# Tacit Knowledge and Intelligence Analysis

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The field of intelligence analysis is currently at a crossroads, facing critiques of its foundational positivism and exploring alternative epistemological frameworks. Amidst this discourse, Michael Polanyi's exploration of tacit knowledge provides a pivotal bridge between objectivity and subjectivity, challenging the discipline to reconsider the value of the 'personal coefficient' in knowledge. Polanyi's insights into tacit knowledge, which encapsulates the deep, often unarticulated understanding integral to decision-making, suggest a reevaluation of its role within intelligence analysis. This paper examines the broad resonance of tacit knowledge across various disciplines and its implications for intelligence analysis, drawing on diverse scholars to highlight ongoing debates about its communicability and nature. By integrating Polanyi's theory, particularly his emphasis on the indispensable role of subjective components in all forms of knowing, this article argues against the full exclusion of the 'personal' from analysis. It suggests that efforts to eliminate bias may overlook the epistemological value of tacit knowledge, underscoring a need for methodologies that bridge formal analytical processes and intuitive, experience-driven insights. This paper advocates for a nuanced understanding that embraces both objective and subjective dimensions of analysis, proposing a path beyond positivism that values the inherent subjectivity and tacit dimensions of knowledge.

Michael Polanyi's concept of tacit knowledge challenges the positivist emphasis on explicit, codified knowledge by highlighting the unstated, instinctive, and internalized know-how that individuals possess. He famously articulated that "we know more than we can tell," underscoring the profound impact of personal knowledge on decision-making processes. This recognition of tacit knowledge is crucial for reforming the standard positivist model of intelligence analysis, which traditionally prioritizes data-driven, empirical approaches while often neglecting the nuanced, subjective elements that Polanyi identifies as central to understanding and insight. Many of the ongoing debates within the intelligence community – the value of structured analytic techniques, the wisdom of "professionalization" of analysis, and emphasis placed on objectivity and neutrality – will benefit from a serious incorporation of Polanyi's perspective on tacit and personal knowledge in the hard and social sciences.

Polanyi's post-critical epistemology advances beyond positivism without rejecting its core values of objectivity and rigor. Instead, he integrates these with a recognition of the personal coefficient in all knowledge, arguing that true understanding arises from a synthesis of explicit and tacit elements. This balanced approach preserves the pursuit of objective truth while acknowledging the inherent subjectivity in human cognition. As Marrin (2020) notes, the early proponents of intelligence analysis, like Sherman Kent, were deeply influenced by positivist ideals, aiming to create a science of intelligence that was objective and impartial. Polanyi's framework suggests that such a rigid separation of facts from intuition is not only unrealistic but also counterproductive. Just as significantly, Polanyi demonstrates a way to expand beyond positivism without discarding or subordinating the ideal of objectivity in its entirety.

The growing recognition of the limitations of structured analytic techniques (SATs) within the intelligence community further underscores the relevance of

Polanyi's insights. These techniques, designed to reduce bias and enhance analytical rigor by breaking complex problems into their component parts, have often failed to achieve their intended outcomes. Polanyi's concept of tacit knowledge provides a compelling explanation for this failure: the mechanistic approach of SATs explicitly sought to separate intuition from analysis, thereby undermining the holistic integration of knowledge that is essential for true understanding. This separation of facts from intuition neglected the reality that tacit knowledge is integral to effective problem-solving.

Polanyi's emphasis on the tacit dimension of knowledge, where personal insights and intuitive understanding play a pivotal role, aligns with the need for a more flexible and nuanced approach to intelligence analysis. Integrating Polanyi's concepts of tacit and personal knowledge into the field of intelligence analysis provides a robust framework for addressing the shortcomings of the positivist model. His post-critical epistemology offers a balanced perspective that values objectivity while recognizing the essential role of subjective insights.

**The Current State of Epistemology in Intelligence Analysis**

The epistemology of intelligence analysis has always been a significant topic among scholars in the field. Currently, many scholars, [Marrin, Pili, and Ormerod], are making substantial contributions to conceptualizing the epistemic foundations of intelligence analysis. While scholars of intelligence analysis have occasionally noticed the relevance of tacit knowledge for the work of analysis, it is only recently that

scholars, particularly Ormerod, have begun to deeply engage with Michael Polanyi's insights as they apply to the whole of the intelligence cycle.

As Marrin (2020) explains, the foundational epistemological approach in intelligence analysis is deeply rooted in the work of Sherman Kent and his positivist worldview. Kent and other early proponents of intelligence analysis were empirically oriented and data-driven, primarily using inductive methods with a strong positivist orientation. They believed that knowledge created through the accumulation and evaluation of data would provide a solid foundation for decision-making. Kent emphasized the importance of understanding the "probable objective situation" of other countries, advocating for research guided by the scientific method as a path to approach, if not attain, truth. This linkage between science and objectivity became a core tenet of intelligence analysis, embedding the ethos of the neutral, objective, and independent analyst into the profession. The goal was to ensure that intelligence analysts could "speak truth to power" by providing accurate and unbiased information, thereby supporting and influencing policymakers' decisions.

