Gianguglielmo Calvi

How do we know how much we don't know?

From Socrates to AI, a fast-forward journey throughout the human understanding of knowledge and how XXI century organisations attempt to manage their own

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somewhere between Geneva, Pisa and Bamako

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How do we know how much we don’t know

by Gianguglielmo Calvi

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a Lena, il cui amore mi risolleva dalle ceneri ogni giorno

alla mia Famiglia, che abita il mio cuore aldilà di ogni distanza

ai miei Amici, che sono famiglia e passione

alle Nazioni Unite ed al Teatro che mi hanno restituito l'umano

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2 Swiss Knowledge Management Forum

Premise

This not-really-a-book started as a placeholder and a blog, a repository and a code base, where I tried to channel the thoughts inspired by, and the exchanges resulted from, the interactions with Prof David Krieger and the many brilliant minds I engaged with during my CAS in Knowledge Management at the IKF Institute[1] in Luzern. Chapters rarely follow a linear structure, made of progressive arguments in a causal relationship, as I took the freedom to experiment with various form of narratives and communication styles, to convey the complexity of each context in the most appropriate way.

1 A Certificate of Advanced Studies (CAS) is a graduate academic qualification. CAS programs offer specialized knowledge, enabling policy makers, professionals and researchers to acquire additional qualification in a certain subject area.

Ipse se nihil scire id unum sciat

Inizio

"I know that I know nothing" is undoubtedly one of the most cited thoughts attributed to the Greek philosopher Socrates, yet never actually found in his texts nor mentioned by his scholars in such form. Still, this powerful statement has become so deeply embedded in our collective imaginary that it serves perfectly to convey one of the foundational pillars of his dialectic: **we know nothing, yet knowledge exists in potency within each human, waiting to emerge and grow through continuous, systematic, and iterative dialogue**[3]**, with the others and the environment.**

I believe this radical idea still holds true today, perhaps even more so as we navigate an increasingly complex world, deeply interconnected and unpredictably interdependent. It forces us to confront a fundamental question about the nature of knowledge itself: **how do we understand our relationship with what we know, or think we know? What body of knowledge we truly own at any given moment in time?**

Traditionally, a body of knowledge (BOK) is defined as the complete set of concepts, terms, and activities that constitute a professional domain – aka the structured knowledge used to guide anyone work in a given domain. Extensively, it's more than a collection of terms or a professional reading list; it represents the accepted

3 And here is the role of the teacher in Socrates's method : the Socratic Method

ontology of a specific domain, carefully curated and validated by its community of practice. Yet, in my twenty years of work across rather heterogeneous disciplines - from computer science to cognitive science, from performance art to knowledge management – I've encountered knowledge in forms that transcend these traditional boundaries, and what we call a body of knowledge – in practice – encompasses far more than its formal definition suggests[4]. Consider an evening at the cinema with friends, watching a historical film. The experience itself becomes a body of knowledge – not just the historical facts portrayed, but the collective understanding that emerges from the shared viewing and subsequent discussion. Or think about a long conversation with a doctor about a medical condition – the knowledge transferred isn't merely clinical data, but a complex tapestry of understanding woven through dialogue. Even a book, sitting quietly on your shelf, represents a body of knowledge in itself – not just in its content, but in how it interacts with your own understanding, creating new connections and insights with each reading.

The Four Faces of Our Knowledge Relationship

As I've observed these various manifestations of knowledge, I've come to recognize that our relationship with any body of knowledge can take four distinct

4 "A body of knowledge (BOK or BoK) is the complete set of concepts, terms and activities that make up a professional domain, as defined by the relevant learned society or professional association.[1] It is a type of knowledge representation by any knowledge organization." - https://en.wikipedia.org/wiki/Body_of_knowledge

forms. Each of these relationships, fascinating in its own right, carries within it an inherent incompleteness that challenges our very understanding of what it means to know something.

Deceptive Certainty: "I know that I know something". Picture yourself stepping onto a bathroom scale each morning, confident in knowing your weight is 82 kg. This knowledge feels solid, reliable – until you discover the scale has been malfunctioning since day one. How many other certainties in our lives might rest on similarly unstable foundations?

The Conscious Void: "I know that I don't know something". Imagine planning a trip to a distant village and acknowledging your ignorance about local bus schedules. This seems like a clear-cut case of known ignorance – until you arrive to find there are no buses at all. Even our awareness of what we don't know can be based on false premises about what there is to know.

