

The Collators Podcast

Episode 1 - An appeal for information - Shownotes

Overview

We use the word “information” every day, but what does it actually mean? In this first episode, drawing on experience from intelligence, law enforcement and academia Mark and Howard dig into the foundations of our information-saturated world, exploring how data becomes meaning, why context matters, and how our assumptions shape what we think we know.

External Links or References:

Claude Shannon

The lattice theory of information

<https://ieeexplore.ieee.org/document/1188572>

Babies - Telling right from wrong

<https://www.medboundtimes.com/fitness-and-wellness/can-babies-tell-right-from-wrong-turns-out-they-are-tiny-moral-judges-in-diapers>

https://www.youtube.com/watch?v=HBW5vdhr_PA

Delphi Method - https://en.wikipedia.org/wiki/Delphi_method

Hypothetico-deductive model - https://en.wikipedia.org/wiki/Hypothetico-deductive_model

Intelligence Cycle - https://en.wikipedia.org/wiki/Intelligence_cycle

Lord of the flies - https://en.wikipedia.org/wiki/Lord_of_the_Flies

Object Permanence - https://en.wikipedia.org/wiki/Object_permanence

Ronaldo Vigo

1) Vigo and Vigo, R. (2011). "Representational information: a new general notion and measure of information" (PDF). *Information Sciences*. 181 (21): 4847–4859. doi:10.1016/j.ins.2011.05.020.

2) Vigo, R. (2013). "Complexity over Uncertainty in Generalized Representational Information Theory (GRIT): A Structure-Sensitive General Theory of Information". *Information*. 4 (1): 1–30. doi:10.3390/info4010001.

3) Vigo, R. (2014). Mathematical Principles of Human Conceptual Behavior: The Structural Nature of Conceptual Representation and Processing. New York and London: Scientific Psychology Series, Routledge. ISBN 978-0415714365.

SARA - Scanning, analysis, response, assessment

<https://www.college.police.uk/guidance/problem-solving-policing>

Karl Popper and the notion of falsification

Popper References for Falsifiability : (1) Popper, Karl (2002) [1959]. The Logic of Scientific Discovery. Abingdon-on-Thames: Routledge. p. 66. ISBN 0-41527843-0. (2) Popper, Karl (1974). "Replies to my Critics". In Schilpp, Paul Arthur (ed.). The Philosophy of Karl Popper. Vol. II. Illinois: Open Court. pp. 961–1197. ISBN 0-87548-142-6.

The Hunt for Red October - <https://www.imdb.com/title/tt0099810/>

Transcript

(Intro hook not transcribed)

Mark

Well, I wanted to start today by talking about something that underpins everything that I've done in my career. I think everything underpins yours. At first glance, it seemed like one of the easiest questions in the world. However, when you start scratching the surface, the question becomes much more complicated and much more difficult the more you look at it. And so the question is; what is information?

I'm not going to try and give you a definition, Howard, because I don't think I could, even after all these years. I have an internal kind of feeling and instinct that I have an understanding and like a deep understanding of what information is, but I don't have an ability to explain it clearly. I don't feel too bad because, know, I come from an, even though I come from an information science academic background.

Within information science, there are numerous definitions of information. Hardly similar sometimes, you'd be amazed how different they are. But when you start looking at the academic record on this type of stuff, I'm gonna quote to you Claude Shannon.

"The word information has been given different meanings by various writers in the general field of information theory. It is likely that at least a number of these will prove sufficiently useful in

certain applications to deserve further study and permanent recognition. It is hardly to be expected that a single concept of information would satisfactorily account for the numerous possible applications of this general field."

So yeah, in plain English, not sure. Essentially, I think I've rephrased what [Shannon] said. So when I start, today's pod by asking you for your kind of take on information, and how you kind of became aware of it as a distinct thing rather than just something you'd automatically used and worked with.

Howard

It's a really interesting question and like you, for all of my lifetime, as well as my professional career, information goes beyond merely what we do as professional intelligence operatives or analysts or data scientists, put whatever title to as you want, investigators. It's a factor of life.

And in all that time in all the places in the world that I've worked with all the different agencies all the different specialisms academic study I've seen hundreds of definitions of intelligence or attempts to define it and I haven't yet found anyone that correctly and fully defines it in all circumstances to be able to hang your hat on it so for me I couldn't define it any more than you could.

The way I look at information, I know it when I see it. I'm sure if you ran examples of different types of data, say data information intelligence, evidence, call it what you will, people would be able to look at them as they came past on the conveyor belt and say that one's information, that one's data, that's intelligence. But then if you actually said to them, why do you say that? I think everybody in our profession would struggle.

