that there are two sources of meaning-making and, by extension, two motivational sources of integration. On the one hand, the natural desire to make sense of the world leads to the integration of particulars in a more or less experimental way (The idea of heuristics is appropriate here.) not so much to solve problems but to discover or reveal new meaning or new value. These integrations are epitomized by the scientific method. On the other hand, there is the type of integration that is intentional in an additional way. One intentionally assembles specific objects to affect the world in specific ways. One can assemble words, sounds, colours, even tools into sentences, music, art, and machines so as to shape the environment. Integration reveals existential meaning in both cases but when particulars are

intentionally integrated for specific purposes, representational meaning also occurs. Thus, representational meaning is “only a special case of existential meaning” (p. 94). Said a different way, representational integration is only a special case of existential integration.

Representational meaning is the conveyed message of contrived order.

This second sense of meaning, representational meaning as opposed to merely existential meaning, is related to abstraction. Whereas the existential sense of meaning occurs developmentally and builds upon (integrates) the fundamental particulars that are encountered in everyday existence, the representational second sense of meaning incorporates an intentional infusion of purpose, as well. By way of the senses, one assembles, by integration, understanding about the world. Once one has integrated enough to understand the world better, the process is repeated. One integrates the integrations and, in so doing, loses track of the original sensory inputs that started the process. They become tacit. How one knows things and one knows how to do things becomes lost in a sea of subsidiary awareness and integrations. Thus, existential meaning is related to the integration of sense data into coherent wholes. Representational meaning comes into play when concepts are formed. They have their origins in the very integrations one performs on sense data. They are, in a sense, meta-integrations.

If one extrapolates from these two senses of meaning, one can envision the integration of meaning with intentionally constructed "real" objects so as to preserve, and present to the future, the meaningful integration of the present. This is how Polanyi understood the use of symbols and metaphors. He called this "joint meaning." Symbols, therefore, return a focal-like meaning in the same way that the sense data of the first type are received but they are already integrated from the past. Symbols are already meaning laden. Symbols embody the integration of the community

present and past. They shine forth a meaning which one can observe through them and by looking past them one sees oneself as part of a reciprocal relationship with the world.

Perhaps a short excursion into the art world might help clarify things. One might begin by saying that, by way of the imagination, one integrates representational meaning with existential meaning to form a "joint meaning." Integration would, therefore, correlate well with a person's ability to imagine and, moreover, Polanyi said that levels of imagination are epitomized in the use of art (Polanyi and Prosch, 1975, p. 85). So, in the same sense that the frame of a picture, the rhythm of poetry, a pedestal for a sculpture, and a stage for a play communicate to an audience, that what they are seeing or hearing is not merely the particulars of their immediate world but also, through those particulars, they are seeing the particulars of a second different world, that is, the world of the author. The "logical incompatibility" of the work of art with the "real" world is overcome by the frame so as to produce a joint meaning that would otherwise be incongruous. The frame is the indicator that the viewer should seek a deeper explanation for the incompatibility, that she should not be satisfied with just a superficial explanation. Polanyi was trying to get to the next level of integration. The use of the term joint meaning implies reciprocity (p. 85). In a sense, the integration rule is: "...the integration of subsidiaries produces a perception differing in both appearance and content from its constituents" (p. 87). There is a temporal transcendence to works of art that shows archetypal aspects of reality - a kind of meta-reality - more real than real even. They are encapsulated bundles of subsidiaries capable of being transported through time. Sophocles' *Oedipus Rex* still speaks truth and meaning to us 2,500 years later. This is an exponential leap of transcendently radical meaning. That words so old can speak to us yet is astounding. Such is the power of art, symbol, and metaphor.

Moreover, art can be interpreted in many ways. Each viewer brings along their own lives to affect the hermeneutical dance in a different way each time. All of these interpretations, although frequently contradictory, are included in the joint meaning of the work, that is, the hermeneutical dance between representational meaning and existential meaning. Moreover, to know that paintings like Rembrandt's *The Night Watch* (1642) have been interpreted through centuries is to add even more to its meaning. Its joint meaning, as with other great art, becomes mind-bogglingly meaningful.

This joint meaning, to be found within the background, rises up in near mythological proportions in the form of art to define and epitomize meaning. To paraphrase Aldo Leopold "Our ability to see quality begins in art" per quotation in Flannery (1999, p. 801). In Polanyi's talking (Polanyi, 1958, p. 123) about how one comes to be able to recognize wholes, he gave the examples of facial recognition and its attendant moods and emotions as well as being able to recognize distinctions in medical conditions. Polanyi mentioned in passing how this ability is associated with aesthetics. He referred to Pantin (in Polanyi, 1958, p. 123) in connection with our ability to communicate and receive large amounts of information in very short periods of time (Pantin, 1954, p. 595).

It is important to see the direction that Polanyi was headed in terms of "meaning," that at higher and higher levels of integration more and more meaning is available to be understood. Polanyi pursued this idea to the point of symbol and metaphor but it is important to remember that Polanyi did not pursue the aesthetics angle since his agenda was to further explain tacit knowing in terms of integration and not to explain meaning *per se*. If pursued, however, a look at aesthetics in terms of tacit knowing would yield a world of detailed nuance that is both known to us yet beyond our ability to articulate meaningfully.

In this way, Polanyi's theory underscores the inadequacy of the positivist view. The propositions that ostensibly convey the knowledge from the world to us do not describe the same world that Polanyi believes to exist. Polanyi believed the world to be meaning-laden from the get-go and language is but one tool to convey that meaning from it to us. Meaning, for the positivist, resides in the language that is constructed to convey knowledge about the world. Essentially, my argument here concludes that Polanyi's fundamental criticism of the positivist position is that it fails to convey most meaning and that meaning is the fundamental relationship one has with the world, not knowledge.

### ***c. The Four Aspects of Tacit Knowing***

The take-away from the last subsection is that to identify tacit knowledge with meaning is very compelling. The following second consideration of Polanyi's "meaning" makes it less so, though. Instead, it will show that meaning is less identical to tacit knowledge and more "in the vicinity of" it.

The second way of getting a better grip on what Polanyi meant by meaning is by taking advantage of his brief but telling description (Polanyi, 1966, pp. 4-20) of the four aspects of tacit knowing: the functional, the phenomenal, the semantic, and the ontological. Each of the aspects forms a view of the integration process, of tacit knowing. To begin, the *functional aspect* is what was described above – the assembling or integration of subsidiary inputs into what is the object of one's focus. It is the relationship where the proximal is subordinate to the distal and where the vectoral quality is understood to be the purpose of the integration. In other words, the fruit of integrated subsidiary awareness is focal awareness and meaning. So, the process of tacit knowing's functional aspect is both intentional and teleological (Polanyi, 1958, p. 141; Shin,

2010, p. 98). However, it is important to understand that within the functional aspect of tacit knowing, “it is a mistake to identify subsidiary awareness with subconscious awareness” (Polanyi, 1958, p. 212). Instead, it is a logical relation that, together with intentional purpose, creates meaningful wholes from meaningful parts.

The *phenomenal aspect* of tacit knowing is the perception of an object as an integration of its instantiations through time. From moment to moment, integrated wholes present themselves in ever changing contexts. For example, the low yellow sunlight through a window on a hot August afternoon changes slowly and produces subtle differences to the room that one is in. Smoke from a cigarette lingers languidly in curious layers. With each passing moment the richness of the scene increases. The phenomenal aspect describes tacit knowing’s recasting of the memories of each moment in terms of subsidiary awarenesses that make for an ever fuller conception of the focal awareness. Thus, the functional aspect is the bringing together of the phenomenal aspect. The phenomenal aspect is the realization of knowing via its functional aspect.

The *semantic aspect* is the gathering together of the phenomenal aspect, by way of the functional aspect, into meaningful wholes. Whether the room is for lounging relaxation or for backless benches for practicing swimming technique, one's conception of the room becomes more meaningful with each passing moment that one is in it. But it is not that the wholes become meaningful as a result of the integration of particulars. It is the particulars, meaningful to us already, that allow for a meaningful whole to become integrated. Polanyi talked about a probe or the stick of a blind man. At first the user only feels the meaningless vibrations of the tool on the hand as the tool's business end contacts the environment. Through repeated use, his “awareness of its impact... is transformed” into communicative meaningfulness (Polanyi, 1966, p. 12). The

semantic aspect has to do with the meaning being projected onto the world. It is "displaced away from ourselves" (p. 13). In this general sense, Polanyi used the word "semantic" to denote all meaning, not just linguistic indication, symbolization and metaphor. "The usual use of the term 'semantics' limits it to the meanings achieved by language; we are expanding the term to include all meanings contrived by man" (Polanyi, 1975, p. 74). It is this more broadly understood view of semantics that I believe to be the most useful entry point for the analogy in the next chapter.

The *ontological aspect* of tacit knowing, based on a real and coherent phenomenal entity,

...implies the claim that its result is an aspect of reality which, as such, may yet reveal its truth in an inexhaustible range of unknown and perhaps still unthinkable ways. My definition of reality... implies the presence of an *indeterminate* range of *anticipations* in any knowledge bearing on reality. But besides this indeterminacy of its prospects, tacit knowing may contain also *actual knowledge* that is indeterminate, in the sense that its content *cannot be explicitly stated* (Polanyi, 1958, p. 141).

Polanyi spoke of modality here. He spoke directly to the potential of a conceptually integrated whole. Its future possibilities lie tacitly within it. This deserves some consideration. While it may appear here that Polanyi waffled on what knowledge was, his point was that the integration of subsidiaries constitutes real but indeterminate conceptual entities, strange entities of possibility and potential. They are entities that can be spoken about but only with inaccuracy and with play built into them, their ontological status being not yet, or ever, real in an absolute sense.

Typically, knowledge is not known in this sense. One can only know the meaning of words (because by convention words have been assigned their meanings) that communicate things about our world. To give a stronger ontological status to knowledge is to reify semi-metaphorical constructs. The ontological aspect of tacit knowing (integration) gives us the clue that Polanyi believed that knowledge was not the sort of thing that is determined with ever greater precision and certainty but is, instead, a meaning that encompasses a range of variability and potential.

Here, there is a temptation to equate tacit knowledge with the logical relationship between the tacit and the explicit (the functional aspect), or the accumulated nuance through time (the phenomenal aspect), or the conceptual entity cast upon a newly integrated whole (the semantic aspect), or the potent future capacity of a newly conceived integration (the ontological aspect). In all of these cases, however, meaning is less construed to *be* tacit knowledge than to *be with* it. Although a logical relationship implies both meaning in the sign-post sense and a "real" object of thought, their coincidence does not make them identical. And, although the accumulated nuance through time is both an aggregate object and increasingly meaningful, the multiplication of the subtleties of nuance would be difficult to convert into meaning in any straightforward way. And, although a newly integrated semantic conceptual entity is by definition an object, its meaning is placed upon it rather received from it. Lastly, the recognition of potential meaning is meaningful in itself but it would be a real stretch to objectify that. Therefore, the temptation of the previous subsection equating tacit knowledge with meaning is mitigated. They are not the same but they are close.

## **11. Three Loose-ends and Three Puzzling Places**

### ***a. The Three Loose-ends***

Sections 9 and 10 began to show Polanyi's thinking about how tacit knowledge was implicit in his main idea of tacit knowing. Those sections indicated niches that fit the definition of what we can know but cannot tell. Whether resident in meaning or within the four aspects, tacit knowledge peeks out of these corners. They are the slight solidification of tacit knowing. The following section reveals three more places that give rise to the various conceptions of tacit knowledge found in the secondary literature. They are found in the slight oddities of Polanyi's

main idea. They are loose-ends that don't tuck in nicely and are the locations that deviate slightly from Polanyi's norm of epistemological action, that of tacit knowing.

The first loose-end can be brought to light by briefly recapping our path so far: Polanyi saw our ability to make sense of input data as the core of integration. I have shown how Polanyi described the integration process as putting together the data of given scenes. Integration develops a plausible explanation of those scenes as objects of thought.<sup>5</sup> These integrations of sense data are recognized as objects.<sup>6</sup> The next step in the process is where one integrates once again the many scenes that have been objectified so as to derive classes of objects. These scenes/classes one can name. And following this integration is the level where concepts are developed, that is, the relationships between the classes of objects. The fourth level that Polanyi discussed is the level of symbolism. Symbols, according to Polanyi, are objects that have had integration built into them by design. They have been intentionally made so that observers integrate what has already been integrated. They are integrations of integrations.

So, one progresses from sensory awareness of phenomena, through integration, to objects as things, then progresses from objects as things, through integration, to concepts as the means of categorization, then progresses from concepts, through integration, to symbolism as the means of encapsulating the explicit with the tacit. At each step along this path one increasingly invests meaningfully. Each hypothetical step describes a generalization of its inputs.

It seems from this description that there is no room for explicit knowledge. In spite of Polanyi's claim that explicit knowledge is a clear-cut case of integration, there does not seem to be a way out of his looping process of integration. There seems to be nothing truly conclusive.

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<sup>5</sup> This looks strikingly like Peirce's abduction model of logic. See Mullins (2002) for an introduction to this line of thought.

<sup>6</sup> Is it any wonder that we have so few memories of early childhood? We have not even determined what objects are let alone what different kinds of objects there might be.