The Hidden Knowledge: "I don't know that I know something". Consider your body maintaining an average pulse of 87 beats per minute throughout the day. You're not consciously aware of this knowledge, yet your blood vessels, heart, sweat glands, lungs, know and acts and reacts accordingly. But in which form your body knows this ? This relationship reveals the fascinating realm of knowledge that operates beyond our conscious awareness.

The Ultimate Unknown: "I don't know that I don't know something"[5]. Think about events happening far away, like that famous tree falling in the middle of the jungle. We might not know about specific instances, yet we can deduce that such events must be occurring somewhere. Even in our complete ignorance, we carry an implicit awareness – a paradox that challenges our understanding of knowledge itself.

The Paradox at the Heart of Knowledge

If we attempt to combine these four statements about our relationship with knowledge, searching for a common root or shared truth, we find ourselves circling back to that profound Socratic insight: "we know that we know nothing." This isn't merely philosophical wordplay - it emerges as the only logically consistent position when we examine the inherent incompleteness in each type of knowledge relationship.

Still, this leaves us with a fundamental question that has haunted philosophers, scientists, and thinkers throughout history: if each way we relate to our own knowledge is inherently incomplete or faulty, and the knowledge of nothing is all we truly possess, how can we define where knowledge dwells? How can we reliably say

5 The concept of "unknown unknowns" got vast attention in media in 2002, when US Secretary of Defence Donald Rumsfeld, probably inspired by the Johari window technique, replied as follow about the lack of evidence of weapons of mass destruction in Iraq "Reports that say that something hasn't happened are always interesting to me, because as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns—the ones we don't know we don't know"

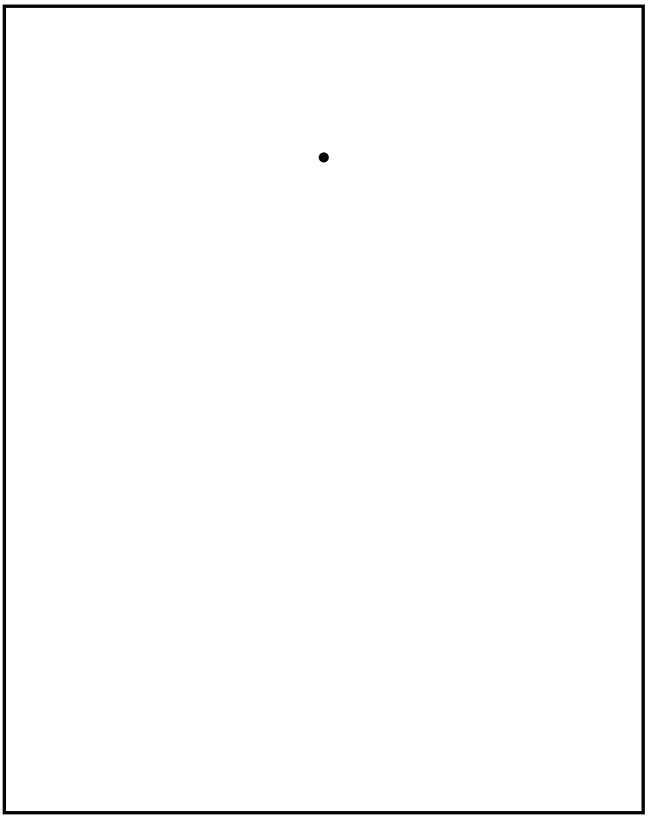
that we know something - or anything at all? This question isn't merely academic - it has practical implications for how we learn, how we teach, and how we navigate an increasingly complex world. As someone who has spent decades working at the intersection of various disciplines, I've come to see this fundamental uncertainty not as a limitation, but as an invitation to continuous exploration and learning. The acknowledgment of our fundamental ignorance becomes, paradoxically, the first step toward true understanding. It creates space for dialogue, for questioning, for the emergence of new insights - just as Socrates envisioned in his method of systematic questioning and dialogue.

This is where we begin our journey into understanding knowledge itself - not with certainty, but with questions. Not with answers, but with an openness to exploration, for in this age of information abundance and artificial intelligence, perhaps the most valuable knowledge is understanding the limits and nature of knowledge itself.

