Knowledge & understanding TEDx type talk	

Notes accompanying my TEDx type presentation

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Slide 1 Introduction

My 2 main sources of how to acquire 'knowledge' are:
|- Albert Einstein: (1879-1955) "a German-born theoretical physicist who developed the theory of relativity, one of the two pillars of modern physics. His work is also known for its influence on the philosophy of science"
|- Immanuel Kant: (1724-1804) "an influential German philosopher in the Age of Enlightenment. In his doctrine of transcendental idealism, he argued that space, time, and causation are mere sensibilities; "things-in-themselves" exist, but their nature is unknowable"

Why have I ignored the likes of those eminent people who, according to their place in history, preceded the development of my interpretation? People such as:
1. Socrates: c419 BC
2. Plato: c394 BC
3. Albertus de Saxonia: c1356
4. G. W. Leibniz: - c1684
5. George Berkeley: c1710
6. Johann Gottlieb Fichte: c1791
7. Philip Kitcher: c1983
8. Roger Evernden: c1986
9. Stephen Palmquist: c1987

Well according to my research I could not find any of their explicit work that gave me confidence that they understood the details of the subject matter. More about this on slide 21.

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Slide 2 My view of knowledge

I discuss why, without understanding knowledge, I consider the following artifacts can be equated to a 'virus' which by one definition means "A piece of code which is capable of copying itself and typically has a detrimental effect, such as corrupting the system or destroying data"
|- Information: corrupts a system because of analysis by paralysis
|- Objectives: Keeps copying itself as no one actually knows what it is
|- Strategies: see objectives
|- Data: corrupts a system due to implicit facts
|- Projects: Destroys data due to the inability to define explicit priorities

Knowledge, as represented in the WIKD triangle/pyramid (which no one seems to want to claim responsibility for its creation), sandwiches 'knowledge' between 'information' & 'data'. Or the WKID triangle 'information' between 'knowledge' & 'data'.

Wisdom (which according to my experience and research is a 'benefit' which is in turn an 'objective') is but one of 4 'benefits' which, if not fully understood, will deliver the very antithesis of a benefit, namely a hardship. Until this is recognised 'Wisdom' alone will not solve the problem of bridging the gap between ‘wisdom’ and ‘data’. Hence there has got to be a better way to represent 'knowledge'.

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Slide 3 Agenda

Let me start with ‘knowledge’ as this is after all the focus of my talk and show how my view of ‘knowledge’ will help solve the WIKD/WKID conundrum once and for all.

Warning: Viewers with the following skills/capabilities may find this tough going, but never fear your view will be catered for in ‘knowledge’. These include (but not restricted to):

Enterprise Architects	Story tellers
Business Architects/Analysts	Data Analysts (Master Data, Data Governance)
Systems Architects/Analysts/Engineers	Database designers
Thinkers (Systems; Design; Lateral	Agilists/Project managers

The agenda for this presentation is as follows

- Definitions
- Types
- Sources
- Models

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Slide 4 Definitions

I can just hear your sighs. Not more definitions, definitions are so boring.

Please bear with me as it is necessary to establish a common starting point. If however you trust me 100% then by all means skip this slide. But do not blame me if you get lost or start to argue with me when all I am doing is researching some other 'authority' on this subject to see if I have missed anything or (heaven forbid) made a calculated error.

Here are but 4 definitions

- “The psychological result of perception, learning, and reasoning” {TheSages English Dictionary}
- From using a search engine
  - “Facts, information, and skills acquired by a person through experience or education; the theoretical or practical understanding of a subject”
  - “Awareness or familiarity gained by experience of a fact or situation”
- From the Wikipedia: “A familiarity, awareness, or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning”

When I finally produce my mp4 version I may add more but I need to keep my time down as much as I can as I have a lot to cover.

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Slide 5 Types

I had to search the internet to find other peoples viewpoints/opinions on the number of different types of knowledge. The total number of pages found exceeded 1.75 billion. Just for the record these included the view that there are between 3 & 14 different types. Examples:
|- A Posteriori
|- A Priori
|- Dispersed
|- Domain (Expert)
|- Empirical
|- Encoded
|- Explicit

Some sources:

- The Knowledge Dimension is the “knowing what.” It has four categories: factual, conceptual, procedural, and metacognitive (A revision of Bloom's Taxonomy developed in 1956 & revised in 1999 by Dr. Lorin Anderson, a former student of Bloom's and his colleagues {Source}
- Piaget proposes three types of knowledge: physical, logical mathematical, and social knowledge. Physical knowledge: It refers to knowledge related to objects in the world, which can be acquired through perceptual properties {Source}
- Kant
  - A priori: “knowledge that is independent of experience. For example, logical and mathematical knowledge is a priori. Their truth or falsity depends in no way upon the empirical facts of the world” {Source}
  - A posteriori “knowledge derived from experience, as opposed to a priori knowledge” {Source}

If you do not trust my choices please feel free to read the 1.75 billion references and make up your own mind. I doubt that you will live long enough to complete this task.