All that matters depends on whether the matter at hand is satisfactory for explaining that which is tacit for the moment. Polanyi seemed to be caught, not in a regress, but in an infinite “progress” for he left no indication that the integration toward symbol and metaphor are the end of integration. There is a muddiness in Polanyi’s thinking that leaves the reader with only one insight: that all knowledge can be tacit. Facts that happen to be in focal awareness, for the moment, are explicit. Everything else is considered to be tacit. This loose-end seems to be the basis of Collins’ (2010) argument that, prior to the modern invention of the category of explicit knowledge, all knowledge was of the tacit type. This loose-end implies that Polanyi has left open the claim that tacit knowledge corresponds to the epistemically axiomatic. A foundationalist argument for tacit knowledge can be built on this view.

A second loose-end to look into is found in the basis for Polanyi's claim for the underlying universality of the tacit dimension. This universality begins with the assertion that to know, without such a tacit component, is to assume two incorrect things: 1) that one already knows the rules that determine which of plain, ordinary knowledge statements are true and which ones are not and; 2) that such a knowledge of rules is a natural consequence of the logical mind. Things are known as they are because the rules are known but the rules are known because things are known as they are.

But, in the case of knowing rules, Polanyi said “we can derive rules of observation and verification only from the examples of factual statements that we have accepted as true *before* we knew these rules” (Polanyi, 1958, p. 254). In other words, to have a basis for determining the truth of any given proposition is to assume the criteria before the evidence for the criteria has been gathered. Therefore, the grounds of tacit-less knowing suffer from infinite regress. This regress is the issue that Gascoigne and Thornton (2013) grappled with. Even Descartes' cogito is

not safe from this problem since one can only know that one is doubting from an integrated accumulation of instances of a tacit sort combined with the appropriate accumulation of social instances calling such a feeling doubt. The upshot here is that there is ultimately no empirical knowledge unmitigated by one's sensual feelings toward it. Tacit knowledge might reside in the rules or it might reside in the sensual feelings, as well.

In the second case where rules are a natural consequence of our logical minds, while it may be true that our cognitive abilities may be logical, it is incorrect to assume that this logic is the one that it is commonly thought to be. Indeed, "logic" to the common man would be deductive but Polanyi does not advocate for this form. As Mullins (2002) observes "his ideas about the "logic of tacit knowing" are in some respects notions strangely akin to Peircean claims about abduction" (p. 206). That being said, the way that Polanyi saw how people come to having knowledge is a creative "best fit" explanation of their surroundings. It is certainly logical but it is not necessarily true in a deductive sense. Arguments of circularity can be made with this loose-end.

There is a third loose-end that might be understood as tacit knowledge. It is related to the first case of the second loose-end. Polanyi relied on language to describe instances and levels of integration. It is assumed that tacit knowledge is that which a knowing activity is supported by and that its logical location is analytically prior to the act in question. But it can be argued just as easily that perhaps tacit knowledge is that towards which an act of knowing points synthetically. And rather than describing something that recedes into an oblivion of detail that cannot be articulated, it proceeds forward into a place beyond the reach of language's ability to articulate. Eventually language runs out of capacity. It becomes terminologically inadequate to keep up with our ability to integrate. This way of thinking generates the impression that tacit knowledge

is implied by a given tacit knowing event. Hence, the temptation to label tacit knowledge as implicit knowledge. This is a rather odd infinite regress into the future.

### ***b. The Three Puzzling Places***

Three further puzzling features show up in Polanyi's thinking. These puzzles do not jeopardize his overall theory but they do partly undermine the way Polanyi's position is commonly thought to be. And identifying what his position is commonly thought to be is important because the same misconception was the original motivation for this study. The idea was to determine what Polanyi, himself, had to say about tacit knowledge transfer, that is, how to teach tacit knowledge. The secondary literature makes it sound as if this analysis was to be a straightforward investigation. Instead, as I mentioned above, Polanyi did not believe that tacit knowledge could be taught. Yet, he used the term frequently enough to leave his reader confused about its independent status. He used the term "tacit knowledge" as a nearly synonymous term with "tacit knowing." But since he used "integration" specifically in place of "tacit knowing" he clearly considered the active form to be paramount. Yet again, since the term "tacit knowledge" lingers even into his later works, he also clearly did not wish to lose its implied thingliness either. The following three puzzles offer suggestions as to where in his conceptual model such objectivity might be validly assumed.

The first puzzle is in regards to the term "tacit knowledge." It is an extension of Polanyi's integration discussed above. Here the most notable shortcoming of the term comes to the fore. Within Polanyi's description, it is very difficult to maintain a fundamentally nounal conception of integration. By Polanyi's description, integration is clearly a cognitive process and not a

cognitive product. He referred consistently to integration as tacit knowing and uses the term tacit knowledge rarely. He commonly used *integration* in reference to complete acts of tacit knowing but, at the same time though, he did not deny a result; a knowing-that, a knowing-how, a knowing-what, or where or whatever. Moreover, he did not deny that integration must be the integration of something with something else. Polanyi recognized the logical problems associated with arguing that one either views the result of the integration process as tacit knowledge or that one views the constituent components of integration as tacit knowledge. By not denying either of these conclusions he allowed their implication to linger. In the former case, there would be no distinction between tacit knowledge and explicit knowledge and in latter case one would fail to distinguish between knowledge and the simple awareness of raw empirical data. Understanding integration in terms of tacit knowing keeps epistemological discussion in an active or verbal sense and, therefore, steers between the two poles. This is the path that Polanyi usually took, but it must be noted that he tended toward the poles occasionally, too. The essential component to Polanyi's thinking is the act of integration which he terms tacit knowing. Tacit knowledge, in comparison, is the result of a previous act integration used in a present act of integration. But this leads to a conundrum. Either tacit knowing is always based upon the results of other acts of tacit knowing or tacit knowing is ultimately based upon something else. If it is the former, then the process of tacit knowing becomes circular. If it is the latter, then the source of tacit knowing must ultimately be perceptual awareness. Then, if the latter is the case, then tacit knowledge must refer not only to the results of previous tacit knowing but also to perceptual awareness. If it is merely perceptual awareness, then even flies have knowledge.

So then, the second puzzle is the idea that tacit knowledge refers to simple perceptual awareness. Though perceptual awareness may well form the basis of knowing in the way Polanyi

described, the fleeting nature of any individual awareness would be a far cry from anything one would deem to be knowledge. They would be so far back in our personal histories that they would most certainly not be untrammelled by subsequent bias. They would have receded into obliterating obscurity. This is not really knowledge in any useful sense.

A third bit of a problem concerns the concept of integration. For one thing, it is difficult to understand how Polanyi envisions individuals being able to form discrete entities from the environment without first having integrated enough to be able to identify those entities. It seems at base that Polanyi's position was that people are heuristic abductors with the ability to confirm with one another items of close cognitive proximity that we can call knowledge. Second, it is difficult to rectify one's being able to put things together without having the ability to recognize elementary particles. It seems to me that the ability to do the latter is a fundamentally different ability than the former and, moreover, the latter ability is prior to the former making it worthy of at least as much consideration. But Polanyi did not recognize this. Nor did he raise the distinction between the two. Third, Polanyi relied on language to substantiate instances and levels of integration. Did he consider the sub-elemental particulars to be tacit to the elemental ones? And did he consider the post-terminal language integrations to be tacit as well but in a different sense?

### ***c. Summary***

So, Part Three provides what Polanyi *might* have meant by tacit knowledge. To reiterate, Polanyi did not use the term "tacit knowledge" frequently. He prefers "tacit knowing" or "integration." These he equated (Polanyi, 1958, p. 140). Early on, he used the term "personal knowledge" to define a mode of knowing that involves the knower. This personal knowledge is

explained in later texts as tacit knowing. When he did use the term “tacit knowledge” it is in reference to complete acts of tacit knowing, not the results of it. For Polanyi, there is no entity of knowledge at the end or at the beginning of an act of knowing.

We have several candidates for what might be deemed tacit knowledge. None are quite convincing. In addition to those brought up in sections 9 and 10, section 11-a identified the three loose-ends that form three corners of a type of Munchausen’s trilemma: tacit knowledge could be the axiomatic foundation of explicit knowledge; tacit knowledge could be the all that is not focal, a form of circularity; and/or tacit knowledge could be a set of rules to follow, a position that leads to an infinite regress. Polanyi did not argue for any one of these positions but left himself open to all of them. Section 11-b presents three more puzzling spots that can be used as a basis to understand tacit knowledge. Thus, Polanyi clearly left himself open to the misappropriation of his theory. The wide variety of definitions found in the secondary literature, therefore, is not only justified. They seem inevitable.

Polanyi recognized the logical problems associated with these loose-ends. He did not argue that the result of the integration process is tacit knowledge nor did he argue that the constituent components of integration are tacit knowledge. He used the term tacit knowledge to refer to the same act of tacit knowing that he talked about as an activity. He did this to convey the idea that knowledge is semi-objective and left the nodes of origin and result undefined. He only implied that tacit knowledge was the result of a previous act integration used in a present act of integration. But the reasoning that either tacit knowing is always based upon the results of other acts of tacit knowing or that tacit knowing is ultimately based upon something else completely leads to a conundrum. Polanyi seemed to be happy with this conundrum.

## Chapter 5 – The Analogous Argument

### 12. Transition to the Analogy

This is the point where I can formulate a way that tacit knowledge can be passed from person to person and still be true to Polanyi's theory. In these next sections I propose three ideas - evaluative thickness, aesthetic knowing, and hermeneutic design. I do so for three reasons. The first reason is that Polanyi, himself, made it clear that his position was contra-positivist but he did not specifically develop arguments against it. He only mentions this repeatedly as the target to which his theory is a response. The idea of "evaluative thickness" develops Polanyi's theme by providing an argument for re-incorporating value with knowledge. Second, in the correspondence theory of truth there is an assumption that there is a simple and straightforward transfer of meaning from the signified by the signifier. This assumption is challenged. This "signpost" metaphor is inadequate for understanding Polanyi's ideas since Polanyi's conception of knowledge does not have its origin outside of the knower himself. What is known has its source from within. For Polanyi the communication of a true statement was one whose truth was consistent with the understanding of the person to whom it was communicated. The consistency from one person to the next is based on the assumed commonality of the world. Third, a thin "signpost" metaphor works marvelously if there is only one valid plane of explanation but if Polanyi's contra-positivist position is valid, then an evaluative plane of explanation is required in addition to the descriptive one. But, whereas the first choice for such an alternative would be the realm of ethics, its propensity for good-bad bi-conditionality is too closely akin to the true-false one of deductive logic. What is needed is a way to view value as a conceptual continuum. Although an ethical basis for the evaluative plane does not preclude its use in this way, its

baggage encourages us to seek an alternative. An evaluative component based conceptually on aesthetics brings to the table a multi-dimensional vision of knowledge that includes matters of taste, sincerity, possibility, and authenticity, among others.

The following sections will lay out the proposal of such an analogy. The discussion within those sections first will link Polanyi's concerns about positivist epistemology and situate those concerns within efforts to address positivism's shortcomings. This, in turn, will reveal the need for the companion initiative. To question the logic of the positivist position, this part will feature Putnam's (2002) reassessment of the fact/value dichotomy, a reassessment that sets in place two things: an argument questioning the logical basis of the positivist tradition; and an argument demanding considerations of epistemic value. The first supports Polanyi's arguments by showing how they fit within wider philosophical efforts. The second establishes that the notion of evaluative assessment rightfully belongs within discussions of epistemology. This latter argument sets in place the initial step for my line of reasoning.

Following this, the idea of "thick description" will be introduced. It will be employed as a method of conceptualizing tacit knowledge without trying to talk about what tacit knowledge is. I do this to avoid having to contradict Polanyi's famous claim about tacit knowledge: "We can know more than we can tell" (Polanyi, 1966, p. 4). Following a discussion of thick description's use and its application for understanding ethical value, some further tweaking of this already well-tweaked concept will allow a way that one can visualize what has hitherto been deemed inarticulable and opaque. This part offers a tactical tool for understanding how tacit knowledge forms the basis of both explicit knowledge and the meaningfulness associated with that knowledge. In other words, this part will present a new word-metaphor in place of the familiar and cliché - word as signpost.

After the discussion regarding conceptual thickness, I will examine what I will loosely call aesthetic knowledge. It will not be about what is now regarded as artistic appreciation. Instead, the discussion will circle around a specific understanding of how one comes to know the world. An aesthetic understanding of knowledge entails a direct sensory connection between our bodies and its environment. The discussion will include arguments that outline how the natural environment facilitates the aesthetic knowledge view and how our built environments depend on it. Three specific ideas will be brought forward: the body as receptor of aesthetically mediated knowledge, the intentional and unintentional messaging of the built environment, and the depth to which this built environment communicates.

### **13. Putnam and Thick Value**

#### ***a. Introduction to Thickness***

Understanding Polanyi's thinking within wider efforts helps one get past the thin view of knowledge. Discussions about knowledge that focus exclusively on justified, true belief have given way to other ways of understanding knowledge. Polanyi was not alone in this effort. He was perhaps not even the most adroit in explaining his theory using terms already familiar. So connecting his effort to a different way of putting the issue is important. Connecting his complaints about analytic definition of knowledge to the clearer articulation of the issue given by Putnam will throw light on how Polanyi's tacit knowing fits in the conventional epistemological debate. And when that is complete the idea of teaching tacit knowledge will be easier to conceptualize.