For information you can take any profession in the world because information is the lifeblood of any decision-making and problem-solving process. So the way I look at it I don't try and define what it is. I try to explain it as a what's it for, you know what does it do, what purpose does it serve. And for me the start point is something that I've talked about in other episodes and you have too.

That as biological creatures we collect data, we put that data to use, to drive decisions that lead to action for whatever survival or comfort or whatever business reason shall we say that we have as organisms and we share it with other people on the same basis.

So the way I look at it, if you imagine drawing a line and at one end of the line has three points on it, for this really simple example and at one end is data that's the first terminus in the station shall we say. Then as you go along the railway line the next one is information and after that the next one is intelligence.

That's really simplistic, but that helps me organise them. For me, the way that we generate

these things is an iterative or a cyclical process. In other words, there's a process of which information is part of that process with other things. And there's an outcome. But it happens in sequence.

So my start point for information is data. And if we accept that there's data being deposited in the environment all the time. The way that we collect that data and represent it to turn it into a form that we can handle the what's it for the raw ingredient is information.

So you think from the point of view of library science shall we say, we take data from the environment and we turn it into the written word.

Depending on what language we use we use certain characters but those characters are not universal they are a common standard in the normal Roman alphabet there are 26 letters correct me if I'm wrong, so you have to find a combination of those letters everybody can use so that when you look at data you turn it you when you're trying to use that data you're not using the data for your thought process you're using the information.

A good analogy for that is cooking. If you decide you're going to make a cake, you would go out and collect the raw ingredients from the environment; flour, eggs, water. You'd also collect the utensils, the tools that you're going to use to process those raw ingredients. And if you're to make cake, an intermediate stage is creating the dough, basically the flour, water, egg combination that is the raw base material.

I think of that as kind of the information. And then you apply your skill to that dough and other ingredients and other processes to come up with a cake.

You could define that but there's a world of difference between the kind of cake I would turn out and something that a Michelin-starred chef would turn out and that's where the art form comes in.

So for me information is a way of processing data into a form that we as human beings can then use and analyse to turn out an intelligence product or a decision making product. So it's kind of what it's for. Does that help? Or does it really simplify it way too far?

Mark

I think it's a big question, right? I think it was lecture one in my course at uni on information science, the first intro session. I'm desperately trying to recall the lecturer's name and not succeeding, but I remember sitting there and he fires up the PowerPoint and on the screen is a black slide, with a single vertical white line in the center, quite small.

He doesn't even introduce himself. He just kind of waits for people to settle down and said, "Okay, I've got to ask you a question. What is that?" And the answers from around the room

range from it's a PowerPoint slide to it's the letter I, it's the number one, it's a vertical line, it's a geometric shape etc

You know, it was all, everybody had their own take on this thing. He basically went into a fantastic summary, which I can't do justice to right now, but basically outlined that saying, this is essentially a symbol and it can be anything.

Well, in some respects, it's anything we apply to it. So yes, this could be a letter. This could be a number. This could be a geometric shape. Might be nothing at all. But it may have value the more symbols we use, the more representation we use.

And not just that one symbol is if I start to put, and then you hit the slide and the slide basically does another line next to it and they hit the slide again and there were three lines, then four, then a line went straight through it diagonally indicating some sort of tally system.

Basically the more symbols and representation he was adding, the more formation, the kind of structuring of what was being done, basically outlined this kind of procedure where basically said, as I tried to start this pod off, was basically saying, look, information is a really hard topic to nail down.

We kind of take it for granted as humans because we work with it every day. We have automatic information processing. We have some deliberate conscious information processing, but sometimes we don't sit down and think, how do I use information?

Do I have biases towards certain types of information? Do I have preferences? Do I prefer the stuff that's easy to take in? Do I like the hard stuff because it's more valid?

I think if you look back at the word information, I think if you go back to the Latin, there is a duality in the term information. There is the notion of tuition or instruction or guidance. And there's a separate, entirely different concept of "concept" and idea and notion are kind of interlinked.

I think that's really interesting because what I've become aware of over my career is that it's kind of helpful to think about information both as a kind of a distinct product or material, and as a process.

So I can look at an IT system or I can look at a department and see how it's run or I can look at a criminal investigation or something similar.

And I can think about the information as a distinct material. What do I have? What do I need? Where am I going to get it? How much? How much is too much? All that stuff. But I can also think about the actual information as a process.

So I can think about who's telling who what. How does that person know that? How will that person be briefed or updated? Will they retain that information? Will they remember it in a few months time?

And that builds up this whole idea of like an information economy, if you like, of that, not just the, if we think about money exchanging hands and economy and kind of stockpiles and being spent and being drawn down on, information is kind of the same.