The idea that the information analysts need is "out there" and that the best way to improve analysis is to use more sophisticated techniques to overcome biases remains a significant strand of scholarship today. Tucker (2024) proposes an advanced integration of Bayesian inference, building on probability theory, to address these challenges. This applied epistemology seriously considers issues of "fuzzy" probabilities, acknowledging that "unless the space of possibilities is limited and well-defined, analysts cannot have an exhaustive list of all possible mutually exclusive origins. Analysts must rely on background knowledge of hypotheses that have the highest prior probabilities and generate different likelihoods of coherent testimonies and independent transmission nets." Further, Phillips & Pohl (Philips & Pohl, 2022) identify

the concept of an incomplete probability set, representing "true" uncertainty. They argue that "uncertainty, while recognized as surrounding each decision, expresses itself in the form of known probability distributions relating to the given elements of this known framework." This perspective aligns with the Austrian school of thought, which acknowledges the non-delineated nature of most important real-world problems and explores human action in the face of uncertainty. Instead of relying solely on mechanical processes within a well-defined problem space, this approach emphasizes the importance of human judgment and action in navigating complex and uncertain scenarios.

The field of intelligence analysis is marked by a lack of consensus on what constitutes "success" or "excellence." Scholars and practitioners often struggle with ambiguous definitions and varied criteria for evaluating intelligence work. Herbert (2006) articulates the purpose of intelligence analysis as the wise management of epistemic complexity. He emphasizes the challenge of accurately assessing what an individual knows, thinks, and does not know based on diverse and often conflicting intelligence information. According to Herbert, intelligence analysts must function as explainers of epistemic situations, navigating complex data to provide coherent and actionable insights. In a later work, Herbert (2013) discusses the diversity of virtues required for effective intelligence analysis, suggesting that analysts must embody different roles depending on the context. He describes how a good analyst can be a journalist, actuary, or broker of expertise, adapting to the needs of the situation to provide valuable information to decision-makers. This adaptability reflects a form of analytic or epistemic prudence, critical for managing the varied demands of intelligence work. Pili (2019) explores intelligence through the lens of social epistemology, emphasizing the multifaceted and sometimes conflicting goals of intelligence

organizations. He highlights the primary epistemic value of true belief and knowledge, stressing the importance of avoiding errors while delivering truthful intelligence outcomes. Phillips and Pohl (2022) argue that successful intelligence analysis must deal with situations "characterized by total uncertainty" where traditional behavioral theory is of little help.

Evidently, intelligence analysis, and the scholarship of analysis, operates at the intersection of multiple epistemological frameworks. The mainstream reliance on SATs and structured methods aims to bring rigor and transparency to the analytical process. However, the importance of tacit knowledge and the personal dimension, as highlighted by Ormerod, cannot be overlooked. Intelligence analysis requires a balance between formal, codified techniques and the intuitive, experience-driven insights that come from an analyst's tacit knowledge.

More recently, scholars of intelligence analysis have become increasingly aware of, and open to, criticisms of the positivism at the core of the discipline (Bean, de Werd, & Ivan, 2021) Manjikian (Manjikian, 2013) notes that other academic disciplines are moving away from positivism due to its failure to produce neutral, value-free analysis. Additionally, Ben-Haim (Ben-Haim, 2018) introduces the concept of Knightian uncertainty, characterized by ignorance, ambiguity, and the potential for surprise, which provides an epistemological basis for extending beyond traditional positivism. Lundborg (Lundborg, 2023) argues in favour of reconceptualizing rationality as subordinated to power, and thus dethroning the enlightenment ideals of objectivity and neutrality. The field is now open to competing perspectives. Some scholars have explicitly warned against post-positivist approaches, but Polanyi offers insights crucial to those interested in building beyond positivism by providing a pivot point between objectivity and subjectivity (Gill, 2000). Polanyi navigated the balance between

reductionist positivism on one hand and untethered subjectivism on the other. He stridently criticized what he saw as a misguided pursuit of objectivity and his work on tacit knowledge, which “cannot be validated by positivistic verification procedures,” (Hill, 1968) emphasized the subjective component of all knowing without rejecting the underlying truth of reality. Other contenders for the way forward include a greater reliance on Bayesian reasoning (Ortola, 2023). “The idea of improving the intelligence process, and making it more rational, is a recurrent theme in the literature on intelligence failures.” (Lundborg, 2023) The problem of how to balance the ideal of objectivity with the fact of subjectivity has long been a subject of discussion among intelligence scholars (Marrin, 2007), and Polanyi’s insights offer a well-developed path forward.