Recent findings in cognitive science and neuroscience offer a new perspective on how our brains actually process knowledge and uncertainty. Rather than simply categorising information into what we know and don't know, our cognitive systems employ sophisticated probabilistic mechanisms that distinguish between different types of uncertainty.

When we encounter uncertainty in learning, our brains differentiate between expected uncertainty (also known as stochasticity) and unexpected uncertainty (or volatility). Expected uncertainty represents the natural variations we anticipate within a stable knowledge framework – like the different interpretations readers might have of the same text, or the varying ways team members might apply the same methodology. Our brains handle this type of uncertainty through steady learning rates and established knowledge-sharing practices.

Unexpected uncertainty, however, occurs when fundamental assumptions are challenged or contexts fundamentally change. This happens when new evidence contradicts established theories or when technological advances transform our understanding of what's possible. In these situations, our cognitive systems respond by increasing both learning rates and exploratory behaviour. This adaptation helps us rapidly absorb and process information that doesn't fit our existing knowledge frameworks.



Heuristica

When my journey in the Suisse entrepreneurship began I had very few elements clear in my mind about what my company would do and how it would do it, and surely I didn't have any vision about the business, its services and products at all. I still remember the fear while facing this lack of clarity, as vivid as the amazement

when I realised how to overcome it: by rearranging the importance and the priorities of what I was going to address first.

Often, way too often, we listen at more or less successful entrepreneurs celebrating the importance of a great vision, brilliant ideas and perfect plans, as if all the people involved over the years in the background creative process are simply a variable of minor importance. As if their knowledge, competence and commitment to grow, are secondary factors. They aren't.

Nobody self-makes anybody

When I founded Heuristica I had no vision but I had some core desires about the qualities of the human and digital ecosystems necessary for building that vision, and various receipts I studied were indeed quite similar to those of some KM case studies analysed, such as the one of the global high-tech consulting firm ScienceCo :

1. Create and foster an environment for the development of solutions in response to client problems while stimulating innovation

2. Offer the maximum freedom to employees and collaborators while ensuring to measure the results and progression of everybody, fairly and effectively

3. Ensure to create a trusted group of professionals willing to stay engaged with the company across the years, despite the inevitable difficulties

4. Ensure to put knowledge at the center of the conversation among all the professionals and to make effective use of it for the benefit of the company

5. Ensure everybody's knowledge in their domain of interest grows with the company

6. Build a digital ecosystem with reduced environmental impact, people centric and privacy centred, sustainable via communities and enjoyable to experience

In its organisation ScienceCo[53] implemented a series of policies and tools to make most of the above a reality for its 200 employees and that resonate very much with my KM Company Vision.

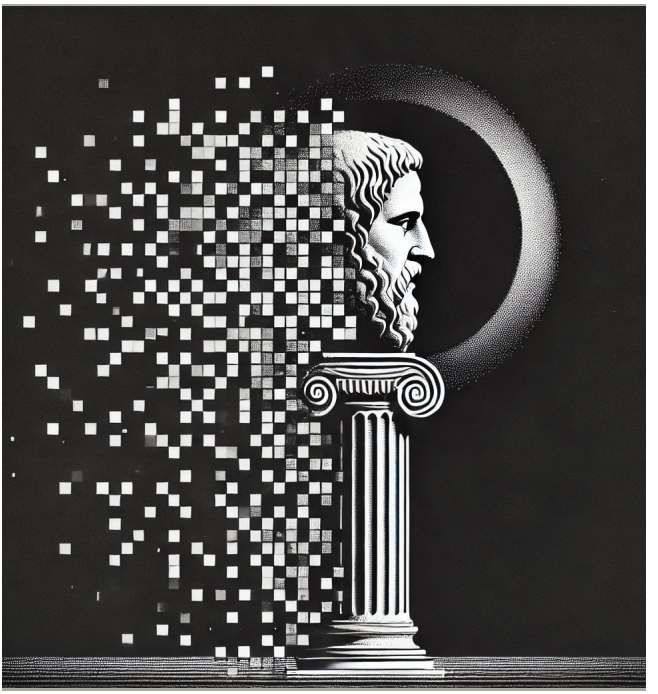
In particular, it established :

- A flat hierarchy, where job titles are not assigned but emerge, as a result of being acknowledgeable in some key aspects of the work
- A professional network growing naturally, without a centralised and top down HR management, that on board new collaborators based on the recognition of their knowledge and attitude toward sharing it
- A performance management system, clear, fair and that values both company and individuals goals
- A digital ecosystem that facilitates and nourishes the sharing of ideas, solutions, lessons learned and ultimately knowledge, vs processes and static workflows

53 ScienceCo is an important case study for understanding how a committed KM transformation can make a company unique

- An open training environment, where everyone can spontaneously propose itself as a trainer for others or a learner to become more acknowledgeable in some discipline.