And it's the second big takeaway, I think, from an information point of view or insight for me, sorry, not a takeaway, is my police career, specifically my intelligence career, and working with kind of operational police officers taught me the difference between, and it's gonna sound so obvious that it kind of, it one of those things that's so important that you kind of forget it, but it's to really understand the difference between the information, the source of the information, and the medium by which you're getting that information.

Because all three of those things are incredibly important because in Intel, the old adage was, whatever you don't know can get you killed. But we were trained to basically understand that you could have a human being who was repugnant and lying and terrible to be with and dangerous, but they could actually have accurate information.

Conversely, you could have somebody who is very friendly, very useful, very kind of can't do enough to support you and you just inherently trust them, but they could be lying.

And so you kind of got to separate the source from the information, but you've also got to be mindful of the medium. So if somebody has written a letter, the physical paper is different to a verbal testimony. It's different to perhaps CCTV footage or something like that.

So the medium of how it's conveyed is kind of critical as well, because that can affect how the information is delivered. When police officers give terrible news to families about things that have happened, they don't just send them an email, right? They knock at the door, family liaison officer is there, so you've got some live communication there. However, for more routine stuff, a letter or an email or a text message might do fine.

So I think that's the thing is when you start understanding the interplay between the information itself, the source of the information and the medium, and you break down your world into that, the world becomes much more interesting and kind of complex, but you can start to see how things kind of work a lot more easier.

And I think it can give you some sort of insight from an investigation and an intelligence point of view, but I do think it's about breaking it down into those kinds of key areas.

Howard

I completely agree with you and one of things I like about the idea you and I have used and have taught a particular skill set or a process called sense making where in layman's terms although it's a structured methodology you're merely trying to make sense of data and in essence that's what we're all doing as human beings and in our case as professional analysts or intelligence operatives in law enforcement.

So for me it comes back to this biological process. Information is symbology and it's really interesting that you say that. Raw data is raw data it's not in a symbol it's just out there in the ether but we turn it into symbols so that it creates a raw material that we can use in our own thought processes and sense making to generate something of value where we probably couldn't do that with the purely raw data even when we ourselves collect it through our own senses.

So I really like this idea of symbology because as you say, the form of the information and the way it was created in whatever form it's in from the original raw data can have a massive impact on its value to individuals as this raw material that we want to use for analysis and problem solving and coming up with theories.

The other thing I want to go back to within law enforcement you know we trained and were trained for years to use something called the intelligence cycle.

Circular process that you shove data in at one end and it goes through certain discrete stages around a cycle. Now, in its simplest terms, that's fine. And it does allow you to explore those different stages where basically you're taking data and you are manipulating it through ultimately symbology to convert it into something of value to then form intelligence.

But for me it was flawed and that's why I mentioned the iterative process. There's a guy, I don't want to go off into loads of theory, but there's a guy called Vigo, a mathematician, who came up with the idea that information is a product of two things.

One, the raw data in the environment, how much and what form and how accessible it is. But secondly, a function of how it's turned into something through symbology. To become something of use, something that can be taken in like the raw material for our thought processes.

And basically it's a mathematical equation. So if you've got loads of data, but a really poor system of creating information from it, you won't have much value. Conversely, little data, but a really good process of symbology or whatever, information of little value. But when you get the two right, you have this product. So it's never data.

It may be very close to data, it's an artificial construct that we've created to feed our thought processes. And coming back to the idea of the intelligence cycle, when I studied this, and I'm

going back three decades, I started preaching something called the intelligence spiral, which was nothing more than the intelligence cycle.

But where the intelligence cycle you could draw in two dimensions as a circle with arrows going around it, a kind of a rotating flow chart. And you'll see loads of decision making or problem solving models like that. SARA, national decision making, all sorts of models full of this cyclical process. The truth is that's not correct.

Because if all we were doing was following that process, you're actually taking data, creating information, and then just re-symbolising the same information. You're not, you're not making the next intellectual leap towards intelligence. And that's why I came up with this idea of a spiral. Because for every rotation of that cycle, every time you go around once, if you're doing the process properly, it's turning information to be something of value.

At the end of that cycle, you're at a different place than where you were at the start. So you start the next cycle with more data and more information and all the time you're moving. So you're going almost along this timeline from data to information to intelligence. And that iteration, that repetitive cyclical process means it's happening all the time.