**Background on Tacit Knowledge**

The concept of tacit knowledge emerged in Michael Polanyi's work during the mid-20th century, initially within the context of scientific discovery. Tacit knowledge refers to understanding that is not readily or fully expressible. Polanyi famously described the phenomenon by which "we know more than we can tell," laying the groundwork for exploring this subtle, but ever-present, form of knowledge. Tacit knowledge encompasses the unstated, instinctive, and internalized know-how that individuals carry, which is often crucial in their decision-making processes but is not easily communicated or made explicit.

Trained as a physical chemist, Polanyi shifted his focus to philosophy and economics, bringing a cross-disciplinary perspective that enriched his conceptualization of knowledge. In his seminal work "Personal Knowledge" (1958), Polanyi challenged the prevailing positivist paradigm, arguing for the inclusion of personal, subjective aspects of knowledge—thus introducing the notion of tacit knowledge.

Scholars across numerous disciplines have found value in Polanyi's conceptions of tacit knowledge…

Despite these developments, debates about the precise nature of tacit knowledge and its communicability persist. Gulick (Gulick, 2016) notes the "profligate ways the term has been employed," highlighting the challenges in defining and applying the concept consistently. While Polanyi himself noted that tacit knowledge might be partly expressible (Ormerod, 2021), he also maintained that its core is never fully expressible. Turner provides a clear distillation of the psychological foundations of tacit knowledge as described by Polanyi, focusing on the familiar phenomenon of a "sense that a pattern or explanation was there; a sense which had to be actualized and focused on to make a 'discovery' that could then be articulated and presented in a publicly verifiable form." This sense, for Polanyi, is not merely the sign of a bias in the sense used by behavioral psychologists but is instead a fundamental and irreplaceable element of genuine knowledge discovery.

The existence of a tacit dimension of knowledge means that even tasks which seem perfectly explicable are seldom, if ever, free of a subjective or personal element, contrary to the enlightenment ideal. Turner (Turner, 2012) highlights this conundrum by arguing that any knowledge surpassing explicit instructions poses theoretical challenges, and ways of interpreting it vary greatly. Despite this, it is crucial to clarify that not all non-explicit activities involve tacit knowledge, as Lowney (Lowney, 2011) points out regarding riding a bike or mastering a craft. Instead, tacit knowledge is about recognizing a whole without explicitly knowing its parts, as Polanyi argued, likening it to recognizing a face without being able to describe its features (Polanyi, 1963).

The challenge remains in how tacit knowledge can be transferred or shared, as it resists formalization and rational language (Lejeune, 2011). Traditional methods such as

observation, imitation, and socialization play a part, but a crucial facet of tacit knowledge always remains personal and inaccessible. Finally, we must consider the argument that all formalizable knowledge has a tacit dimension, suggesting an inherent interconnection between tacit and explicit knowledge. As Virtanen (Virtanen, 2010) observes, the nature of tacit knowledge resists definition because shifting our attention to examine it changes our perception and understanding radically.

The notion of tacit knowledge being inexpressible in its entirety, however, has sparked significant debate among scholars. Some, like Nonaka and Takeuchi (1995), propose that tacit knowledge can be converted into explicit knowledge through a process of socialization, externalization, combination, and internalization. Conversely, scholars such as Collins (Collins, 2010) largely align with the stricter view, asserting that certain aspects of tacit knowledge can never be fully articulated or transferred, given their deeply personal and context-specific nature. Gulick adopts the broader view of tacit knowledge but usefully breaks out the various dimensions, some of which are merely not yet explicit and some of which truly cannot be made explicit. Furthermore, "all knowing, even that which is explicit, relies upon tacit processes and elements" (Gulick).

This paper adopts a similarly purist position, maintaining that while aspects of tacit knowledge can indeed be externalized, a core component of this knowledge type remains inherently inexpressible. This aligns closely with Polanyi's original conceptualization, which stressed the personal coefficient and the inherently subjective nature of knowledge. Through this lens, tacit knowledge is not merely information that has yet to be codified, but a distinct form of knowledge with its own unique characteristics and value. The potential implications of this understanding for the field

of Intelligence Analysis are profound and will be the focus of the subsequent discussion.

Polanyi's theory of tacit knowledge posits that it plays a pivotal role in perception and understanding, a sentiment echoed by Ormerod (2021) when he states that "tacit knowing is what makes perception possible." This lends credence to the idea that all knowledge, even when seemingly explicit, contains a tacit element deeply rooted in personal and relational aspects of knowing. This "from-to" structure of knowledge, as Nagy (Nagy, 1994) discusses, forms the bedrock of our understanding, emphasizing the inherently personal nature of all knowledge.