The first of the three position concepts already mentioned - evaluative thickness - begins with Putnam's (1982; 2002) arguments criticizing the fact/value distinction and is, therefore, a

critique of positivism. There are two reasons for pursuing this line of loosening of the analytic position. The first is because Polanyi's own efforts had this direction even to the extent that *Personal Knowledge* (1958) had the subtitle "Towards a Post-Critical Philosophy" (Jacobs and Mullins 2011, p. 433). He saw his work to be a renewal of philosophical tradition and an overcoming of the most recent incarnation of that tradition, logical positivism. The second reason is that the questioning of the rigid separation of value from fact opens a space to discuss the nature of value as an epistemic issue, not a simply a moral one. Polanyi did not view tacit knowledge as an underlying moral motivational component to knowledge. He saw tacit knowledge as that which is undisclosedly known in support of what is focused on in the moment, the minutia and detail that comprise a synthetic whole.

In any case, the modernist philosophy that Polanyi set himself against included a strong rational core supported by empirical verification. This left no room in the epistemological discussion for non-empirically verifiable knowledge. Kant, like Hume, "rejected the possibility of providing any sort of rational basis for metaphysical, aesthetic, and moral endeavor's" (Gill 2000, p. 26). Thus, the foundation of twentieth century modernist epistemology is that it is devoid of concepts of value. Polanyi's early observations recognized this (Polanyi, 1958, pp. 134-142) but not as a viable avenue to portray his overall conception of knowledge. Polanyi spoke of passions and interests as playing important roles in selecting what is scientifically meaningful but did not follow through in connecting this thought to tacit knowledge. I believe that completing Polanyi's open circle provides an excellent access point into his epistemic structure and a pivot on which to subtly transform from a binary valuation conception to one that incorporates a gradient continuum.

### ***b. Putnam's Value***

Putnam (1982) provides our initial argument. In the decision process of choosing between two scientific theories, he says, the one that is simpler and more coherent would be the one that would be more adequate and thus would prevail as the accepted explanation. This is a standard method in scientific thinking. But Putnam's point is that the terms “simple” and “coherent” are no less value terms than the “paradigm value terms (such as ‘courageous’, ‘kind’, ‘honest’ and ‘good’)” (Putnam, 1982, p. 366; Tauber, 1997). In short, even Occam's razor is a value statement. In other words, what we as investigators, scientists, and theorists have as criteria for knowledge to be defined as knowledge, already colours the expected results. In a sense, one gets what one is looking for. One gets what one already knows. (Plato's *Meno* addresses this paradox.) Therefore, according to Putnam, theories of knowledge are adopted on the basis of values as much as they are on the basis of whether they correspond to the facts. Likewise, Polanyi noted that "the affirmation of a great scientific theory is in part an expression of delight" (Polanyi, 1958, p. 141). From such a commingling Putnam concluded that “a sharp fact/value dichotomy... rest[s] on untenable arguments” (Putnam, 2002, p. 1). Putnam enlarges on the argument by adding that, in logical positivism, “nothing can have cognitive significance unless it contributes... to predicting the sensory stimulations that are our ultimate epistemological starting point. I say that *that* statement itself does not contribute... positivism is self-refuting” (1982, p. 367). The upshot is that in order to define knowledge, values are required - whether they are epistemic values or otherwise. Such values are contributed by the knower – which is the contribution that Polanyi spoke of twenty-five years before Putnam.

Putnam (2002) continues by questioning the dichotomy between fact and value under any and all circumstances. And here I emphasize “dichotomy” as his target. He does not equate

dichotomy with distinction or difference. His point is that just because fact and value are different, it does not mean that they are mutually exclusive. The logical positivists held that anything other than what is synthetic (empirically verifiable or falsifiable) or what is analytic (true or false on account of a logical relationship), all else (moral statements, theology, aesthetic judgements, and even jurisprudence) is meaningless nonsense. Putnam considers this a "metaphysical bogey" (p. 11).

The injection of value into the knowledge mix problematizes not only what knowledge is but also what value is. Putnam (2002) gives some clues in this regard. His argument begins by acknowledging that Hume considered that moral value was knowable but by sentiment only, not factually. Furthermore, the knowability of moral value was later denied completely by others (e.g. Carnap). Putnam's point is that the twentieth century rejection of the knowability and meaningfulness of ethical statements is a proxy for the rejection all value statements, ethical, aesthetic, or otherwise (p. 19). "[M]any Anglo-American philosophers continue to think that meaningful language must be understood on the model of the language of *physics*" (p. 25). Instead, Putnam proposes that fact and value are "entangled" (p. 27). The one cannot be conceived without the other. "[T]he whole argument for classical fact/value dichotomy was in ruins. [A]s far as logical empiricism could tell, science might presuppose values as well as experiences and conventions. Indeed, once we stop thinking of 'value' as synonymous with 'ethics' it is quite clear that it does presuppose values - it presupposes epistemic values" (p. 30).

So, if facts and values are entangled, the concepts they are entangled in have an inherent duality about them, one that eludes conventional thinking. To target this duality and to better grasp the fact/value interconnectedness, I propose to press into service the familiar metaphor of "thickness."

## 14. Thick Concepts

Polanyi said, "My definition of reality, as that which may yet inexhaustibly manifest itself, implies the presence of an *indeterminate* range of *anticipations* on any knowledge bearing on reality. But besides this indeterminacy of its prospects, tacit knowing may contain also an *actual knowledge* that is indeterminate, in the sense that its content *cannot be explicitly stated*" (Polanyi, 1969, p. 141). Here Polanyi spoke specifically about two things that I have spoken about at length: that knowledge is indeterminate (i.e. It is not precise. It has a range of meaning.); and that he used the word "knowledge" in two senses - in a holistic, value laden sense as well as in an originating framework on which "indeterminate ranges of anticipations" bear. The first refers to what he called tacit knowing. I believe that the second sense refers to another way to think about tacit knowledge.

The idea of thick concepts may seem to be a bit odd but it does have a solid developmental history. Bernard Williams introduced the notion of thick description, as opposed to thick concepts in 1985 but he had borrowed the concept of thickness from Geertz (1973) who in turn had already borrowed it from Ryle (1968). Ryle used the term "thick description" to describe an intended future activity inside the mind of a thinker while she is engaged in the preparatory acts leading to that future act in mind. In other words, the thick part of the thinking in a given moment is the future act that the present thinking is practice for. Batting practice, for example, entails the "thin description" of concentration in the present moment but it also entails the "thick description" of hitting the home run in the next game. Geertz borrowed this term but adjusted its meaning. For Geertz "thick description" is the "setting down [of] the meaning [that] particular social actions have for the actors whose actions they are, and... stating, as explicitly as we can manage, what the knowledge thus attained demonstrates about society" (1973, p. 27). For

Geertz, the description that thickness entails is the drilling down within cases to access depth of social meaning for human actions, not across cases to produce theoretical breadth. Next, "Williams used this phrase [thick concept] to classify a number of ethical concepts that are plausibly controlled by facts, such as *treachery*, *brutality*, and *courage*" (Kyle, 2016). But, instead of remaining true to Geertz's conception of adding layers of thickness to description by introducing additional levels of analysis, Williams adjusted the concept by distinguishing between a "thin" core of evaluative assessment and a "thick" layer of appropriate description. This is the concept that I wish to work with.

So, what Williams was trying to accomplish and what Putnam's fact/value entanglement implies is essentially the same thing, namely, that concepts (Williams) and knowledge (Putnam) can have an evaluative component as well as a descriptive component. The main difference is that Williams limits his thinking to ethical notions while Putnam claims that there is a different value component to all knowledge, namely epistemological value. He further implies that the list of types of values is not inexhaustible. The notion of "thick concepts" can, therefore, be extended to establish the notion that propositions of all kinds have a combination evaluative/descriptive meaning. However, contrary to how Williams envisions concepts (as having a thin 'good or not good' evaluative core with a thick descriptive coating), I believe that propositions might more plausibly be understood as a central descriptive meaning with a thick peripheral cloud of evaluative judgement, be that ethical, aesthetic, or pragmatic. I contend that it is helpful in understanding Polanyi's tacit knowledge/knowing if one thinks of the core of thick concepts as that which is focally attended to and that the layered thickness of the concept to be that which is tacit and subsidiarily attended to. Moreover, I contend that, in the same way that Polanyi claimed that all knowledge had its basis in tacit knowledge; only by acknowledging the peripheral

“cloud” and “indeterminate range” of associated meanings can one recognize the rise of a concept’s central descriptive meaning.

Much in the same way, Polanyi said tacit knowledge is the basis of explicit knowledge (Polanyi, 1966, p. 20). This “giving rise” is the integration of which Polanyi spoke. It is not argued here that the peripheral cloud of meaning that propositions entail *is* tacit knowledge. Tacit knowledge is the cognitive cloud of subsidiary awarenesses pointing towards a conceptual focal centre; it is the understanding of the degree to which those peripheral meanings can be closer to or farther from (less or more relevant to) the denotative descriptive centre.

Part of Putnam’s argument is that ethical value has been, and generally continues to be, a proxy for all value. This is the case for the discussions surrounding thick concepts and ethical value. Being construed as categorical, ethical value cannot help but be relegated to the central, thin, centre of such concepts. But if they are released from this stricture, which I concur with Putnam’s claim as natural, then the reverse should be the case. And once one begins to see the descriptive part of thick concepts as the central (and, as yet, meaningless) core of knowledge and the tacitly relevant valuation of that core as the meaning of that knowledge, can one begin to visualize what Polanyi was trying to describe. Once this happens, then there will be a substantial base to build a functional conception of tacit knowing and knowledge. The central meaning, the conceptual centre, is the explicit knowledge that the positivist tradition attempted to define as that which corresponded to the state of affairs in the world. Polanyi's efforts focused on showing how such a view, while successfully defining epistemological accuracy, came at the price of meaningful nuance. A positivist definition of knowledge is rather like having the bones without the meat. Such a view of knowledge works well if mechanical manipulation of logic is the goal but it has difficulty satisfying the demands of meaningful description of the events of life.

As far as I can see the definitions of thick and thin circle around the same problem that Putnam identified in the entanglement chapter of his book (i.e. that all talk of thick and thin refer to ethical value and none other). It does not seem reasonable to assume that the thick/thin concept is necessarily limited to moral value. Moreover, there is no reason to apply the concept of thin to the evaluative part and thick to the descriptive part. One can attribute normative bias in degrees by choosing alternative words to describe ostensibly empirical statements of fact (e.g. massacre vs. battle or examine vs. scrutinize). For Williams, however, having the evaluative as the core was important since the evaluative component was an either/or categorical field. But this way of thinking (thin valuation with thick description) limits the evaluative component to a good/bad dichotomy rather like “hurrah/boo” emotivism (McCloskey, 2016). This is too simplistic of a notion to accurately portray the world. Cruelty, for example, when seen in a child is evaluated not just with indignation but with anger or longsuffering as well. When the same action is perpetrated by a mugger that same indignation is mixed with fear. And when it is done by you it is done with retributive vindication. These are not the same evaluative concepts. Nor are they thin.

There is also no reason to assume that the descriptive part of thick concepts per Williams should necessarily be the thick part given that further description is nigh impossible without introducing further value laden terminology. If thickness were a requirement of the descriptive aspect of thick concepts, that aspect would fail. It would not be very thick either.

## **15. Aesthetic Knowledge**

The final stage of my argument takes an extension of the idea of value (from the “thick description method described above) and conceptualizes it in terms of aesthetics. This final stage

works from the assumption that whatever is deemed to be tacit knowledge has its origins in the environment our bodies interact with. Polanyi was specific about this. The "subliminal clues" (Polanyi, 1966, p. 31) that stem from the environment are that from which one begins the integration (the tacit knowing) process. Even the other loci that remain candidates for being called tacit knowledge (i.e. the object of tacit knowing or the result of integration or subliminal gestalt background) have their origin in the meaningful organization of sense perception into concepts. But in spite of stating early in his works that "perception prefigures all our knowing of things" (Polanyi, 1958, p. 99), Polanyi did not fully articulate the problem until much later. In *Meaning* (1975), he said, "The coherence we see in nature has a new *sensory* quality not possessed by the separate perceptions from which it is tacitly created" (p. 35). In other words, Polanyi at last recognized the problem of what he called "phenomenal transformation" (p. 35) in that the integration of perceptions into concepts is a fundamentally different process than the integration of basic concepts into further complex concepts. To overcome this ontological divide, the mechanism he argued for is "a gradient of meaning operative in a field of potential meanings" (p. 178). In other words, he enrolled the idea of *meaning* as a common denominator between the two processes and stated clearly that it is a gradient.

Polanyi utilized the concept of meaning to bridge the gap between the tacit knowing of perceptions and the tacit knowing of logical premises. Therefore, this final stage must address two issues. The idea of aesthetic knowing must explain the meaning of two distinct things: the meaning gleaned from the objective world and the meaning generated by communication.