Is Socrates back ?



A: I fear, Euthyphro, that they are a very wicked and unprincipled set of people. But I wish that you would tell me: Was the murdered man such a relative of yours as I described?

B: Not really

A: What was he, then?

B: A distant uncle

A: Still, he was a relation.

B: Yes but distant

A: Well, that makes no difference.

B: What difference does it make anyway. A man has been murdered, no matter my relationship with him!

A: I am happy, Euthyphro, that you have reminded me of the real point at issue. For I do not appear to remember what I was saying, and there is a danger of my becoming forgetful, and so appearing to be ridiculous.

Now the point I was asking was whether the murdered man was a kinsman or not?"

B: He was not

A: Then why in the world should you prosecute your father for killing him?

B: Because no human being should kill another one without paying any consequences for his act!

A: But if he is not a kinsman, why should he pay you damages?

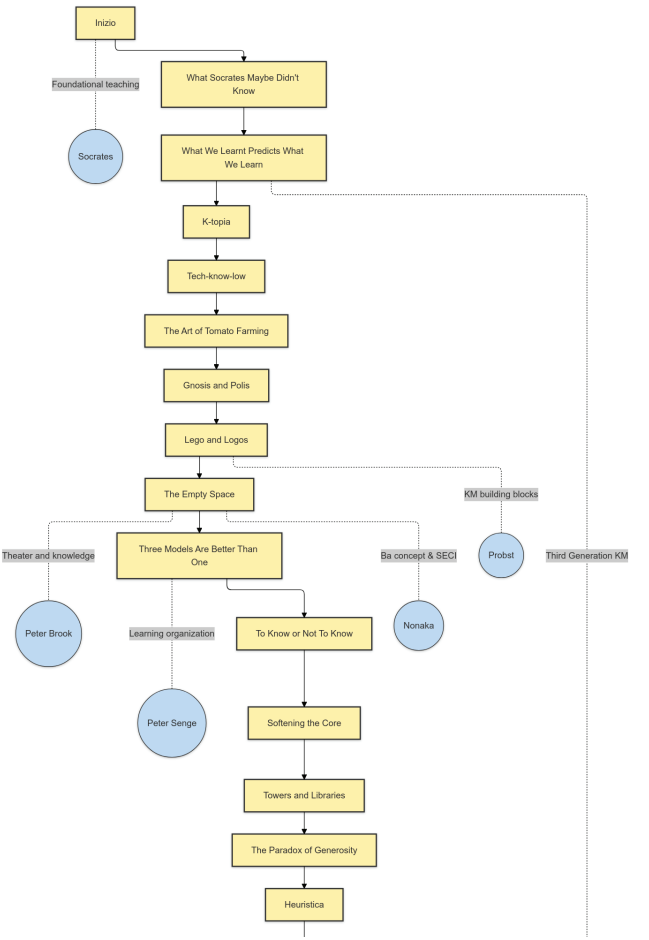
B: I don't get it

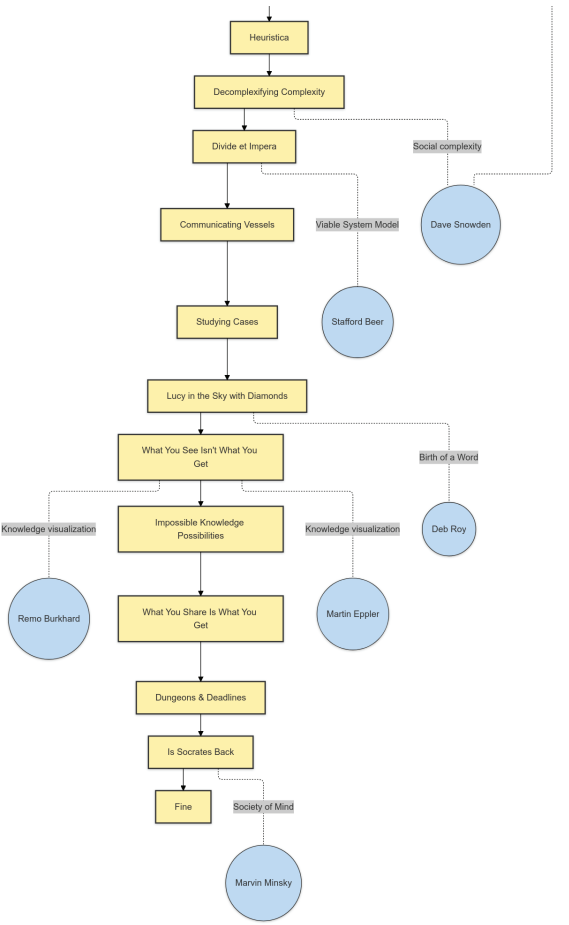
A: Let me tell you my view, Euthyphro. I do not think that a man can have any right to prosecute another, unless he has been wronged by him. And the wronged party cannot come into court except he have justice on his side. The slayer may have been legally acquitted, but the kinsman of the slain man can never be legally acquitted. Kinship is denied by the defendant's pleading that the dead man was not related to him, and therefore he is not responsible for his death.

B: I don't recognise you. What is your name?

A: I am a human being.

B: Your name


Inizio
What Socrates Maybe Didn't Know
Foundational teaching
Socrates
What We Learnt Predicts What We Learn
K-topia
Tech-know-low
The Art of Tomato Farming
Gnosis and Polis
Lego and Logos
The Empty Space
KM building blocks
Probst
Third Generation KM
Theater and knowledge
Peter Brook
Three Models Are Better Than One
Learning organization
Peter Senge
Ba concept & SECI
Nonaka
To Know or Not To Know
Softening the Core
Towers and Libraries
The Paradox of Generosity
Heuristica


Heuristica
Decomplexifying Complexity
Divide et Impera
Social complexity
Communicating Vessels
Viable System Model
Dave Snowden
Studying Cases
Stafford Beer
Lucy in the Sky with Diamonds
What You See Isn't What You Get
Birth of a Word
Knowledge visualization
Impossible Knowledge Possibilities
Knowledge visualization
Deb Roy
Remo Burkhard
What You Share Is What You Get
Martin Eppler