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Slide 6 Sources

I had to search the internet to find other peoples viewpoints/opinions on the source of knowledge (from whence knowledge comes). The total number of pages found exceeded 1,.83 billion.

Some sources

- The Oxford Handbook of Epistemology - the “four standard basic sources: perception, memory, consciousness, and reason” {Source}
- “The person in the street often believes that knowledge has four sources: transcendental, direct, vicarious, and inference” {Source}
- Philosophical {Source}
  - Perception — that which can be perceived through the experiences of the senses. The view that experience is the primary source of knowledge is called empiricism
  - Reason — Reason can be considered a source of knowledge, either by deducing truths from existing knowledge, or by learning things a priori, discovering necessary truths (such as mathematical truths) through pure reason. The view that reason is the primary source of knowledge is called rationalism
  - Introspection — knowledge of one’s self that can be found through internal self-evaluation. This is generally considered to be a sort of perception. (For example, I know I am hungry or tired.)
  - Human Memory — Memory is the storage of knowledge that was learned in the past — whether it be past events or current information
  - Testimony — Testimony relies on others to acquire knowledge and communicate it to us. Some deny that testimony can be a source of knowledge, and insist that beliefs gained through testimony must be verified in order to be knowledge
- Albert Einstein: Provided over 37+ quotes. {Source}
- Emmanuel Kant: Critique of Pure Reason {Source}

If you do not trust my choices please feel free to read the 1.83 billion references and make up your own mind. I doubt that you will live long enough to complete this task.

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Slide 7 Models

With 1.83 billion viewpoints of the sources of knowledge I decided to settle on 3.

I chose 2 from Kant and 1 from my own experience.

Perhaps someone will now ask why I excluded Albert Einstein's viewpoint. Well a phrase that he was supposed to have stated frightened me away from him "A little knowledge is dangerous. So is a lot" {https://lnkd.in/fhcRP8j

So I was left with the one person I felt made a lot of sense (well at least to me he did). If you wish to pursue anyone else's viewpoint on knowledge & are able to develop a more explicit model than I have, please feel free to do so. Here is a heads up of a few 'authorities' you can follow:
|- Agile (Sprints and Scrums)
|- Business canvasses
|- Chen - Conceptual data model
|- Codd - Normalisation
|- De Bono - Lateral Thinking
|- Design Thinking
|- FEAF
|- Peter Drucker
|- Systems Thinking
|- TOGAF
|- Zachman

Best of luck as I have already given my viewpoint on all of them (source). A few (eg Zachman) began their models with 6 of the 'a priori knowledge' classes but did not venture further. This has allowed the 'data' centric technologists (Agile Scrum/project managers and database designers) to fill in the blanks resulting in (the majority of cases) delivering rather disastrous outcomes.

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Slide 8 The 'a priori' model

I had to use a presentation management software product to draw the 51 boxes that represent questions that one needs to ask in order to seek out further knowledge. Trying to add the words to the questions was an impossibility & trying to draw the lines showing the links between the 3 layers would produce a diagram that would cover 3 or 4 walls (especially if you were to avoid lines crossing each other making the overall model almost impossible to read.

The next slide will contain the list form of this graphical representation, proving to me that graphics is not the best option as a modeling tool.

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Slide 9 The list of 'a priori' knowledge seeking questions

My 51 ‘a priori knowledge’ questions

If you think (Descartes) you have a better model then please feel free to research the number of combinations you think are needed. You could start to expand on this list for example (Who & What & Who) & (When & Why) and create an even bigger model which in the end will end up being unimplementable. This sort of modeling is the unconscious way some data modelers (those who reject normalisation) go about their task of designing a database.

Still, 51 questions are just not workable & my next slide will show how I 'rationalized' (dare I use that word) the 51 to create my view of a more workable 'posteriori knowledge model' enabling me to computerize my 'knowledge class database' back in 1989/90 using a MacPlus computer and a hardly known software development environment called Omnis

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Slide 10 My 'posteriori' knowledge model

This is how I selected my 23 principle fundamental entities from the 51 presented on slide 9.

The remaining 28 have been 'absorbed' into one of the 23.

The next slide (11) will reveal my mapping. This model begins to contain the basic business vocabulary which will be fleshed out by a qualified 'knowledge architect' to create the 'business posteriori knowledge'.