***a. The Two Paths***

Two paths of further argument are needed then. It seems to me that the meaning apprehended by perception, that is, the meaning associated with what is tacitly known, cannot be understood cognitively alone. Otherwise, one would be able to “tell of all we know.” Instead, perceptions as well as hands holding hammers and gestalt backgrounds and knowing-how as well as the other problematic and puzzling corners mentioned in sections 9, 10, and 11 need to be understood aesthetically either as straight up bodily feeling or as visualizable imagery. Yet, the obvious cognitive aspect associated with meaning cannot be disregarded. So, in order to accomplish my argumentative goal and still demonstrate this complex mix, I will employ targeted portions from the ideas of three aesthetic theorists (Hans-Georg Gadamer, Mark Johnson, and Antonio Strati) to formulate a notion that the built environment is aesthetically meaningful and that, moreover, it can be manipulated to produce aesthetic knowledge much in the same way that Polanyi described the higher levels of integration, the levels of symbols and metaphor. One path will follow a conception of aesthetics in the vein of Baumgarten and the other will allude to a position closer to that of Kant. So, to hark back to my introductory comments regarding the differences between Baumgarten’s conception of aesthetics and that of Kant’s rationalist approach, I want to emphasize that what I propose in the next few pages is, to some degree, a mix of the two. However, I want be clear that *in neither case do I wish to incorporate any notion of the disinterestedness so closely associated with Kant.*

In following the first path, Mark Johnson (2007) writes about his position on aesthetics related to meaning. His primary claims are that “[a]esthetics is properly an investigation of everything that goes into human meaning-making” and that this “meaning-making [is] through our visceral connection to the world” (p. xi). He makes two connections. First, he formulates

arguments that connect the body with the mind (p. 2) and, in so doing, supports Polanyi's similar idea of indwelling, the unconscious absorption of both tools as well as one's own body as an extension of the mind. Second, he connects the idea of percept (p. 87) (the object of perception) with that of aesthetics. This is the Baumgartian aspect and is analogous to Polanyi's argument connecting tacit knowledge with subsidiary awareness. Adding to this conception, organizational theorist Antonio Strati (1999) speaks of ideas regarding the aesthetics of everyday objects (p. 18). Strati maintains that the aesthetics of our environment causes us to think in ways akin to it and implies that Polanyi's tacit knowledge (i.e. subsidiary awareness) can be manipulated in a similar fashion that one's environment can be. Gadamer (1989) contributes the Kantian aspect in his important work regarding hermeneutics as applied to aesthetics. Gadamer adds the observation that many of the objects in our environment have historical depth and meaning that not only give rise to our attitudes and values as Strati suggests but also that they are made intentionally to embody historical and cultural values and to communicate those historical and cultural values. In this way he also gives added significance to Strati's aesthetics of everyday objects in the lives of those around them since they too were made intentionally. My main effort will be to connect Gadamer's hermeneutical historical depth, by way of Johnson's and Strati's observations, to Polanyi's notion of tacit knowledge and tacit knowing, the process he also calls integration.

The second fruitful path addresses the problem of knowing the degree to which objects have qualities. The degrees to which qualities manifest themselves overrun the words available to describe them. Thus, one is cognitively limited by one's vocabulary. One can only communicate what one has the words to say. If a young person, for example, does not yet know the words "scarlet" or "crimson," she cannot talk about them individually but she, nevertheless,

knows them by having seen them. By the same token, those among us who have good relative pitch recognition can tell if a tone is slightly flat of C# but there is no word for that tone. In this way, Polanyi's subsidiary and focal awarenesses, together with their "from-to" relationship constitutes the structure of this way of understanding aesthetic knowing, a concept used in the medical profession since Carper (1978)<sup>7</sup> wherein she emphasized the meaning of aesthetics as feel, sensation and perception in order to overcome the problems of communicating those feelings and sensations. Polanyi identified this as connoisseurship and he called it a "valid, indispensable, and definitive form of knowledge" (Polanyi and Prosch, 1975, p. 32) but did little in the way of elaboration except by saying that it is known in the same way as perception is known (p. 33). This section will try to fill that gap in elaboration by using the idea of conceptual thickness mentioned above and connecting it with aesthetic knowing.

These two paths, the reconceptualizing of aesthetics as a visceral and meaningful connection of the body to the world along with the understanding of the meaningful distinction of nuanced gradience as aesthetic knowing, provide the conceptual link from the tacit to what can be learned.

### ***b. The Two Arguments Applied***

In chapter four above, I described Polanyi's systematic approach to how one comes to know the world – the integration of subsidiary awarenesses into focal wholes. Polanyi and Prosch's *Meaning* (1975) expands on the notion of integration by describing the differences between the integration of the original subsidiary awarenesses and the integration of subsequent

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<sup>7</sup> Carper proposed a categorization of knowledge sources for assessing the condition of patients. Each source is said to produce a unique type of knowledge and beliefs. Aesthetic knowing, she says "involves the perception of abstracted particulars as distinguished from the recognition of abstracted universals. It is the knowing of a unique particular rather than an exemplary class" (p. 27).

focal awarenesses, that the integration process is different from one level to the next. They claimed that these differences were incorporated into the aesthetic terms “symbol” and “metaphor.” *Meaning*, the term used by Polanyi and Prosch to describe what the process of integration gives to the subsidiary awarenesses, is developed in three levels.

The first sense is the most visceral, one that most people are already familiar with. It is the focal awareness that is of intrinsic interest, not the subsidiary awarenesses. It refers to Polanyi’s from-to structure at its most basic. If, for example, one is in a dark room the room feels like cave. The light, the sound, the temperature – they all have visceral effects on us. One can feel comfort and one can feel its approximation. One can feel what is pleasant as well as feel what one does not want to feel. The senses tell us what our surroundings are like and those surroundings produce conditioned responses. In this sense, one has integrated past experiences into somewhat recognizable wholes that produce meaningful responses.

The second sense is the encounter with symbolism. It is an aesthetic response to an object purposely constructed to produce a similar response as in the first way but this time artificially. Early medieval artwork, for example, was designed for the expressed purpose of symbolic display, to convey repeatable messages through the portrayal of meaningful people, gestures, and objects. This is what an icon is meant to do. Polanyi described the second level in the later book. In it he recognized that there are objects (symbols) where the reverse of the first is true (p. 72). A flag, for instance, is only a sheet of cloth. In itself, it is of no real interest but it is the subsidiaries that make for the flag’s composition that are of interest to us. So, even though the from-to relationship still holds, what is of intrinsic interest to us is that which this focal aspect points back towards. In the same manner, Polanyi saw that the meanings of words are of interest, not the words themselves. In the same way that flags and medals and tombstones symbolize that

which lies behind subsidiarily, so too, words symbolize the meaning that lies behind them. The meaning of a word that is derived from perceptions has the structure that he described already in *Personal Knowledge* (1958). There, the word is the focal awareness and is the encapsulation of a multitude of long forgotten perceptions. In the later work, *Meaning* (1975), it is understood more clearly that many words can also refer back symbolically to other ideas. In the first case the words themselves are of interest. In the second case, the meaning reflected by the word is what is important.

The third sense is metaphorical. It is the form of the from-to structure where both the subsidiary and the focal are of interest (p. 74). “As in the symbol, so in the metaphor: the subsidiary clues consisting of all those inchoate experiences in our own lives that are related to the parts of a metaphor – are integrated into the meaning of a tenor and a vehicle as they are related to each other in a focal object (metaphor)” (p. 78). One recognizes both verbal metaphor and the visual metaphor as challenges to push out the boundaries of our understanding, to produce new meaning and to see meaning where none was before. In the art world, Marcel Duchamp’s *Fountain* and John Cage’s *4’33”*, for example, challenge audiences to think in ways that fly in the face of received wisdom.<sup>8</sup> They challenge audiences to think of the possible, to think past what simply is, and so to confront their own contribution to their knowledge of what is.

Thus, the first path following Johnson’s reconceptualization of aesthetics as a visceral and meaningful connection of the body with the world, together with Strati’s generalization of

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<sup>8</sup> Duchamp’s urinal, as his submission for an artistic competition in 1917, was a specific challenge to the establishment of the time. It confronted what was proper to be considered artistically meaningful. His claim was that since he submitted the urinal as art, it was art. It meaningfully represented his intentions. Cage’s performance of four minutes and thirty-three seconds of silence was also to challenge the boundary between what was deemed to be art and what was deemed not to be. His point was that ambient sound, bird songs and audience coughing, not to mention the emotional response of the audience, were as much part of the aesthetic environment as the conventional sounds of musical instruments. Both these artists make the statement that the aesthetic reaches into the everyday in the same way that Polanyi described symbolic and metaphorical integration doing.

what can be considered to embody aesthetic meaning, places one in a space wherein, by way of the second path of gradience, one can know, aesthetically, what hitherto could only be approached empirically. Polanyi's symbolic and metaphorical integration provides the epistemological backdrop to both medieval iconography and to those of Duchamp's and Cage's ilk. Polanyi described in tacit integration terms what can now be seen as aesthetic knowing.

### *c. Symbolization*

Now the challenge is to relate the level of meaning associated with Polanyi's conception of art to the environment in which a *learner* finds herself. What is Polanyi's conception of art? "Among the ideas readily available to our culture, a tremendous number are transmitted to us in imaginative form and are accepted by us on such terms. We can understand how this happens if we think of art as an extension of perception" (Polanyi, 1975 p. 108). And here is the rub. "It is in terms of such artistic expression that poetry, painting, sculpture, and drama convey to succeeding generations the whole range of ideas of which the current use of seventy thousand lines of English poetry is but a token" (p. 109). So, it is clear that Polanyi believed that art communicates. But it is unclear that his claim is that art communicates meaning or if it communicates the tacit. Of course, one could take the route of identifying the tacit with meaning but that tack would run to an end quickly. Instead, I submit that art communicates the tacit component of meaning as well as meaning itself. It does so in the following way.

Aesthetic understanding is not just limited to our responses to art and the symbolism contained in art. "Symbolization processes also create organizational memories" (Strati, 1999, p. 43). Strati's contention is that the aesthetic experience that Gadamer would regard as the exclusive domain of the work of art is also available through everyday artifacts. The aesthetic of

a place is presented in the most general sense by the building that houses it or the location where one is, by its visual presentation and by timbre of the footsteps as they echo in its halls. The point of Cage's 4'33", if there is one to be made, is that surroundings are as integral to an event as the event itself is. The sights, sounds, and smells elicit emotional responses and their attendant memories and meanings. And like with the work of art where each onlooker experiences meaning in her own unique way, a place may induce feelings of comfort or disgust according to the histories that each onlooker brings with them. The major differences are that the onlooker normally only experiences the aesthetics of an organizational place in a tangential way. And, secondly, the aesthetics of a place can be managed and shaped. The inexhaustibility of meaning that Gadamer sees as the core of the hermeneutic process is echoed in Strati. The upshot is that Strati steers toward more of a pragmatic view of aesthetics wherein the aesthetic experience is not "confined to the aesthetic objects produced by what are conventionally regarded to be 'the arts'" (p. 79). Unlike Gadamer, however, Strati does not believe that the aesthetic experience is cognitively important. While I acknowledge something to this effect, the implication that the process psychologically manipulates people is misleading. The intentional design of an organizational environment must be appraised in comparison to doing nothing for to do nothing is to intentionally let the environment shape the organizational members is a way that is not planned. But the members will be shaped regardless. It will just happen in a uncontrolled way, that is all.

#### ***d. How Johnson Connects Polanyi to Aesthetic Thinking***

From Strati, then, one learns that the built environment is aesthetic in the same way that art objects are (perhaps, to a lesser degree). And from the section 15-a, I showed the two paths

by which this could be justified; the reconceptualizing of aesthetics as viscerally meaningful and the idea that aesthetic knowing is the meaningful understanding of subtly nuanced perceptual gradience.

Here, I am faced with a bit of a challenge to overcome. In the same way that Polanyi did, I have switched from a discussion of knowledge (tacit or otherwise) to a discussion of meaning. But this has been done somewhat surreptitiously. Because Polanyi claimed that the integrations of subsidiary awarenesses into a whole gives those subsidiaries meaning, I might feel justified in switching too but this still leaves things in the air. So, it is time that I come to some consensus as to what Polanyi meant by meaning. He said, “We might justifiably claim... that everything that we know is *full* of meaning” (Polanyi, 1975, p. 179). This would be consistent with our previous statement. He further distinguishes between existential meaning and denotative meaning (Polanyi, 1958, p. 50). “When I receive information by reading a letter and when I ponder the message of the letter, I am subsidiarily aware not only of its text, but also of all the past occasions by which I have come to understand the words of the text” (p. 92). The consequence is that, if I may put it in terms of a hierarchy, at the lower levels, integrated subsidiary perceptions combine to form integrated wholes that are represented with words. This process continues in this vein until no more words remain to describe the phenomena before us. The former is representational meaning and the latter is existential. The conclusion is that all knowledge has meaning, either as tacit knowledge subsidiarily composing focal wholes or as focal wholes socially decreed to have specific representational meaning through words. Moreover, there are many things that are not knowledge that have meaning as well (i.e. familiar people and things, memorabilia, works of art, gestures, symbols and metaphors).

Johnson (2007a; 2007b) provides a more thorough argument that connects aesthetics to what Polanyi describes. Johnson makes the case for two things: first, a strong link between sensory input (Polanyi's subsidiary awareness) and meaningful thoughts (Polanyi's integrated focal awareness) and, second, that the sensory input is aesthetic in nature, that is, a relationship between the qualities of things and our value responses to them. Johnson's main claim is that all of our meaning and thought originate in the aesthetic dimensions of our corporeal relationship with our surroundings. "Once I took the leap into the deep, visceral origins of meaning, I soon realized that I was dealing with aspects of experience traditionally regarded as the purview of aesthetics" (Johnson, 2007a, p. x). Thus, "our capacity for making sense of anything emerges from felt patterns of bodily perception and movement, and this embodied understanding provides the basis for all of our imaginative acts of abstract thought and creativity. Art is thus the consummation of our human drive to make meaning" (Johnson, 2007b, p. 89). He also relates this issue to Polanyi's from-to theory. Our awareness is tuned to the focus of our attention, not the subsidiary physical body. The body tends to be subsidiary in our engagement with the world so only if one consciously turns toward the body in order to experience *it* as focal does one see it as part of the world. But, even then, it is almost always the peripheral parts of the body that are experienced even in this way. In our everyday lives the world is experienced by way of "tacit" contact with it through our bodies.