As we are talking right now, we are collecting data and information and it's helping us form our decisions and thoughts around what am I going to say next how might the listeners react to it am I making sense and then another piece of information will come in it's like I'll make a point and then you'll think, Howard's made me think of this, you'll make a point so again it comes back to this communication

But that's the other thing for me information to be truly of value has to be the driver of a process that moves your perspective forwards. It's not merely standing still. Imagine a library full of books. Millions and millions of books. Nobody ever goes in and nobody else ever reads them. That's a resource of information. But until somebody reads it and starts to use it as raw material for a thought process and decision making It's just information. It's redundant.

So this again is the problem where you can't say something's just data, just information, just intelligence. They're all on this moving train, this spiral cyclical process, this journey. And at whatever point you jump on, imagine catching a train that's halfway through its journey. You're playing catch up.

We've had it as intelligence operatives. Like you say, when you're thinking of who collected this data or this information when it comes to us, how did they collect it? What was their purpose? What was their perspective? Do I need to quality assure that?

And the answer, of course, is yes, in every way you can. And the first way of quality assuring it is asking those questions. So you are, in effect, trying to pick apart the information you've been

given, because that's part of a process you're trying to get back to.

Can I check the process to make sure that the information I think I'm seeing is actually what it really is before I even start to put it to use to think, theorise about it. And just one other point I'd make with that. People always talk about information science and science as a process and we've discussed that before. I don't think it's scientific and you and I agree on that. I think it's an art form, in law enforcement as in all professions.

But what always stood out to me, and I've done it myself, I used to refer to people to the scientific method, the hypothetico-deductive method that everybody preaches about in science that basically says you collect a load of data and then you formulate a theory that explains all that data and you go away and test it. And if the theory doesn't explain all the data, chances are your theory is wrong.

Again that's not a bad concept to use to try and understand the process. But what looking back at it now I see is it talks about collecting data and using that to drive theorising the thought process to come up with hypotheses theories. We don't do that. We do collect data but the theory process is driven by information, not data.

The data drives the information through an information generating process. The information then drives the theorising which is sort of the analysis. Does that make sense? So you've got all these complex factors that are intertwined and moving around all the time.

It's trying to explain something that's like watching the wind or the sand in the sky blowing around in a typhoon. You can't hang your hat on any one piece. You've got to adjust to the whole thing and learn how to embrace it with all its flaws checks and balances that you've talked about but ultimately does it lead you to a useful conclusion that's reliable and repeatable that gives you confidence in the theories that you come up with and therefore the potential issues or solutions that you recommend to decision makers.

Mark

Okay, you covered a lot of ground there. no, don't apologise. It's great, but I need to, I want to try and address them in reverse order, I think. So if I miss one, tell me. But I think the first thing I want to talk about is that kind of reaction when you acquire new information.

I also think it's important to look at what the sciences have to say. And this is what makes information science as a discipline quite tricky because it's often described as one of those kind of cross discipline things because it touches on maths, touches on philosophy, touches on psychology. The notion of information, it's a little bit like that philosophical argument of numbers are numbers real, know, is the number two real? It's a very useful conceptual tool, but it's hard to observe directly.

So in a scientific context, and I do want to talk about the science part, I am not a scientist. You have been. Although I am a massive fan of scientific theory and process. However, I think the problem with the scientific approach for information is I wonder if information, first of all, we need to get solid definition. We don't have it. Second of all, if you had a solid definition, there's levels of complexity there that it would be curious to understand what are you gonna make kind of reproducible or kind of falsifiable if you're gonna take Popper's view kind of thing.

Obviously Shannon and others have done things in a quantitative and a technological sense, which are really important and fundamental. You and I would literally not be having this conversation in the way which we have if wasn't due to that.

And I think it touches on you perhaps accidentally kind of implied that information gathering was a form of truth seeking and it's we want our information gathering as a way of, and I think that's right. I think instinctively, we think we are trying to ascertain a situational awareness or truth or insight into something. And I think it's important to recognise that's different for everybody.

It's tricky to define, it's tricky to measure. And it's certainly very hard to scientifically study, I'd argue, sometimes. You can observe the behaviour, can observe the external components. Sometimes you can't see the internal dynamics. I can't see what's going on in your head and my head. You can still wire it up to MRIs and it just shows you something lighting up, right? It doesn't show you exactly what's going on there.

So, but I think it's also important to recognise that the scientific method, and I want to be very clear on this. The scientific method is one of the most important inventions we've had and will ever have. And it's the best way of proving things to be true for all time, or at least reducing uncertainty for all people at all times. And I think it's absolutely fundamental to what we do.

However, the scientific method, in my view, cannot be applied to certain situations easily.

And I say that because I've tried. And I've kind of gone through this weird cycle in my career where you learn a very scientific, rigid approach to how to kind of understand the world.