Parallels can be drawn between tacit knowledge and procedural knowledge, both of which are action-oriented, experiential, and often unconscious (Cianciolo, Matthew, Sternberg, & Wagner, 2006). Still, tacit knowledge stands out as an adaptive intellectual resource shaped by dynamic interactions with the environment. Tacit knowledge thus sits on a knowledge continuum with explicit knowledge but represents more than uncodified information. When examining the dichotomy of tacit versus explicit knowledge, it is important to clarify that these concepts represent not stark opposites but a continuum of knowledge representation. While certain actions like riding a bike or mastering a craft may seem reliant on tacit knowledge due to the inexplicability of the tasks, they are, in fact, not perfect examples of tacit knowledge (Lowney, 2011). Rather, they embody the interplay between tacit and explicit knowledge, which makes perception and understanding possible (Ormerod, 2021).

Polanyi himself acknowledged that the utility of tacit knowledge does not undermine the value of explicit knowledge. Instead, he stressed the importance of a process of "alternate dismemberment and integration" (Polanyi, 1969). In other words, we can improve our skills by attempting to make tacit processes explicit while

appreciating that a certain amount of tacit residue will always remain. This underscores the interdependency and symbiotic relationship between tacit and explicit knowledge. It is by delving into the tacit that we can expand and refine our explicit knowledge, and vice versa.

The challenges inherent in understanding tacit knowledge, as discussed by Turner (2012), largely stem from its position on the knowledge continuum. Tacit knowledge, by its very nature, exceeds explicit instructions, potentially even eluding any possible list of instructions. This characteristic gives it theoretical appeal and intellectual complexity, leading to a diversity of competing interpretations and theories. Muñoz et al. (Muñoz, Mosey, & Binks, 2015) echo this sentiment, acknowledging that people cannot make all their knowledge explicit. This resonates strongly in the realm of scientific activities, where performing certain tasks often relies on knowledge that is difficult or impossible to specify. Rather than viewing this as a hurdle, it should be acknowledged as a testament to the depth and richness of human knowledge, demonstrating the critical role that tacit knowledge plays in our everyday activities and in scientific endeavors.

**Polanyi and Intelligence Analysis**

Polanyi's insights have only recently found significant attention among scholars of intelligence analysis. Ormerod (Ormerod, 2021) emphasizes the crucial role of tacit and personal dimensions in the tradecraft of intelligence analysts. Ormerod's exploration of Polanyi's insights into tacit and personal knowledge provides covers a wide range of applications that deserve serious and sustained attention by scholars trying to understand both the limits of our current epistemological norms as well as productive paths forward. By emphasizing the importance of tacit knowing, indwelling, and

practical knowledge, Ormerod illustrates how Polanyi's epistemology can enhance the analytical process, leading to more nuanced and perceptive understandings of the knowledge synthesis by intelligence analysis and the communities in which they operate. Ormerod correctly argues that developing our appreciation for the tacit dimension is essential for scholars and practitioners of analysis, particularly in light of the growing recognition of the limits of structured analytic techniques.

Analysis entails breaking down a complex problem into its constituent parts, while synthesis involves assembling these parts into a coherent whole. (Pili, 2023) Polanyi's insights into tacit knowing are particularly relevant here, as synthesis relies on the analyst's ability to integrate various pieces of information into a meaningful pattern. This process engages the analyst's skillful powers of tacit integration, making tacit knowledge a fundamental aspect of transitioning from analysis to synthesis. Polanyi's core concept that "we can know more than we can tell" is central to understanding tacit knowledge. Drawing on Gestalt psychology, Polanyi highlights the mind's natural inclination to integrate parts into a whole to make sense of the world. In the context of intelligence analysis, this means that analysts use tacit knowing to perceive and interpret the salient features of a problem, shifting from proximal (detailed) to distal (holistic) awareness. This "from-to" relationship of tacit integration is key to achieving coherence in analysis and is essential for effective problem-solving.

Further exploring Polanyi's ideas, Ormerod discusses the concept of "indwelling," where practitioners assimilate tools and methodologies into their cognitive framework, making them an extension of their awareness. Analysts "dwell" in the problem they are solving by integrating data, information, and theories to explain its meaning comprehensively. This dynamic process is disrupted if analysts focus too narrowly on separate parts rather than the whole, underscoring the importance of

holistic engagement. Polanyi also emphasized the importance of practical knowledge, which is gained through observing and learning from recognized masters in a tradecraft. This knowledge involves tacitly knowing and skillfully integrating the rules and maxims of the tradition into one's practice. For intelligence analysts, this means embodying the tacitly known practical knowledge essential for mastering their craft. Polanyi argued that knowledge always contains a personal dimension, as it requires a form of orientation that involves the knower's responsibility and commitment to the standards and principles of their tradecraft.