Alternatively, the positivist position is that meaning has its origin in language. "The conceptual propositional theory of meaning" (Johnson, 2007a, p. 8) has its origin in dualist thinking. In that theory, meaningful propositions become the bridge between the mental and the physical. But what Johnson makes plain is that the propositions themselves generate emotive bodily responses. The word "gun," for example, causes the same type of wariness and tension in

us as the real thing does, only to a lesser degree. To Johnson, one does not cognitively associate the word “gun” with the real thing’s conceptual potential to do harm. One feels it and one knows it in exactly the same way that Polanyi claims: one has felt this feeling of the word “gun” as an impending threat and one knows the feeling as the understanding of meaning. The meaning of the word is perceived immediately because it has already been integrated into a concept-emotional matrix of what guns are like.

The analytic tradition would have that such an event as to encounter “gun” is a multi-step cognitive process that would wish to side-step the non-cognitive and visceral response. This would remove the troublesome emotively-based body from the equation of meaning but Johnson instead argues "for the *central* role of emotion in how we make sense of the world" (p. 9). In the analytic way of thinking priority is given to quantities; distance and measurement, to objects of time and space. Little heed is paid to the qualities of things, the extent to which they affect us and to the extent "that we have almost no adequate way to describe and explain what qualities are..." (p. 70). Typically, qualities are seen to be properties of objects. They are said to be static and permanent. In response to this common attitude, Johnson reminds us of what Dewey's claim regarding qualities is: That they are "pervasive," that they have an enduring range of presentation under varying conditions. To engage with art, archetypally, and experience, generally, is to be immersed in sensory and emotional qualities together and all at once.

In support of his position, in contrast, Johnson talks about the difference between percepts and concepts, percepts being sensory input and concepts being the abstraction over multiple similar inputs. Traditionally, percepts and concepts are assumed to be entities of different ontological kinds and that the difference between them matches the difference between the body and the mind. Johnson recalls William James and his suggestion for overcoming the

problem because as long as one assumes a divide between the mind and the body one has, by definition, a gap to overcome. In doing so, one assumes the very problem one wishes to overcome. Instead, Johnson says that "our language of 'concepts' is just our way of saying that we are able to mark various meaningful qualities and patterns... to recognize something that is the same over and over across different experiences and thoughts" (p. 88). Again, this is similar to Polanyi's thinking. Concepts are like constellations: they are there in appearance only.

Lastly, Johnson provides an argument that resembles Polanyi's "from-to" idea. "Thinking moves in a direction, from one thought to another, and we have corresponding feelings of how this movement is going..." (p. 97). "Such are the aesthetic dimensions of our thinking" (p. 97). In other words, Johnson furthers Polanyi's claim that subsidiary awareness comes from the senses. Johnson's idea here is that, what Polanyi describes as the integration of integrations, the subsequent formation of thoughts after perception can be felt bodily as well.

Johnson provides us with four pieces to our argument. First, he raises the bar set by Polanyi. Whereas Polanyi demonstrated that the higher levels of integrated abstraction were found in artistic endeavours, Johnson argues that abstractions, themselves, are aesthetic. That our relation to the world is sensual and thick, oozing and sticky with meaning says to Johnson, and to us, that the aesthetic has to do with not just beauty but with ugliness as well (Zangwill, 2019). It has to do with the sublime and the macabre, the graceful and the crooked, and so many other qualities, qualities that form the stuff of meaning. Second, Johnson has knitted ordinary language to its referents by stating that words evoke visceral tastes of the real thing. He bypasses the "cognitive signage" theory and places the man squarely in front of the torrent of meaning. Third, he supports an interpretation of Polanyi's beliefs saying that percepts and concepts are ontologically similar. Our sensory perceptions are processed in no different a manner than our

concepts are. Polanyi called this integration. Johnson calls it “cognition as action” (Johnson, 2007a, p. 91). Fourth, he says that one has feelings about the movement of thought. Whether a line of argument makes sense or is confused, that sense is a feeling felt in the body. Johnson’s claim is that what is commonly believed to be cognitive activity of the mind is really bodily-felt neural transmission.

Johnson spells out how he reconceptualizes aesthetics. He describes a sense of meaning that is consistent with Polanyi’s and contrasts his position with the analytic tradition in the same way that Polanyi contrasts his with positivism.

*e. How Gadamer Expands the Concept of Meaning Through Hermeneutics*

Gadamer (2004) offers a significant clue for how the process of tacit learning can occur in this setting. In describing the way he envisioned how scholars examine historical documents, one discovers a hermeneutical process of investigation that produces ever deepening layers of meaning. The kind of thinking that Polanyi envisioned is claimed here to be the reverse of the Gadamerian hermeneutic process. Let me describe in some detail what Gadamer’s hermeneutic looks like.

Before that though, it is helpful to distinguish Gadamer’s conception of hermeneutics from that of Dilthey. Dilthey’s version is essentially the kind that theologians have traditionally used. In this form, the scholar is to approach the document with the aim of discovering the writer’s mind. Examination of historical documents using this approach becomes one of interpreting the perceived intentions of the author in an objective fashion as defined by the standards of the natural sciences. The most notable issue with this methodology is that the document becomes as much of a barrier to approaching the mind of the author as it is a reflection

of it. How one defines the terminology used in the document becomes an impossible process of having to know the author's mind before one interprets the document that is supposed to give clarity to that mind, an obvious conundrum.

Gadamer recognized this problem and reformulated the process so that this most problematic issue becomes the centrepiece. Instead of attempting to discover the mind of the author, Gadamer assumed that the document reflected the author's environment as well. He calls this relationship the horizon of the author as opposed to the horizon of the interpreter. The fusion of these two ontological horizons comes together in the document or work of art under examination. In this sense, he distinguishes between normative hermeneutics and philosophical hermeneutics, the latter being the form in which he sees promise (Gadamer, 1977). It was an encapsulation of the thinking of the author's time as much as an encapsulation of the thinking of the author himself. Moreover, Gadamer believed, the document becomes a historical commentary that influences the future every step of the way. With each reading, the document places its stamp on the contemporary present of each reader and each time grows in complexity and in meaning from her commentary on it. Modern readers are therefore faced with the daunting realization that the document itself has affected their own development from birth, that they are as much a product of the document as it is a product of its author. Therefore, one must approach a document, or work of art, understanding one's own prejudices toward the document as much as understanding the prejudices of the document's origins. In this sense, the document and the interpreter are equal partners in bringing out the truth contained in the document.

What is critical here is that this hermeneutical process is immune to accusations of infinite regress. This multi-layered unpacking process of hermeneutical unfolding cannot be viewed as an infinite regress since with each cycle of examination more and more complexity

and meaning is unearthed. With each cycle something new is known. Unlike the infinite regress arguments that Gascoigne and Thornton (2014) present, Gadamer's hermeneutic offers a methodology that keeps giving more plausibility and possibility with each cycle of examination. Perhaps the only serious criticism that can be brought against this formulation is that it foregoes universal certainty and therefore calls into question whether or not the product of the hermeneutical investigation is knowledge at all, at least knowledge in the modernist sense. This is something already encountered with regard to tacit knowledge. But this, once again, brings up the issue of how knowledge is defined to begin with. If it is defined so narrowly as to include only the tautological and the trite, then the attainment of knowledge itself becomes a less-than-noble goal.

This would be in keeping with Polanyi's thinking for, as has already been seen, his conception of knowledge is rooted in the "lost" tacit awareness of our original integrations. The torrent of sensory perceptions that one encounters throughout life falls back into a plenum of indistinguishability. Our ability to integrate similar events from that plenum, along with the subsequent layers of integration of integrations, is the start of that which the hermeneutical process unpacks.

Gadamer's position is that Hume's inductive logical paradigm not is adequate for understanding either the human condition or for the human sciences. In fact, the very notion of definitiveness, so important in the natural sciences, is inappropriate. Instead, an idea of "ongoingness" is needed, one where a historical context needs to be understood to get a proper understanding of a human event. I believe that this "edifacing" is the context of tacit knowledge.

The final step to our somewhat circuitous argument, finally, is the introduction of the idea of Gadamer's aesthetics. "What does philosophical hermeneutics have to do with aesthetics and

the experience of art? The immediate answer to this is, to make aesthetics more ambitious philosophically, to turn it from a reflection on the nature of pleasurable sensations to a consideration of the horizons of meaning that manifest themselves in the experience of art.” (Davey 2013, p. 21) With this in mind, I want to accomplish several tasks.

*i. First.* In Polanyi’s conception of tacit knowing/knowledge, there is an element of reciprocity, a back and forth, and that a comparison with a hermeneutic methodology is appropriate. This element of reciprocity operates between the human participant and her world. She is subsidiarily aware of meaningful sensory stimuli that she (her body) interacts with. In turn she integrates these stimuli into wholes which are then projected into her world as that which is to be meaningfully engaged with. The part-whole configuration of Polanyi’s integration concept and the same within Gadamer’s hermeneutic method is not only interesting. The hermeneutic method and integration are the reverse of one another.

Although the meaningfulness of perceptual stimuli remains one of pleasure or pain at its most fundamental, such a conception past the lowest level of awareness loses its appropriateness. Aesthetics goes well beyond such a limitation. The point is that "hermeneutical aesthetics is not a theory of art per se..." (Davey, 2016). On the surface, it is a dialogue between the onlooker and the artwork and in that dialogue the onlooker gains meaningful insight. But by examining the process that Gadamer describes hermeneutics to be, a better understanding is available of how the received meaningfulness came to be in the first place. Gadamer’s agenda with hermeneutical aesthetics is to examine works of art as well as, in the broader context, literary documents. My argument is that what comes out a work of art must have gone in. I am not arguing that all of what the onlooker finds meaningful in a work of art has been necessarily put there by the artist.

That viewpoint would not be in keeping with what Gadamer intended. Instead, it would be an instantiation of the type of Diltheyan hermeneutical analysis he sought to modify. But, because the work of art also acquires more meaning from its social context - its fame, its value, and the like - long after the artist is finished with it, it can still be said that what comes out must have gone in.

This feature can be extended even further by stating that the hermeneutic approach to works of art can also be applied to objects and environments too. This is what Strati had in mind. My daughter, for instance, has a pair of scissors made into the shape of a pelican, its beak doing the cutting. Because it has been made into an article with aesthetic appeal the scissors have more meaning and more value to her than just of plain utility. As well, in my house I have handcrafted articles of furniture. My family has a more meaningful relationship with their maker as a result. And in this sense, modern organizations are philosophically immature. Since there is only institutional involvement in their built spaces these spaces remain sterile and devoid of both personal and communal meaning. In this sense, the modern rationale for organizational existence is undeveloped, somewhat childish. Gadamer's concept of *Bildung* (i.e. the formation and learning through experience) is the result of the hermeneutical back and forth of meaning, a back and forth of meaning that is possible to detect in all of one's environment. This is the essential relationship between the onlooker and the work of art. It reflects a world with which the onlooker interrelates - each time - differently - and cumulatively.

**ii. Second.** The reverse hermeneutic process suggested in the last few paragraphs is an analogy for how one can inform the future self of present thoughts. In other words, it is the intentional assembly of our Polanyian integrations set before us in meaningful arrangement.

Snodgrass and Coyne (1992) introduced the connection between hermeneutics and the design process and argued for a better metaphor for than the classic “problem-solving” metaphor that goes along with the “algorithmic logic model derived from language theory” (Snodgrass and Coyne, 1996, p. 65). They argue that although there is a definite problem-solving element that goes into the design process the activity is not one that reflects this approach, Instead, the design process more approximates a dialogue in which both the design challenge and the designer suggest directions and responses to one another's contributions. This is strangely familiar in the way Polanyi describes the process of integration in works of art and in metaphor. He believes that the role of symbol and metaphor, as proxies for works of art, is specifically to draw attention back to the constitutive particulars that their authors put into them and not to draw attention to the integrated symbols and metaphors themselves.

“The distinctive mark of the language of art is that the individual artwork gathers into itself and expresses the symbolic character that, hermeneutically regarded, belongs to all beings” (Gadamer, 1976, p. 104). Gadamer wants to discover the ontological ground, the basis of reality, of the experience had with art. For Gadamer, hermeneutics is not the meeting of two minds, so to speak, over a historical distance. The task of hermeneutics with regard to art is to bring meaning towards greater completion, a task that can never be finished. "Artworks are dramatic in that they place something in play" (Davey, 2016). Perhaps, one can say that art works establish a cultural horizon or context in which Gadamer’s famed “fusion of horizons” can occur. They suggest a symbolic order for the future. In a sense, symbols preserve and project, into the future, an ontology and a range of what presently is.

*iii. Third.* The “aesthetic knowledge” discussed at the beginning of this section comes to the fore in the understanding of it in terms of hermeneutics. In describing Gadamer’s aesthetics and how it relates to the hermeneutic process, Davey (2016) refers to "the participation in a trans-subjective event..." (Davey, 2016). Art is not a solitary subjective experience. The work of art can be extended into language. The symbol is associated with the sublime. It has "a penumbra of unstated meanings.... Hence, the hermeneutical sublime, the excess of meaning, the promise of meaning more and meaning something different which is made apparent by the symbol, is held within, is imminent in the given" (Davey, 2016). Art is, therefore, presentational, not representational. It is the presentation of the meanings they (the works of art) call forth in the onlooker. In representational thinking the work of art is only a vehicle, a servant of the source of meaning. In presentational thinking, the work of art becomes the motivational urge that causes meaning to well up in the onlooker herself. "The artwork does not simply offer 'a recognizable surface contour' but has an inner depth of self-sufficiency which Gadamer calls after Heidegger a 'standing-in-itself'" (Davey, 2016). The work of art holds within it the trigger of the yet-to-be-revealed which is always an aspect of the meaning that goes unnoticed until another event of onlooking. The power of the symbol as artwork "is its promise of transcendence... that we belong to a hermeneutic community always larger than we envisage" (Davey, 2016). The artwork's subject matter is the foundation of Gadamer's idea that the experience that art evokes is cognitively meaningful.