See slide 12 for the final model showing how some of the principle fundamental entities were used to rearrange the WIKD/WKID triangle.

This is not the first time I have published this model.

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Slide 11 Mapping my 'posteriori' knowledge model

In slide 10 I presented you with a graphical representation of the 23 principle fundamental entities I selected from the list of 51 'posteriori knowledge classes' I revealed in slide 9. This is the list showing my mapping.

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Slide 12 The 'business posteriori' knowledge model replacing WIKD/WIKD triangle

I have now arrived at the point where I can demonstrate how I used 'a priori knowledge' (Slide 8 & 9) & my 'posteriori knowledge' model (Slide 10 & 11) to create the 'business posteriori knowledge' model which shows why the WIKD/WKID triangle is flawed and how I used this model to not only define the business rules (Objectives - the 'Should' 'a priori' question) but also the relationship between the various artifacts and how this design helped me develop the databases I created to implement my artificial intelligent compilers which helps record and manage all the artifacts.

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Slide 13 A worked example

This is an example which will hopefully demonstrate how the knowledge model can be used to develop a business specific knowledge model which in turn reflects the business operative's view of their business requirements.

Please note that to complete the conceptual knowledge model still requires business operatives to explicitly describe their business objectives, which is an entirely different matter.

Please read the slide.

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Slide 14 How to answer a posteriori question

I will be building a hierarchical knowledge model with types and sub-types which will ultimately represent the explicit (put in context) business operatives experience. No data model has the capability to manage this sort of modelling as hierarchical models do not require data and the relationship between 'entities' is dependent on a mutual hierarchical relationship (parent-child) and not on foreign keys.

Please read the slide.

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Slide 15 Correcting a misconception

Sometime the hierarchical relationship requires an intermediary entity to fully answer a related question. In this case one could ask 'Could' (invokes the entity 'Classification) an 'Offering' also be something unrelated to a 'Sneeze', for example a 'Food Item'? If the answer is 'Yes' then the 'Knowledge architect' would have to 'vertically partition' the 'Offering' by creating another layer of 'Offering' type. In this example the 'Bodily Offering' and relate the 'Sneeze' to this new concept.
Please read the slide.

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Slide 16 Answering the remaining questions

So far I have shown how to answer the first question: What is a 'sneeze'. Now time to answer the other 2.

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Slide 17 Return to information

Remember the posteriori business knowledge model I built on slide 12?

Perhaps it is time to tell you why the artifacts appear in the order that they do. It is all because of one simple question: Which comes first? Note that the word 'which' (unlike the 10 principal fundamental entities) is not an interrogative but a pronoun. In essence the questions that **should** be asked are:

1) How did I know that the sequence of artifacts is the way I placed them?
2) 'Why did I place them in that precise order? Or: Why is it that Objectives precedes Knowledge and Knowledge precedes Strategies?
3) Why is it that in some approaches Objectives precede Strategies whereas in another Strategies precedes Objectives?

I will answer 3 first. Because the developers of those approaches where either ignorant of what knowledge was and chose to ignore knowledge or did not know that knowledge was gained by asking the right question at the right time and checking that the answer that is given satisfies (is proof) that the question has been answered correctly. As the late astrophysicist Carl Sagen was purported to have stated "**There** are naive **questions**, tedious **questions**, ill-phrased **questions**, **questions** put after inadequate self-criticism. But every **question** is a cry to understand the world. **There** is no such thing as a **dumb question**". Or as Colin Powell was purported to have said: "*there* is *no* such thing as a *stupid question, only stupid answers*". Or as Ramon Bautista was purported to have stated “The only stupid question is the question that is never asked”.

To answer questions 1 and 2 I draw your attention to the word 'should' (which I will claim to be 'a priori' knowledge). To my way of thinking I ask the question: Should I be doing something? If my answer is 'Yes' then I have to have a reason for doing 'it' (whatever the 'it' is and that reason provides me with a purpose and a purpose is an objective, therefore objectives come before 'knowledge' but objectives is still part of the posteriori knowledge model. If the answer is 'No', then 'Why am I doing this'. QED

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Slide 18 Building the objective's knowledge model

It is now time for me to explain what the objective knowledge component of the 'posteriori business (information) knowledge model looks like.

As you can see the first subset of an objective is either a 'Behavior' or a ' Measure'. Why did I choose these 2 subsets? See next slide (19).

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Slide 19 How I modeled 'Behavior'

One definition of the word 'behavior' is: “Manner of acting or controlling yourself” therefore 'behavior' should be an 'Activity' = 'How' as this slide shows.