Ormerod further highlights that different forms of reasoning profoundly influence the judgments made in intelligence analysis. Polanyi adds that the knowledge produced in this context contains a personal epistemological dimension, rejecting the view that empiricism and induction are entirely unbiased processes. The "art of inquiry," according to Polanyi, is an exercise in skillfully solving problems. Analysts use heuristics to direct their attention to suggestive features and remain mindful of similar problems with known solutions. This enables them to anticipate potential solutions and gain deeper cognitive insights.

Tucker (Tucker, 2024) addresses the role of tacit knowledge in assessing the reliability of information gathered from HUMINT sources. He proposes that analysts may use tacit knowledge when they employ informal Bayesian reasoning techniques, though he considers it inferior to more formalized methods of reasoning. He acknowledges the importance of tacit knowledge as an approach to understanding reliability – wherein “institutional best practices” serve as the best approximation for establishing reliability.

The notions associated with collective tacit knowledge have made their way into intelligence analysis scholarship, such as in Pili (2023). Pili explains that the process of

interpretation, a crucial part of the standard analysis model, necessitates a context that is not readily available prior to analysis. Context-setting involves creating a framework within which information can be understood and interpreted meaningfully. Creating context is an inherently tacit process, relying on the implicit knowledge and experience of the analyst. This is because context is not merely derived from raw data but requires a nuanced understanding that extends beyond explicit information. Analysts draw on their tacit knowledge to identify relevant factors, recognize patterns, and establish connections that form the backdrop for meaningful analysis. Creating context is an inherently tacit process, relying on the implicit knowledge and experience of the analyst. This is because context is not merely derived from raw data but requires a nuanced understanding that extends beyond explicit information. Analysts draw on their tacit knowledge to identify relevant factors, recognize patterns, and establish connections that form the backdrop for meaningful analysis.

Analysis aims to organize and make sense of collected data, reducing complexity to facilitate human understanding, but it requires a synthesis process (Pili) to reconstruct and present a coherent, actionable conclusion. Polanyi's concept of tacit knowledge complements this by emphasizing the implicit, unarticulated understanding that analysts use to set the context and integrate information into a meaningful whole. Thus, while analysis breaks down information, the tacit knowledge crucial for synthesis helps to reassemble it into a clear and usable intelligence output.

Polanyi highlights that while the deconstruction and reconstruction of problems via standard analytic methods are essential, they overlook the inherent limits of purely formal analysis. Polanyi’s concept of the "from-to" vector of intentionality emphasizes that all knowledge includes a tacit dimension, where background clues are integrated

into focal awareness, indicating that the pursuit of formalization must be grounded in a tacit framework to fully grasp the complexities of knowledge and understanding.

**Truth-seeking beyond Positivism**

Historically, the field of intelligence analysis has adopted a predominantly positivist epistemology, which underscores the pursuit of objective knowledge and the reduction of bias as cornerstones of the analytic process. The positivist view maintains that reliable, objective intelligence can be derived from observable and verifiable facts. As Fingar (Fingar, 2011) notes, the aim of intelligence analysis, in this regard, is to offer the most accurate and least biased understanding of complex issues to decision-makers, serving as an unbiased beacon in the stormy seas of decision-making.

Similarly, Johnston (Johnston, 2005), Heuer (1999), and Treverton (2011) argue that objectivity in intelligence analysis is a gold standard, and the accuracy of analysis should be testable against the "ground truth" whenever it becomes known. These scholars posit that analysts should strive to remove personal biases, preconceptions, and emotions from their analyses to achieve this objectivity. The intent, as Waltz (Waltz, 2003) describes[1], is to develop intelligence products that are devoid of subjective interpretation and that provide a clear, undistorted window into the realities being assessed.

The advent of structured analytic techniques (SATs) marked a significant shift in the approach to overcoming bias and promoting objective interpretation in intelligence

[1] Waltz provides a rich description of knowledge, which includes both explicit and tacit elements. Objectivity is the hallmark of what he calls the “Cartesian” approach.

analysis. Coulthart (Coulthart, 2016) notes that the theoretical work justifying and recommending SATs as a mechanism to improve analysis arose out of the dominant social scientific paradigms of the 1960s. SATs, including methods such as Analysis of Competing Hypotheses, Scenario Analysis, and Key Assumptions Check, among others, aim to provide a structured pathway to analysis, thereby reducing the potential for subjective interpretation and bias. The central idea was that by adopting systematic and transparent processes, analysts could increase the rigor of their analyses and yield more objective insights.