Care must be taken here. One cannot claim that meaning is independent of the work of art even if it is independent of the source behind it. The meaning that it evokes in the onlooker is still tied specifically to that particular work of art. The work creates a space in which its subject evokes meaning and at the same time makes a statement about that subject. That statement may

change in each onlooking event. How can they not and remain interesting each time. Gadamer is skeptical of language's ability to measure up to the work of art. It just does not bring out lived experience the way a work of art can. "The finitude of language itself prevents it from capturing the totality of the [aesthetic] experience" (Davey, 2016). There is something in a work of art that resists its reduction to a mere vehicle of transferred symbolic meaning. This something plays host to a bottomless well of meaning, an unending source of meaning.

### *f. Conclusion*

First, two of Polanyi's ideas, the "from-to" notion where the subsidiary awarenesses point to the focal awareness, which in turn, points back to the subsidiary, and the mutual increase in meaning of the two awarenesses due to integration is the same process Gadamer's hermeneutic unraveling of the work of art or historical document. Second, Gadamer describes this hermeneutic process as the "fusion of horizons." Polanyi speaks of integration. Fusion and integration? I do not believe that the similarity in terms is coincidental. Third, to repeat, the work of art holds within it the trigger of the yet-to-be-revealed. Is there anything that can be more effective as a symbol of all made things and their ability to communicate to future generations, the subtleties of all that can be known but not told?

## Chapter 6 - Argument Summary

Sections 9 and 10 above showed that the thrust of Polanyi's tacit dimension was toward the generation of meaning. But our goal has been to work out how tacit knowledge can be communicated, not how meaning can be. Sections 9 and 10 also pointed out that although almost all of the secondary literature talks about tacit knowledge, Polanyi spoke of it infrequently yet frequently enough to merit considerable effort to figure out how it fit into his main concept, that being tacit knowing or integration. Section 11 outlined the logical niches that might be, and have been, construed to constitute tacit knowledge. Chapter five introduced three ideas that, in combination, form a pathway capable of communicating the contents of those niches.

The first idea was the importation of Putnam's argument for fact/value entanglement. I associated this idea with the fairly commonly known agenda of Polanyi's opposition to the analytic epistemological tradition. Polanyi's conception of knowledge required the personalization of knowledge. In a nutshell, his thinking was that without the involvement of a knower, all that is known (knowledge) is not known (by anyone), an obvious problem. The knower is always involved in some way in what is known but this truism only kicks the can down the road. The issue then becomes one of how, not if, the knower is involved with what she knows. Both the rationalist and the empiricist traditions would have us believe that one can detach oneself in a way similar to a Kantian aesthetic of disinterestedness, that is, from what is known without consideration of what our values are, that is, without consideration of what is important to us. As such, these traditions would have us believe that one can coldly calculate in the most heated of moments and would have us believe that conclusions can be coolly drawn from insufficient samples. Instead Polanyi argues that, while both rationalism and empiricism

have their place, they form an incomplete picture. His conception of awareness is, after all, empirical and his conception of the integration of integrations nuzzles up to the rational. Thus, he calls into question how an only partly rational knower can ever attain the type of knowledge that the analytic tradition demands. The certainty requirement of that tradition is problematic not only because it is unreasonable to expect individuals to verify each claim to knowledge themselves but also because certainty, itself, is a value: what is enough justification for one person may not be enough for someone else. So, spurred by Polanyi's quarrel with positivist thought and aided by Putnam's arguments against the fact/value dichotomy and, rather, for their entanglement, a need is encountered to conceptualize how such an entanglement might be talked about. There rises a need to describe in what way the knower is involved in the knowledge that she knows. How are the values of the knower accounted for in the encounter with the world of knowledge?

The second idea I introduced was "thick concepts." I did this for two reasons: to provide a conceptually three-dimensional way of thinking about knowledge and as a way to incorporate value considerations. Rather than think of knowledge in a conceptually thin correspondence way where the components of language are assigned two-dimensionally to their meanings, the notion of thick concepts affords a way to conceptually attach associated terms as well. And rather than exclude that which inevitably colours our view of the world, the idea of thick concepts allows us to "keep the enemy near." To be clear, my project here is not to claim that value is an equal partner in our effort to understand the world but it is an integral part of what being human is. To exclude it from the knowledge corpus, as Polanyi, Putnam and others argue against, is to miss much else that is true about that world.

I followed this discussion with the introduction of a third idea, aesthetic knowledge, and I did so for several reasons. The first was, as evidenced by his last major work, that Polanyi

believes that tacit knowing culminates in artistic, symbolic, and metaphorical thinking. Second, the reason for bringing aesthetics into the discussion is that aesthetic values are more easily seen to be variable than ethical categories are. One can have varying degrees of gracefulness, for example; varying degrees of tone or shape or any number of sensory characteristics. This is done for strategic reasons in the argument of this paper. Aesthetic values can be more easily recognized as quantifiably variable. They are infinitesimally and subtly variable and, therefore, contrast significantly with how thick concepts are discussed in the literature, that is, as moral terminology wherein only two categorical values exist and are conspicuously mutually exclusive. The third reason for introducing “aesthetic knowledge” is an extension of the last comment. It is that our agenda is to distinguish our formulation from that of thick concepts the way that Williams talked about it. To stay away from ethical concepts is to stay clear of any confusion. The fourth reason is that Polanyi devoted a large part of his final work to the subject. He did this because he believed that the process of developing a work of art is very much akin to solving a scientific problem (Polanyi and Prosch, 1975, pp. 95-100).

In summary, I am trying to show that one’s integrations can be demonstrated aesthetically in art as well as in an aesthetically developed environment. Moreover, I am trying to show that tacit knowledge can be taught by the intentional application of one’s values (not only emotions) through aesthetics to the environment of the learner, not only by way of art specifically but also in the surrounding of place. This project's focal intent, therefore, has been to offer a conceptual path through which tacit knowledge can be communicated, that is taught, and mentally visualized in a way that circumvents the definiteness required for explicit knowledge. The project pinpoints a possible conceptual route that tacit knowledge can be disseminated and acquired.

In the movie business a common trope is the dimly lit, contemplatively sparse, Buddhist temple. A white haired robed old man sits serenely cross-legged on a dais. But it is not only the Buddhist temple that uses ambiance to produce calmness and reverence. If you have ever been to a Good Friday evening service in a Christian church, you will know the vibe all too well. The point is not so much that the atmosphere is created but, more importantly, that one knows how to behave in it. One knows how to respond behaviourally to sensory stimulus. Our environments, in other words, are instruments of learning to be finely tuned.

## **16. What Hurdles Need to be Overcome**

However, there were several hurdles to overcome. Each of these hurdles is a source of possible criticism to my answer. The first hurdle was simply to make clear the methodological issues that would be encountered in the thesis. This would not be a project that tried to explain tacit knowledge. Instead, the intent was to adopt a "what if" attitude. An implied question was "What would be needed in order to communicate what was tacit?" So, rather than entering the fray by providing yet another analysis of Polanyi's writings and yet another new and competitive understanding of his idea, I went the other direction and constructed what I believe to be a plausible way that tacit knowledge and tacit knowing can be taught regardless what it is. I do not just want to describe tacit knowledge in a propositionally coherent way. I want to generalize by suggesting that because it is knowledge, it must have the characteristic of teachability. By recognizing that "we can know more than we can tell" does not necessarily preclude an articulation by some other means. So, once I got to the point of thinking that accepting an exchange of clarity in knowledge for depth and breadth, I thought that, since our original sense-experience provides basic tacit information, an intentionally manipulated environment, a school

for example, would provide specific sense experience and specific tacit information, a tacit fingerprint that could predictably impart an intentional set of beliefs or attitudes. That being said, though, it was important to distinguish how I was to describe the process contained in this thesis and clearly articulate it as different from the process that an individual would use in communicating tacit knowledge to someone else. So, while the remainder of this section sets out the argument for the latter, the process of this thesis itself has adopted an air of a thought experiment combined with what has of late been termed conceptual engineering, namely, the reworking of ideas to make them more fitting for the purposes at hand. Ironically, this process is strangely similar to the integration process that Polanyi says tacit knowing is. But, more germane to the point is that such willful manipulation and blatant extraction from context that I have perpetrated upon these ideas may not sit so well with some folks. Learning tacit knowledge from a specifically designed environment may seem, to some, a bit underhanded. It may even be borderline indoctrination. But I argue that this is not so far off from simulations and learning environments designed for the same purpose.

I should also remind the reader that although the idea of tacit knowledge originally comes from Polanyi, the way it is now understood does not come from him alone. The term has been part of our lexicon for many years, so some people may not even know its Polanyian origin. Thanks in large part to writers of business management theory in the late twentieth century the term has enjoyed relative familiarity if not real clarity. The amount of effort and thought devoted to tacit knowledge in that academic sphere has proven rather serendipitous by providing an undeniable amount of free advertising for the term. It has also imparted an impressive gleam of

value by associating the term with increased profitability.<sup>9</sup> While some authors such as Reber (1989; 1993) have simply explained the idea in other terminology, the passage through economics and knowledge management has left tacit knowledge with a reputation of both utility and of thorny nuance. It is a complex idea. However, responses to it and attempts to explain it have not been entirely successful apart from indicating how complex it is.

The second hurdle was that, in spite of tremendous efforts by many authors, a clear idea of what constitutes tacit knowledge was and still is forthcoming. At present the tacit knowledge moniker is a tangle of substitute concepts and varying interchangeable terminology. Save for some admirable efforts by authors of recent monographs, the state of affairs regarding the definition of tacit knowledge is in disarray. How to garner a single understanding of tacit knowledge clear enough to support an explanation of expertise, mentorship, or what have you, is not evident in the least. The secondary literature was not helpful in understanding how tacit knowledge could be taught with one exception. That exception can be approached by extending Winch's (2011) observation that the Ryleian knowing-how concept can be evaluated in terms of degree. One can know how to perform an action with varying degrees of skill. By extension, knowledge, in spite of its fundamentally bipolar true/false nature, is still held to be true or false with varying degrees of certainty. Quine (1987) voiced his opinion on this subject more generally. "We do better to accept the word 'know' on par with 'big' as a matter of degree" (p. 109). Quine suggests that knowledge be thought of in the same way as bigness, that the truth of knowledge be comparative rather than categorical. Outside of this, from the literature one can at best either estimate what tacit knowledge is or conclude that it comes in several guises.

Returning to Polanyi's own writings was necessary but even there, as I have shown; tacit

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<sup>9</sup> An honourable mention goes to the concept of "nudge" (Thaler and Sunstein, 2009) as well as Dave Snowden's (2000) idea of starting change in small increments from where one is and directing change vectorally rather than beginning with a big goal and then determining what needs to be done to achieve it.

knowledge per se was not easily demarcated from its tacit knowing sibling. Although Polanyi described tacit knowledge in a couple of places, how it fit into his epistemological construct was difficult to determine. It seemed only to fit into logical endpoints where the active tacit knowing framework seemed to leak. But this, in retrospect, fits with the many explanations for what tacit knowledge is.

The third hurdle is the inadequacy of language to describe a complete knowledge picture. This concern appears in connection with Polanyi's epistemological context. Polanyi's concept of tacit knowledge assumed a different conception of knowledge than the one generally accepted in philosophical circles at the time. He dared to suggest that the knowing subject be re-introduced into our conception of what knowledge is and what knowing is. This is in the same vein that others in the twentieth century have taken. In a later section, I offered Putnam's argument in support. Putnam's position that fact and value are entangled and not mutually exclusive is similar to Polanyi's idea of the knower's involvement in knowledge. By implication the idea of tacit knowledge, because it would re-embodiment knowledge in the knowing subject, requires a further challenge to the assumptions regarding the dualist conception of mind and analytic thought in general. While Polanyi does not dispute that knowledge has meaning in this sense, he does think that this is only the "clear cut" version (Polanyi, 1958, p. 60). The kind of things that he talks about, in addition to the clear-cut ones, are situational. They do not have specific words associated with them. What appears to be the case is that language has an economizing effect on our experience and that the tacit bits are the 'inconsequential' parts that are left out of that economization. Language generalizes common situations and events and, at the same time, leaves out what makes each situation or event unique. What is left out is the tacit. Taken together, as in Polanyi's integration process, these tacit bits amount to substantial knowledge

bereft of articulability. To some degree this project has had to grapple with this issue. Perhaps, moreover, a criticism may be raised that not enough grappling with this issue has occurred.

Things like body language, gestures, and vocal inflection come to mind.

The fourth hurdle was to describe Polanyi's idea as closely to his intention as I could. The integration process flows from sensory input to the development of what are construed as objects in our world. This is the part that the majority of the secondary literature focuses on and stops at. Polanyi's further ideas are seemingly disregarded. His next step was to understand that integrations can further be formed from these objects to form conceptual objects of class. Furthermore, a final level that has been discussed is the level of symbolism. Symbols, as techniques for preserving knowledge, and metaphors, as technology for generating knowledge, according to Polanyi, are objects that have had integration built into them by design. They have been intentionally made so that observers integrate integrations, so to speak. So, one progresses from sensory awareness, through integration, to objects, then one progresses from objects, through integration, to concepts, then from concepts, through integration, to symbolism. At each step along this path does one increasingly invest oneself meaningfully. That is, one increasingly adds meaningfulness because at each step more fact and value referents are added.