However I am looking for a definition that does not include the use of the pronoun 'you' (a type of 'Person' which is a subset of 'Identity' = 'Who'). As I could not find another definition I looked for a synonym and found the word 'Attitude'. Now anyone can 'offer' an attitude, hence I chose to model behavior as a sub-type of 'Offering' rather than an 'Activity'. A knowledge modeler has to know 'Grammar' and how to work with 'key-words' (a topic I deal with in my 'Objectives' crafting course and did a post on a number of years ago).

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Slide 20 How I modeled a Goal

On 30 Sep 2018 I wrote a LinkedIn post titled “**Logical joins”**
Quote: My thoughts on the difficulties enterprise/business architects (EA/BA etc), strategic planners (SP) & data modelers (DM) face by excluding the 'mutually inclusive' (logical AND or L:AND) function:
1) EA/BA have difficulties identifying business objectives. They fail to see the 'L:AND' of business goals. All they see are the mutually exclusive objects - eg vision or mission or value
2) SP ignore it
3) DM need data to define their models, therefore:
3.1) Normalisation techniques fail when trying to use the 'L:AND' as this is a 'conjunction'
3.2) Entity relational modelers do not see the 'hierarchical' functionality. The best they can come up with is to use a 'role' type entity - eg a person playing the role as a 'patient' & 'doctor'
3.3) Object orientation practitioners have a hard time trying to model the 'L:AND' case in polymorphism. They let programmers create redundant procedures &/or develop program language specific 'classes' to try to handle it
3.4) Context or connected modelers using a 'conceptual data model' fail because of 1, 3.1 &/or 3.2 IT project failures can be attributed to the combination of these 3 difficulties as well as implicit deliverables

Regards

ps my software implemented this in 1990 & I teach this in my knowledge modeling course

Unquote

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Slide 21 A new definition of ‘knowledge’

Perhaps it is time to add a new definition to the word ‘knowledge’ by taking into account the 3 types mentioned on slide 7.

Existing definitions which only deal with ‘posteriori’ (gained through experience)

1. “Facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject’
2. “Awareness or familiarity gained by experience of a fact or situation”
3. “Acquaintance with or **understanding** of a science, art, or technique”
4. “The fact or condition of being aware of something”
5. “The range of one's information or understanding”
6. “The circumstance or condition of apprehending truth or fact through reasoning **:** cognition”
7. “The fact or condition of having information or of being learned”
8. “The sum of what is known **:** the body of truth, information, and principles acquired by humankind”

An added definition which introduces not having to have any experience whatsoever (a priori):

9. “Anything gained by asking the right question at the right time and understanding the right answer”

As I have now defined the 3 levels of ‘knowledge’ perhaps an example of this concept is asking the following question: What’s the time? The interrogative ‘What’s’ is actually 2 questions namely ‘What’ and ‘Is it’. The answer to the question ‘What’ = (according to my ‘posteriori knowledge’ class) should be some form of ‘Offering’. However the answer to the question ‘Is it’= having some form of ‘Rule”. Therefore this question is not the right one. The right question should be: Could you please tell me the time? This now enable the person being questioned the ability to answer in one of 3 ways:

- Yes. In which case the person has a time piece and is willing and able to answer your question
- No. In which case the person is either unwilling or does not have a time piece or cannot tell the time
- I do not know. In which case you need to find the time from someone else

Hence asking the right question at the right time is the only sure way of gaining useful ‘knowledge’

I wonder what a different world we would now be living in if any of the following (who identified 'a priori knowledge') had had the technology to enunciate all the 'a priori knowledge-seeking' questions as well as their appropriate 'posteriori knowledge' answer:

|- Socrates - c470 BC
|- Albertus de Saxonia - c1356
|- Leibniz - c1684
|- George Berkeley - c1710
|- Kant - c1781
|- Fichte - c1791
|- Philip Kitcher - c1983
|- Roger Evernden - c1986
|- Stephen Palmquist - c1987

I am yet to find any other approach that actually understands & implements any of the 3 classes of 'knowledge' in their design. Shame on their developers, marketing people and trainers for not learning from the past.

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Slide 22 ‘A priori knowledge’ and Risk Analysis

Risk is a part of life. Reducing risk is vital. This slide identifies, based on my experience and research, the correlation between the phases of risk management and the ‘a priori knowledge’ needed to develop an efficient, effective, ethical and easy-to-understand risk management system.

My presentation on Risk Management.

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Slide 23 ‘A priori knowledge’ needed for Data Management

Without the basis of ‘a priori knowledge’ ‘data’ is logically illogical and will never provide any sustainable system, which in essence is the implementation of natural intelligence.

Artificial intelligence depends on ‘Data’ and processes which depends on business ‘posteriori knowledge’ which depends on ‘a priori knowledge’.

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Thank you for your attendance. Keep well by taking care and staying safe.