However, the effectiveness of SATs in accomplishing these goals has been met with scepticism and debate. Scholars such as Marrin (Marrin, 2007) [and many others…] question the assumption that structured methods necessarily lead to better analytic outcomes. They point out the limitations of these methods, including the potential for analysts to use structured methods in an unstructured way or to ignore them altogether when pressed for time or faced with ambiguous data. This critique has led to a reevaluation of the very goals SATs are designed to achieve.

More recently, the scholarly debate has evolved to question not just the effectiveness of SATs, but the very goal they aim to achieve. Scholars like Omand (Omand, 2020) have argued that the relentless pursuit of objectivity and the eradication of bias might not be entirely desirable or even possible in the realm of intelligence analysis. This perspective posits that a certain degree of subjectivity, rooted in the tacit knowledge of the analyst, might enhance the analytical process, a perspective that challenges the traditional positivist stance and opens up new avenues for exploring the role of tacit knowledge in intelligence analysis. We find value in Polanyi's assertion that "knowledge contains a 'personal coefficient'," which suggests that the subjective, unarticulated insights of analysts are essential to the analytical process (Ormerod,

2021). A Polanyian approach challenges the traditional aim of reducing bias and removing the 'personal' from analysis, which might be epistemologically misguided. In intelligence analysis, recognizing and utilizing tacit knowledge can enhance judgment and decision-making, particularly in situations where explicit knowledge and formal methods fall short.

Cooper (Cooper, 2005) emphasizes the role of practices, habits, and mindsets in guiding analysts towards better judgment, akin to fields like science, medicine, and warfare, where knowledge is often tentative and not subject to formal proof. These cumulative practices form a culture that facilitates the creation of knowledge and the transmission of expertise. This aligns with Polanyi's view that all research and analysis are grounded in tacit knowing, which is unformalizable and uncodifiable (Preston, 2022). In the context of uncertainty, notions of epistemic risk and can enrich intelligence scholarship by highlighting the limitations of trying to perfect probability assessments and decisions through formal methods alone (Philips & Pohl, 2022). Hendrickson's analysis of different types of uncertainty further supports the need for tacit knowledge in navigating complex epistemic landscapes.

In the realm of intelligence analysis, a movement has been growing which posits a profound reorientation of the discipline's epistemological foundations. This perspective, known as critical intelligence studies (CIS), essentially seeks to disrupt the traditional positivist foundation by challenging the very notion of objective truth (Roberts, 2020). Scholars advocating for CIS argue that intelligence analysis is inherently political, socially constructed, and deeply interwoven with power relations and ethical considerations (Svendsen, 2018). Consequently, they propose a critically reflexive approach that acknowledges these complexities and challenges the presupposition of objectivity.

However, in response to this shift, some scholars propose a nuanced middle-ground, known as 'critical realism.' This approach acknowledges the inherent limitations of positivist epistemology in the context of intelligence analysis but continues to maintain a commitment to the existence of a workable conception of truth or 'ground truth'. (Agrell & Treverton, 2015) Critical realists argue that while our understanding of reality is inevitably influenced by our perspectives, biases, and tacit knowledge, this does not negate the existence of an independent reality that can be studied and understood, albeit imperfectly. Polanyi's insights offer a valuable alternative to both positivism and its postmodernist critics. Nagy (1994) points out that nature is full of novelties, hidden possibilities, and ambiguities, contrary to the positivist ideal of distinct and explicit knowledge. Polanyi's framework accommodates these complexities, arguing that our understanding is always influenced by tacit knowledge that integrates background clues into focal awareness, thus bridging the gap between the explicit and the implicit.

Polanyi's work addresses the limitations of both positivist and postmodern approaches to knowledge. While positivism seeks to eliminate subjectivity and reduce knowledge to objective facts, Polanyi emphasizes the indispensable role of tacit knowledge. He argues that all explicit knowledge is underpinned by a tacit dimension, which involves a personal, intuitive grasp of complex situations. (Henry, 2010) This perspective acknowledges the inherent subjectivity in all forms of knowing and challenges the positivist dismissal of the 'personal coefficient.'

On the other hand, postmodernism often critiques the possibility of objective knowledge, emphasizing the fragmented and constructed nature of understanding. Polanyi's framework offers a middle path by recognizing the tacit dimension that underlies all knowledge while still affirming the possibility of meaningful and coherent

understanding. This 'from-to' vector of intentionality integrates background clues into focal awareness, providing a structured yet flexible approach to knowledge (Preston, 2022).