## **17. Pedagogical Applications**

### ***a. Intentionality***

Developing an idea of pedagogy regarding tacit knowledge is a bit misdirected. The intentionality of pedagogy precludes an active instruction of a knowledge that does not stand out to be identified. Hence, tacit knowledge cannot be taught as if it were explicit. Tacit knowledge must be taught in somewhat of a surreptitious manner. If there is to be a pedagogy of tacit

knowledge it would have to entail an approach that establishes its existence first and then, only after that, figure out what it might be. Students, regardless of whether they are children or adults, have no idea of how they put together what they know even in a classroom setting. So, much of the challenge would be to show how students could do that.

The temptation, however, is to think that learning is an act done to people. So then, one might think that teaching tacit knowledge is some kind of setup as in the case of the idea of "nudge." Thaler and Sunstein (2008) raised an approach to changing social behaviour by suggesting that people's actions will more likely follow a default alternative or suggested path if it is clearly presented. Their primary claim is that much of our daily activity is a function of automatic responses. Many of us, for example, drive home from work each day but sometimes cannot remember doing so. Learned procedures repeated over many iterations also produce automatic responses. Most of us have encountered large doors with D-handles only to discover that one must push on this pull signal. Nudge theory incorporates these sorts of signals by suggesting that behaviours can be predictably altered given appropriate stimuli. But this not instilling tacit knowledge. Learners in nudge theory are simply trained to behave in specific ways. They are not made aware of their propensity to do so and, therefore, cannot be aware of what might have brought their behaviour about.

One might also argue that what I am presenting here is just "the hidden curriculum" by another name. I readily admit to some similarities - unstated, unintended, for example. Where I disagree with this assessment is in the fact that, in the hidden curriculum, the biases in the pedagogical arrangement are there as a result of a residual push toward a specific social arrangement that is entirely related to the outwardly intended curriculum. The sociological assumptions that undergird curricula are part of the curricula and are thus intended in spite of not

being specified as learning goals. The environment, on the other hand, is not intended to be pedagogical in any way and is therefore not expected to have pedagogical value, so to speak. Architectural values do, however, shine through this lack of curricular intent. Take for example the schools built in old neighborhoods. Often schools are made of brick and stone, materials that imply permanence and importance. Their grandeur gives the onlooker a feeling that their education is valuable. But, often times, these grand old buildings are in disrepair. They portray neglect and disregard at the same time as permanence and importance. New schools, on the other hand, have newness and... portable classrooms.

Teaching tacit knowledge does not involve teaching something specific. For each person what is tacit about any subject relies on the past, the memories of, and the values of that individual. To teach tacit knowledge is to show that it is there.

***b. To Whom Would this be Important?***

Who cares? First, the rhetorical sense of this question implies that this formulation of how tacit knowledge comes to individuals is all but the most useless of concepts. But given that religious institutions have, for centuries, used this kind of approach for inculcating their message to illiterate masses, there is most certainly more to the approach than merely a hit, miss, or hope type of thinking. The use of the cross, crescent, or mandala is no accident or mere convention. They serve as foundational symbols and serve to produce, in the onlooker, reminders and assurances of answers to fundamental attitudinal and existential questions. Narratives provide an idealized common ground from which all listeners can extract lessons and exemplars to form a sense of historical identity or a place in the cosmos. Pictorial, architectural, and ritual reminders, regularly pointed to, act as sociological compasses and educational guidelines that help form

communities into cohesive units. Like it or not, our present educational institutions do this. They just do it in a very disorganized way. My guess is that the haphazard nature of our educational systems as they are, not only have been produced from an individualist mindset but also act to reproduce it.

Even closer to home, our aboriginal communities have long used this approach by infusing animals with character traits, by using directional symbols to conceptually associate those traits with place, progress, and rhythmic, cyclical change. Who cares? We educators all should care. The adaptation of our lived environment into an instrument of education has a very long and powerful history. Perhaps more attention should be paid to it.

The second sense of "who cares?" asks "Who should care?" To begin with, educators should care for no other reason than to convey facts. The present practice of pasting posters on walls as the commonest method of reminding students of important aspects of a given subject also sends a clear message of impermanence. The fact that posters are removable also communicates a contrived temporality that borders on banality and sloganism. If facts are facts, should they not be embedded into the very walls of our educational architecture? Educators should also care in the same way that they arrange classroom seating in different ways to achieve various educational ends. Perhaps, in our penchant for modernist purity, too much emphasis has been placed on the ideals of efficiency and utility. As Nussbaum quips "Distracted by the pursuit of wealth, we increasingly ask our schools to turn out useful profit-makers rather than thoughtful citizens" (2010, p. 141).

Political leaders too should understand the workings of what the lived environment communicates to us. The long-observed dissonance that exists between the words of politicians and the reality in the lives of the public could be ameliorated if consideration of the message

coming from the lived environment more closely matched to that coming from the rhetoric. Let me be clear though. I do not wish to engage in a polemic against power. What I see, though, is an opportunity to subtly educate individuals, students, and communities into closer proximity to a common ideal. We have the technology to rebuild in this manner. Perhaps the most notable efforts in describing this effect have come from Sunstein (2014), in his defense of the notion from criticism of paternalism. His point is the same as mine: paternalistic influence will occur regardless of whether or not a given environment is intentionally nudged or designed to communicate. If that environment is not challenged, the existing power structures will continue to have their own message conveyed, whether it is the chocolate bar merchandisers at check-out counters the world over or whether it is the modernist architectural firms designing our bland schools. Bland places produce bland people. Rich places produce rich people.

***c. The Pedagogy of Deconstruction.***

When I was a kid (maybe eight or nine years old) our family television broke down. My brother and I asked if we could take it apart. It was an old black and white from the '60's, one that had a cabinet that you could almost climb into. It had wires in it and tubes in it. (My father shot the picture tube.) It had things in it that we had no idea what their purpose was. It kept us busy for weeks. I call this the pedagogy of deconstruction: take an object, break it down, and wonder about what the purpose of the components might be.

What are the objects in our environment that one can deconstruct or disassemble? Obviously, the appliances and small machines can be. Can emotions be deconstructed? Can the human body be deconstructed? How about symbols? Do the demands of curricula stand in the way of learning by deconstruction? What is it about a school building that communicates what it

does? Why is there large “21” emblazoned on its outside wall?<sup>10</sup> The fact that a building is purposely built as a school is significant.

How does one find the path between concrete activities, straightforward pictures, and information to the symbolic? Are there transitional steps? Does the ordinary communicate? The fundamental point of my thesis is that it does. Does the ordinary communicate in a way that one can understand? Does one have to learn to understand the commonplace before one can learn from it? If so, how would that happen? If not, then one must assume that one knows how to do this already.

Students do not know how to look for the understanding that the environment provides. Let us assume that learning occurs through repetition. If this is so, then procedural activities will garner learning of how to do the activities that are repeated. The question that needs to be asked is about whether or not the activities that are being repeated for learning fit the needs of the student. It behooves the pedagogue, therefore, to either convince the students of the value of learning objectives (the present approach) or provide a curriculum that empowers students to thrive within the circumstances from which they come.

#### ***d. The Pedagogy of Cloud-making.***

Some of the authors of the secondary literature on tacit knowledge would have tacit knowledge defined as subliminal or implicit knowledge. As mentioned above, other variants can be used as well. However, this approach implies that the supporting knowledge one has for one's claims (i.e. whether one calls it implicit, or tacit, subliminal, or whatever) is in some way covert. But thinking in this way misses the main idea of tacit. It is not that what is known tacitly cannot

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<sup>10</sup> The building where I teach was converted from an unused airport terminal. The “21” on the outside wall refers to the directional orientation of one of the runways - 210° - 30° west of south.

theoretically be stated explicitly. It is that what one tacitly knows is not immediately germane to what one explicitly knows. The distinction between what one is able to do (i.e. state knowledge explicitly) and what one deems to be the relevant knowledge of a situation is of utmost importance.

This distinction illustrates two ways of how knowledge can be constructed; in a linear way or as an aggregation. Assumptions based on logic will show knowledge to be formed from logical antecedents whereas assumptions about what constitutes knowledge based on aggregation will show knowledge to be networked. In the same way that one can tangentially associate with the queen of England - as well as a host of unknown persons - so can one tangentially know potentially explicit tacit knowledge as well as much that cannot be made explicit (or what might be termed "unknown knows").

The idea that the environment is an effective source of knowledge is not new, of course. In many ways what is communicated by that environment is fairly direct. Simple observation of the natural things in that environment reveal things to know. Analysis of those objects brings out further knowledge and on it goes. But in many ways the built part of the environment is not as simple. Though layered like the knowledge gleaned from the natural environment, the built environment requires analysis of intentionality, the "why?" of what was produced and even the "why not?" of what was not produced.

I had a friend many years ago who firmly believed that his "calling" was to preserve the old knowledge of furniture making. He believed that without people like him the old knowledge would be lost. He had a point. With the mechanization of the skilled trades that has occurred over the last century and a half, two things have happened. First, there has been a simplifying adaptation of techniques to the abilities of machines to perform them. Second, the required skill

level of individual workers has gone down. Expertise in woodcraft has been replaced with simpler tasks of operating machines. The point of my friend's concern and that of my anecdote is that knowledge can be lost if it is not purposely retained. The idea is that knowledge can become tacit once again after having been explicit and, moreover, that over a long period of time knowledge emerging as explicit knowledge and re-submerging as tacit knowledge is a complex adaptive system, a system whose important (read focal) or relevant components come to the fore and whose less immediately important and less relevant components recede. Just like when Polanyi's piano player begins to pay more attention to her fingers than to the music being played, the music becomes less focal and more tacit.

While the intent of my idea regarding tacit knowledge does include this sort of thinking with regards to symbols and icons in our built environments, it goes farther down this conceptual path by claiming that even the orientation of our buildings, their colours and textures, and materials portray the rudimentary affective associations of a common community. If, for example, a group of people have grown up living in shacks, their common experiences would be those of shacks as opposed to the lush conditions of air-conditioned mansions. Their common experiences would be the draughtiness and, thus, the closeness to the outside. Those experiences would be formative. The felt feelings of one's environments, the cold or the warmth, the levels of light and the qualities of the sounds are associated with the experiences within those places. The affective experiences of particular associations can be channeled to produce meaning.

One evaluates the present in terms of the past. In comparison to previous experiences one judges present environments as either favourable or not favourable. Though not accurately, one is able to assess whether a new circumstance is better and roughly by how much. In this sense one creates the evaluative cloud around the descriptive core of our present situation. Do one

learn from this? Is one learning when one does this? My feeling is that one does and is. But it is a tricky business assessing our emotional responses to our surroundings. Creating the cloud of meaning is like asking ourselves if our present is better than our past or the other way around. It is like requiring ourselves to nail something down that can change from day to day. It takes an extra effort to generalize over our responses of value. Perhaps the only way to get ahold of our learning in this sort of scenario is to do so anecdotally. One can certainly identify the descriptive elements of our stories. In doing so one can also surmise the immediate causal links as well as the obvious implications but to continue identifying these links is to begin to understand that such identification can go on for a very long time and that one soon realizes that there will always be more that is not identified. It will remain tacit. By visualizing learning is this way, one can come to see that some tacit knowledge can be made explicit but that there will always be more that will stay tacit. That an idea is made explicit does not make it cease to be tacit. What makes an idea tacit is that it is not focused on.

In the course of reading this thesis, for example, some of the points made early on may have slipped the mind of the reader. These points were presented when they were because they lent support for points that were to come afterward. But once the points afterward were made, the supporting points become less significant in comparison and, therefore, faded from memory. But my point right now is that whether or not the previous points are remembered does not make them tacit or explicit. The points are tacit as long as they are not the points being focused upon. How one treats the things in the environments; how one remains aware of them, provides an idea of the emotional responses one might have toward similar things in previous environments.

### *e. Conclusion*

Deconstruction and cloud-making: the two go hand in hand. What is a bit unusual is that they are applied to a knowledge category that remains not only in the background but is the background. The idea of this thesis is that this tacit background can be deconstructed into what it might be affective and reconstructed into what might be the evaluative component. In other words, I am advocating for a turn toward an examination of the modality of the human condition – of value.

I have also compared my ideas about tacit knowledge with what is referred to as the learning space or learning environment. This is perhaps the closest to my thinking of all the aspects of pedagogy. The learning space advocated would claim that the environment affects the learning abilities of students to the extent that that the space is designed in a particular way. My claim is that the learning space "teaches knowledge" of a sort. It teaches tacit knowledge. The views from windows, for instance, or the type of light has a direct affect on students' ability to concentrate on specific learning activities as well as their ability to restore after intense concentration. These are concerns in the learning space literature but they are initially biological and only secondarily pedagogical. My claim is that they are primarily pedagogical. They are in consonance or dissonance with experience. They are, therefore, constant reinforcements of specific memories and their itinerant emotional responses. My claim is that the tacit impulses from the learning space tweaks reactions from students.