Dungeons & Deadlines
Is Socrates Back
Fine
Society of Mind
Marvin Minsky

Biography

Gianguglielmo Calvi is a Swiss-based computer scientist, knowledge manager and SME entrepreneur. With his two decades of experience in international projects, he plays a key role in advancing knowledge management systems that facilitate knowledge and information sharing and foster virtual communities' growth. Throughout his career Gianguglielmo covered multiple positions for important international organisations: researcher

in cognitive science and artificial intelligence at the ISTC-CNR (Rome - Italy), senior knowledge manager and programme manager at the International Labour Organisation, at UN/CEFACT, at UNDSS, at the Green Growth Knowledge Partnership (Geneva - Switzerland), at WHO EUROPE (Copenhagen - Netherlands), and at Voolinks (Bamako - Mali) as Director of R&D.

He is also founder and co-founder of two startups (Heuristica and EnQu Ideation) focused on bringing digital innovation in the management and generation of knowledge. Gianguglielmo holds a master's in computer science with a specialisation in Artificial Intelligence from the University of Pisa, a Certificate of Advanced Studies in Knowledge Management from the IKF Institute Luzern, and relevant international certifications in project management (PRINCE2, ITIL) and international development (GIZ - Guide for Practicing corporate Sustainability, GCSP - Meeting the Cyber Security Challenge).

He is also co-author of twenty+ publications in cognitive science books and proceedings. Outside of his professional endeavours, Gianguglielmo is actively engaged in community-building initiatives, serving as a board member of the Swiss Knowledge Management Forum, organiser of the SKMF Round Tables Geneva, and contributing with his expertise to various international platforms focused on digital innovation and knowledge sharing.

“The text offers a tour de force through the history of knowledge before and after it became a topic of knowledge management and an organizational goal. It follows the development and uses of knowledge up until digital information technologies and AI. Knowledge is understood to be a transformative force or individuals, organizations, and society. Many examples from various fields of endeavor are cited to illustriate this historical lesson learned. The text represents the wisdom of knowledge management which is often neglected in the usual literature.”

Prof. David Krieger

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