In intelligence analysis, Polanyi's insights highlight the importance of tacit knowledge in achieving synthesis, which structured analytic techniques (SATs) might undermine by overly formalizing the process (Ormerod, 2021). As Mole (Mole, 2012) demonstrates, methods like the Analysis of Competing Hypotheses (ACH) can be overwhelmed by the exponential complexity of competing causal explanations. Tacit knowledge allows analysts to navigate this complexity by integrating diverse and often ambiguous information into coherent insights.

In the face of true uncertainty which confounds even our most sophisticated attempts to assign probabilities to various outcomes, (Philips & Pohl, 2022) argue that the challenge for intelligence agencies lies not in acquiring more information but in understanding the ways rivals delineate and navigate problem spaces. This deeper understanding requires tacit knowledge, which enables analysts to interpret and synthesize information in ways that purely formal methods cannot achieve. As Pili (2021) notes, inexperienced analysts may struggle to judge the validity of computer-generated assessments without the requisite tacit knowledge. Polanyi, in his work "The Republic of Science," suggests a balance in the role of expertise. He notes, "The professional standards of science must impose a framework of discipline and at the same time encourage rebellion against it." (Polanyi, 1969) This insight acknowledges the necessary structure in analysis, but it also highlights the importance of creative and intuitive thinking.

Tacit knowledge is integral during the conceptualization phase of the analytic process. An intelligence analyst's judgments about the significance, boundaries, and

various dimensions of the problem to be addressed are steeped in this tacit understanding. This recognition aligns with Polanyi's view that "the assessment of plausibility is based on a broad exercise of intuition guided by many subtle indications, and thus it is altogether undemonstrable. It is tacit" (Polanyi, 1969).

The role of tacit knowledge, however, extends beyond the conceptualization phase. Turner (2012) illustrates this by comparing it to driving instructions for a novice. The instruction given to a new driver provides a "functional substitute" for the nuanced, unconscious behaviors of experienced drivers. Similarly, Structured Analytic Techniques (SATs) serve as practical proxies for the complex, intuitive, and tacitly understood habits developed by seasoned intelligence analysts. These instructions will always be incomplete and cannot precisely replace the tacit knowledge they seek to imitate (Tartaro, 2021).

This perspective can illuminate why, despite acknowledging their theoretical value, intelligence analysts seldom apply SATs in practice. The formal processes encapsulated by SATs do not entirely replicate the dynamic, instinctive processes inherent to real-world analysis. Ormerod's (2021) proposition offers a compelling perspective on the role of personal knowledge within the intelligence analysis process. He argues that knowledge is intrinsically characterized by a 'personal coefficient' – it is inevitably shaped by our individual experiences, intuition, and tacit understanding. Thus, efforts to completely eradicate bias and remove the 'personal' from analysis can be seen as an epistemological misstep. This doesn't imply that analysts should be biased, but it suggests that their unique personal insights and tacit understanding should not be entirely disregarded. This individual 'touch' may, in fact, contribute valuable, unanticipated insights into the analysis. SATs offer a useful tool, but they cannot supplant the invaluable tacit knowledge and intuitive insight gained from experience.

In response to some critics of expertise who have noted the tendency of experts to become staid in their thinking patterns, Polanyi's "Republic of Science" offers reasons for balance. "The professional standards of science must impose a framework of discipline and at the same time encourage rebellion against it." (Polanyi, Knowing and Being, 1969) Tacit knowledge plays a role in intelligence analysis in the conceptualization stage of the analytic process. Even in the context of a specific tasking requirement, an analyst will inevitably make judgments about the meaning of the question, the relevance of numerous (or innumerable) variables, the likelihood of gaining greater insight into the issue from certain types of sources of information, and more. Eventually, we want the analyst to subject their analysis to the most rigorous evaluation possible, whether through SATs or peer-review. But the way by which analysts first conceptualize the significance, meaning, and even boundaries of the problem to be addressed is crucially dependent on a type of understanding that must remain tacit. The intelligence analyst faces precisely the same problem described by Polanyi in "Personal Knowledge."

Responding to critics who argue that experts may become rigid in their thinking, Polanyi's "Republic of Science" provides reasons for balance: "The professional standards of science must impose a framework of discipline and at the same time encourage rebellion against it" (Polanyi, 1969). Tacit knowledge plays a critical role in the initial stages of the analytic process. Analysts make judgments about the meaning of a task, the relevance of variables, and the potential sources of insight. Eventually, the analysis should be subjected to rigorous evaluation through SATs or peer review. However, the way analysts first conceptualize the significance, meaning, and boundaries of the problem is dependent on a type of understanding that must remain

tacit. This aligns with Polanyi's notion that the assessment of plausibility involves undemonstrable intuition guided by subtle indications (Polanyi, 1969).