## **18. Review of the Idea of Thick concepts and How They Encapsulate Knowledge**

We have concluded so far that, because an argument can be made for the entanglement of fact and value, there is room in the epistemological realm for more than knowledge in the

positivist or modernist sense. Putnam supports Polanyi in describing that alternative. In their sense, knowledge includes the “subjective“ aspect of individual knowers, not that truth or knowledge becomes relative but that truth and knowledge are affected by the knower's “take” on them. I have also described in section 15 (Aesthetic Knowledge) how knowledge is not restricted to being understood as a bi-conditional thing. As well, remember Putnam's conclusion that the understanding of value is not necessarily tied to ethical value but is only so because knowledge has been traditionally examined in terms the “ought” of human action and the “is” of the natural sciences. But if bi-conditionality is neither descriptively necessary nor prescriptively necessary, knowledge becomes a far more complex notion than most people would be conceptually prepared for. Knowledge would no longer be limited by notions of certainty and utility. It would be limited only by what can be symbolically presented, propositional statements being only the vanguard of such symbolism. This kind of idea needs a metaphor to aid in its understanding. That metaphor is conceptual thickness but the question as to the necessity of this concept to the argument presented in this thesis is moot. It is not necessary. But it is helpful. It is helpful as a heuristic tool for conveying an idea of multi-directional depth that all knowledge has, so much depth that a portion of it must remain tacit.

The idea in detailing this heuristic tool was to provide a framework that rises above a signifier-signified two-dimensional world. Value can be understood as a gradient by using “thickness” but the idea need not be limited to ethical concepts, of course. It can be applied just as well to description of all kinds. Concepts, therefore, apart from their thin core denotative meaning, the meaning usually associated with knowledge, can have varying degrees of different kinds of value associated with them as well. The key question at work here is the question of how thick. In other words, one cannot get away from the question, “How justified does a belief

need to be before becoming knowledge?" The difference now is that the question comes from multiple directions. These quantities are unavailable to us through language apart from a few intensifiers. Only by way of experience, human knowledge about things, can one have anything approaching a knowledge of such value quantities. But our language is not capable of describing our experiences in great enough detail to make the differences in the results of similar actions clear to others. One only learns something similar by repeating a similar action or repeating a similar situation. As a result, something similar to tacit knowledge remains. This is experimental evaluation. Thick concepts are not the result. The result is only having an approach to an understanding of what tacit knowledge is and to give us an idea of how and in what scenarios tacit knowledge can be predictably encountered.

The idea of thick concepts is utilized to avoid two opposing problems. The idea was that thick concepts could be viewed as approximations of highly focused thin concepts that in turn could be viewed as explicit knowledge. A counterargument to this stance is that tacit knowledge is "knowledge" that is not accurate. And since it is not accurate, it is technically false. This is a serious flaw. Such a view then undermines the idea that tacit knowledge can be knowledge.

More troubling, however, is the alternative implication that since true accuracy in terms of correspondence of propositions with the world such as it is can only be accomplished if conceptual sloshiness were built into propositions. If, for example, a "99.9999% pure gold bar" were set before us, its remaining impurity would likely be located in a different place in another gold bar of equal purity. They would in fact be different but would still both be tagged by the same propositional rubric "99.9999% pure gold bar." The fudge factor in propositional statements, therefore, makes knowledge about the world tacit at best and explicitness virtually impossible.

This is why I introduced the thick concept visualization tool. In it I have a metaphor that posits propositions as the central descriptive (though not definitive) core meaning with a thick multidirectional (i.e. ethical, aesthetic, or pragmatic) peripheral cloud of evaluative judgement encircling it. I have a picture of a concept that is approachable by experience and feel. It is much in the same way that prickly philosophical questions can never really be decided but can be understood as a region where truth and knowledge reside. It is helpful in understanding Polanyi's tacit knowledge/knowing if thick concepts are conceived of as the acknowledgement of the peripheral cloud that gives rise to a concept's central descriptive meaning. Then one can avoid both the implication that the tacit is not knowledge because it lacks certainty and that the explicit can never be explicit enough to be knowledge.

### **19. The Idea of the Body as Aesthetic Actor**

An explication of Polanyi's position disclosed a world in which knowledge is bartered for meaning, a world in which epistemic expectations of surety and certainty is pared down in exchange for the inclusion of nuance and a recognition of subjective meaningfulness. An explication of Polanyi's position widened horizons by reconceptualizing ideas in terms of awareness, the explicit in terms of the aesthetic, and the known in terms of the tacit.

Johnson makes two main connections. First, he connects the body with the mind. Second, he connects the idea of percept (the object of perception) with that of aesthetics. This is analogous to Polanyi's argument connecting tacit knowledge with subsidiary awareness and is also the way Strati views the aesthetics of our environment as causal to how we think. Johnson's two connections imply that Polanyi's tacit knowledge (subsidiary awareness) can be manipulated in the same fashion as Strati's idea of the aesthetic impact of everyday objects. Gadamer adds the

observation that the objects in our environment, to varying degrees, have historical depth and meaning that give rise to our attitudes and values. The main effort in this project connects Gadamer's hermeneutical historical depth, by way of Johnson and Strati's observations, to Polanyi's notion of conceptual integration (tacit knowing). The project further argues that this connection is reciprocal, that hermeneutics is the analogous reverse of Polanyian tacit knowing.

Johnson's argument leads to the conclusion that all of our awareness (i.e. of abstractions, of objective qualities, of percepts, and of thought itself) is aesthetic. This would make Polanyi's subsidiary and focal awarenesses fundamentally aesthetic as well. Tellingly, Polanyi leans in this direction too.

## **20. What Criticisms Might Be Faced Regarding Hermeneutics?**

So, aided by Putnam's arguments against the fact/value distinction and his arguments for their entanglement, one encounters a need to conceptualize how such an entanglement might be talked about, that is, one encounters a need to describe in what way the knower is involved in the knowledge that she knows. How are the values of the knower accounted for in the encounter with the world one calls knowledge?

Gadamer's position is that Hume's inductive logical paradigm is not adequate for understanding the human condition nor is it adequate for the attainment of knowledge in the human sciences in the same way that it is for the natural sciences. The consistent and predictable causal relations found in the natural sciences do not occur. The values of the knower cannot be predicated on the basis of laws. In fact, the very notion of the definitiveness of knowledge, so important in the natural sciences, is dubious when applied to the study of human behaviour. At best, the human sciences can only determine propensities, not laws like in the natural sciences.

The notion of propensity implies an observation over time. Therefore, an idea of “ongoingness” is needed, one where a historical context needs to be understood to get a proper grasp of human activity, e.g. learning. The values of the knower need to be seen through time.

Gadamer’s hermeneutic approach to aesthetics provides the conceptual framework for this. For him aesthetics is not merely the inconsequential and decorative. It is far more philosophically ambitious. Not only does it encompass truth in the sense of the natural sciences, it also conveys historical truth. To turn from objects in the world without understanding their aesthetic impact is to miss half of their message but it takes extra effort to hermeneutically draw that message out. The interaction between a viewer and art is an ongoing activity that reveals both the propensities of the artist, those of his time, as well as those of the years since his time. The facts and values that these propensities indicate are pieced together to form an understanding, a knowing called knowledge.

The reciprocity so evident in hermeneutical analysis is similar to the element of reciprocity found in Polanyi’s conception of tacit knowing/knowledge. The part-whole configuration of Polanyi’s integration concept is similar to that within Gadamer’s hermeneutic method. This element operates between the human participant and her world. Gadamer's hermeneutics describes the human relationship to aesthetic objects. Polanyi's from-to idea reveals the same back and forth relationship with the world in general. The main difference is that the hermeneutic method deconstructs meaning while Polanyi’s from-to integration method constructs it. Each mirrors the other.

There are two related points. First, the reverse hermeneutic process is also an analogy for how one can inform the future through intentional aesthetic design. By understanding the development of knowledge in terms of Polanyi's integration, one can better grasp the depth of

which is invested into the artifacts of our built world. And, following from this, it is easy to see that, by “reverse engineering” these artifacts, much can be ascertained about the knowledge that went into them. In other words, design is the intentional assembly of our Polanyian integrations set before us in meaningful arrangements.

The second point is an adjustment in how art is understood. Art is presentational, not representational. By understanding aesthetics in a broader sense than just in a solitary Kantian disinterestedness, one can extrapolate a whole alternative conception of how one relates to the world. It can also be extended into language as can the symbolic gesture, as can the symbolic act. The symbol is associated with the sublime. Art as symbol and the mundane as aesthetic enter the lexicon of meaning. Polanyi was wrong in this respect. We can "tell" far more than he believed. One's integrations can be demonstrated aesthetically in art, in symbols, and also in an aesthetically developed environment.

## Final Thoughts

This project makes the following argument:

First, the secondary literature (academic articles) is too ambiguous to glean a clear understanding of what tacit knowledge is. Perhaps this is an indication of the ambiguity of the tacit knowledge concept itself. However, although ambiguity is addressed by the authors in this literature as a feature of tacit knowledge, the actual ambiguity issue is not ironed out, nor is it likely to be. Definitions and applications of the term “tacit knowledge” are ridiculously numerous. Ambiguity is simply discussed as a trait of the several kinds of knowledge that have tacitness as a feature. (This was the root of my observations about the logical locations of tacit knowledge in Polanyi’s argument). Different authors favour different locations. Tacit knowledge, however, if understood as a thing like a sack of potatoes, crops up in a number of different guises.

Therefore, to overcome this ambiguity and because all the authors of the secondary tacit knowledge literature presume to begin their investigations with reading Polanyi, examining what Polanyi wrote was necessary. But my own examination of Polanyi's writing yielded only how tacit knowledge comes about, not specifically what it is. I can only conclude that the authors of the secondary literature entered into Polanyi’s opus looking for something concrete. They were looking for a thing called tacit knowledge but found only what can be objectified in the mind alone. It seems evident that what has been sought by these authors has been something that necessarily fitted into their preconceived modernist dualism. But crucial to Polanyi’s argument is the very disassembly of such dualist thinking. The thrust of his argument was that knowledge of any kind is the integration of subsidiary components, the kind of components that remain

inconspicuous in the presence of that which is focused upon. Therefore, the secondary literature cannot be relied upon to provide a good understanding of tacit knowledge let alone yield a way that it can be communicated or taught.

Second, I discovered that Polanyi claimed that whatever tacit knowledge is, it is always the background to what is focused on. In his words, it is “the subsidiary” and “the distal.” So, whatever is taught in a conventional sense cannot, by definition, be tacit. Ergo, tacit knowledge cannot be taught. However, to my way of thinking, what is known must have been learned and what is learned must have been taught – in some way. Furthermore, Polanyi’s later arguments began to obscure the lines of demarcation between knowledge and meaning. He began to take on the task of unbundling knowledge from certainty. In doing so, Polanyi put forward an easier way to visualize tacit knowledge. Meaning comes with far less clearly defined boundaries than knowledge does. Even more, it implies a co-generative activity by the knower and the known. It implies a construction whose beginnings are assumed but not articulable.

Third, Putnam invigorates the questioning of this notion of epistemological certainty. He criticizes the Humean distinction between the truths of the world around us and our sentimental reactions to them. He talks of “collapsing the fact/value distinction.” His claim is that the knower’s own sentiments cannot be divorced from what the knower knows. Her knowledge of the world is always associated with her sentiments toward it. It is always known in the context of her values and emotions. Thus, Putnam sides with Polanyi in reintroducing the knower back into the concept of knowledge.

Putnam’s second contribution in support of Polanyi’s reintroduction of the knower sites that the reason for the prolonged bifurcation of knowledge from value is that it is tightly tied to ethical bi-conditionality. Two ideas, Hume’s distinction of the “is” from the “ought” and that the

“ought,” furthermore, is either good or bad, has led to an assumption that the “is” is necessarily bi-conditionally true or false. Yet value is not necessarily ethical. Value can also be epistemic, as Putnam points out. It can be aesthetic as well. Hence, not only does knowledge amount to be a relationship between the knower's values and the real world, it also comes in varying shades, so to speak. Facts, for lack of a better word, come with varying degrees of meaningfulness depending on the value individuals place on them. These varying degrees can be known without being articulable. These degrees can be learned by experience of them. And since these degrees are not discrete, they do not qualify as knowledge per se but are known nevertheless.

Fourth, I have demonstrated this phenomenon by exchanging aesthetic value in place of ethical value and enlisted arguments from Johnson and Gadamer. Johnson makes the case that all of our awareness of the world (of abstractions, of objective qualities, of percepts, and of thought itself) is aesthetic. This would make Polanyi's subsidiary and focal awarenesses fundamentally aesthetic as well. It also provides a justification for linking Polanyi's foundational activity, integration, with a specific methodological approach to understanding aesthetics - Gadamer's hermeneutics. Such an approach, when extended to our environment as Strati suggests, also yields a Polanyian field of aesthetic awareness. Johnson's formulation justifies the aesthetic approach and Gadamer's view of aesthetics, as an ever-deeper quest for meaningful understanding, exemplifies Polanyi's view of tacit knowing. Therefore, to determine what one knows becomes an archeological expedition into the layers of meaning.

Polanyi's later writings (largely ignored in the literature) enlarged upon the idea of integration and argued that initial integrations themselves are integrated to form more complex and abstract notions. This process culminates in symbol and metaphor. The making of a symbol

amounts to the articulation of integration. And since Polanyi equates tacit knowing with integration, symbols embody and communicate tacit knowledge.

Therefore, it is plausible that tacit knowledge can be taught by the intentional application of one's wordless understanding to and through the aesthetics of the learner's environment.

However, this plausibility is still grounded on a reliance upon the constructs that the authors of the secondary literature have described. The term "tacit knowledge" is problematic.

Nevertheless, I have made headway. Regardless of how one takes the relationship between tacit knowledge and tacit knowing to be, what I have demonstrated is how our environments might be seen to cause us to know without being able to articulate that knowledge. Yet, there remains, so much unsaid.

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