## Polanyian Insights for the Community of Analysts

The debate over whether intelligence analysis should be more professionalized or remain a "craft culture" has significant implications for how tacit knowledge is appreciated and integrated into the field. Ormerod suggests that an appreciation of tacit knowledge might support greater professionalization, as recognizing and cultivating these nuanced skills could enhance the effectiveness and reliability of intelligence work. However, this perspective is countered by Collins, who emphasizes that "education is more a matter of socialization into tacit ways of thinking and doing than transmitting explicit information or instructions" (Collins, 2010, p. 87).

Tacit knowledge is crucial in both the "how" and the "what" of analysis. The "how" involves understanding methodologies, techniques, and heuristics—knowing how to ask the right questions, synthesize disparate pieces of information, think critically and creatively, and communicate findings effectively. Individuals develop knowledge "how" through experience, practice, mentorship, and feedback. The "what" refers to a deep, intuitive understanding of the subject matter, including cultural, historical, political, or social contexts. Recognizing patterns, making sense of incomplete or ambiguous information, and understanding context are integral to this type of tacit knowledge, which scholars and analysts develop through immersion in a specific field or context.

Each type of knowledge inevitably contains tacit elements, and neither the subject-matter expert nor the procedural expert can effectively do their work without

first obtaining that knowledge which resists explicit transfer. An analyst's understanding of a specific cultural context (the "what") can guide their choice of analysis techniques (the "how"). Conversely, methodological expertise (the "how") can shape an analyst's approach to new contexts or subject matters (the "what"). Marrin and Clemente (2005) highlight the importance of tacit knowledge in both the process and content of intelligence analysis, arguing for the value of experience-based intuition and deep contextual understanding in interpreting intelligence data.

Richards J. Heuer Jr., in "Psychology of Intelligence Analysis" (1999), similarly argues that effective intelligence analysis requires both methodological rigor and deep substantive expertise. He suggests that while analytic methodologies can be taught and codified, substantive expertise often involves a level of tacit understanding that can only be developed through immersion in a specific field or context. Polanyi's insights suggest that Heuer was only half-right. Both methodological and substantive expertise can only be obtained through a process which will include both explicit teaching and the sort of indwelling that generates tacit knowledge.

All of this is especially relevant to the ongoing discussions about the potential for the professionalization of intelligence analysis. Gentry provides a counter-argument against professionalization, pointing out that the essence of good analysis might lie in enhancing the quality of discourse, as Sherman Kent suggested, or in reducing uncertainty for decision-makers, as Thomas Fingar emphasized. Both tasks require a blend of analytical sophistication, communication skills, and trust-based relationships—qualities that are often developed through a craft culture rather than formal professionalization. Cooper also highlights the current state of intelligence analysis as a craft culture, reliant on the transfer of tacit knowledge through socialization and mentorship.

Henry (2010) observes that tacit knowledge is vital in transitioning from novice to expert status. Intelligence analysis can benefit from fostering environments that accelerate the acquisition of tacit knowledge, similar to models in fields like medicine, where hands-on learning and mentorship are key factors in expertise development. By comparing learning curves and success rates in these fields, further research could identify best practices for cultivating tacit knowledge in intelligence analysis.

Cooper (2005) underlines the importance of hands-on learning and mentorship in the transmission of tacit knowledge. Drawing on Gulick's (2016) description of the tacit nature of bike-riding, we recognize that while some parts of good analysis can be explicitly described, the actual experience of doing good analysis is largely tacit. Embodied knowledge related to achieving some end cannot be fully articulated in words but can be demonstrated through intentional, skillful actions appropriate to the context. Implementing structured mentorship programs, increasing opportunities for hands-on learning, and integrating education, research, and training more effectively could significantly enhance the development of tacit knowledge in intelligence analysis.

Cooper (2005) also elaborates on how social networks facilitate the sharing of tacit knowledge among analysts. These networks, whether formalized or fostered within intelligence organizations, can play a crucial role in the continuous development of analytical skills. Initiatives to cultivate such networks could include hosting regular knowledge-sharing sessions, fostering a collaborative culture, or implementing social networking tools designed to facilitate knowledge exchange.

**Conclusion**

There is more to be said in the future about the ways in which intelligence analysis is planned and guided, and the ways in which it must remain free. Polanyi writes of the futility of trying to organize scientific progress "under a single authority" which would

"elimination their independent initiatives and thus reduce their joint effectiveness… paralyse their cooperation." The world of intelligence analysis is perhaps more centrally ordered, but still retains a degree of freedom, especially given the way it has been described in this paper. Polanyi borrows from economics in speaking of the "invisible hand" that guides the mutual co-ordination of the scientific enterprise, but argues that really "the coordinating functions of the market are but a special case of the coordination by mutual adjustment." More work can be done to examine how the work of an intelligence community is another special case of that more universal human phenomenon.

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