And then you get your first, I don't know, serious case, your first murder, your first serious assault, or maybe your first intel case. And maybe you're trying to work out a drug dealer network or some sort of violent crime pattern.

Well, the problem is you don't have many labs or any sort of process to kind of create the exact set of criteria. You can't list all the variables. It's too complicated. It's too uncertain. And so it would be brilliant to have to form a null hypothesis and to apply some gadgets to make some observations and some measurements, but that's timely.

It's very focused on singular phenomena. It's one thing to roll a ball down a plane and measure

its velocity. It's another thing to try and work out who's dealing drugs to kids on a certain housing estate.

That's a difficult thing to do. You can be [rigorous] in your approach. You can be logical in your approach, but sometimes it's very hard to be scientific. And I tend to find it both in intel and in criminal investigations. You must be [rigorous] and you must be kind of almost have that kind of that scientific dogma, kind of that thoroughness there, but you do not have the ability to make all the observations you want to make.

You don't have the opportunity to measure all the things you want to measure because the simple case of most investigations and intel that I found is you have very little information to go on, very little capability to measure what's going on or assess anything.

And even if it was a perfect world, you need a lab representing the exact circumstances of that universe, if you like, maybe a hundred times over to say, well, did it happen? You know, out of a hundred times, did it happen a hundred percent of the time? happen 50% of the time? You get what I'm saying.

I think that's what makes this kind of information work and we'll cover Intel work later in a different episode. But making sense of the world scientifically is really important and people should engage with that.

But I also think that that's what makes 'information work' really important because there's people out there right now in all sorts of jobs, in all sorts of sectors who are basically tasked with make sense of the world, make sure it's accurate. And as you alluded to, try and be the sense making truth engine for the creature, the creature being out of themselves or the organisation. And that you can't always do it.

And the point I'll hand over to you on, the last point is, it's a really big point to make is that with information, to go back to your library example, the big insight for me with your library example is when somebody finds information, they change. The information doesn't change. There's no physical transfer. It's not like they've consumed food or gathered energy from the sun.

What's happened is an internal cognitive change where basically they had belief A and then some sort of process has taken place and now they have belief B, but that's an internal state change and that change in internal states is fundamental, I think, and is worth reflecting on.

Howard

I think you're right and what stands out to me whether we the individual are the consumers of this information and the users of the information to form theories and hypotheses and to take decisions or whether we're wanting to provide that to other people the organisations we work for we want certainty we want guarantees that whatever we come up with no matter how insightful

how mundane or relevant or irrelevant it appears is 100% if you're being mathematically obtuse shall we say 100% accurate.

The truth is for all the reasons you've said and more that will never happen. We strive for perfection and like you say scientific method or another process examination and self-examination, bias and everything else. They try and help us recognise potential flaws and maybe eliminate or at least introduce a measure of how flawed it may be.

But it will never be the case in the world of crime information, well any data set. You never have all the data. You never have all the information. You never know. You're not able to QA the process by when, where, by whom, how it was collected. And if there are intermediaries between you and the data, which there always are, you don't know if the way that they codified it has introduced some kind of deliberate or accidental bias that influences the way you view it.

And that can change. Information decays like data decays over time. I always remember teaching data visualisation. Decades ago. And if you think back to 9/11 and we had Osama bin Laden.

One of the things in criminal intelligence analysis is we use images, icons, as entities to represent a person, a car, a building, a plane, a unit of money, whatever. And then we draw lines, link lines between them to show relationships. It's kind of the symbology of analysis.

And the symbols actually are irrelevant. You can make them look different. If you have a thicker line or you put an arrow on it, it gives it greater emphasis. And I've always had great fun playing with this.

And if you remember when 9/11 went down, I was teaching this in America. Normally [when creating a chart] I would use things like a plane icon, or just a circle. and then introduce colour a bit like your library day one, lecture one, library 101 information science the black slide with the white line, I love it and I'd have a white or a black icon what do make of that? well white is good black is bad you haven't said that it's an artificial construct but people's perspectives on life as a result of culture, upbringing, training, whatever, personal preference, they start to introduce an interpretation that's wrong.

And then you use colour. You use red, does, you know, a red dot suggests there's a potential threat. A green dot suggests it's good. Again, it's irrelevant. It's only relevant if you've coded it for that colour for those reasons. It's not yet a universal language. And I'd have a smiley face. typical one that you'd have on a patch in the 80s on jeans if you were as old as I am and used to go around with tank tops and loons and smiley patches on your jeans or little icons of burglars and things like that and just those symbols a bit like we'll use icons these days or gifts they convey a different meaning it's a different kind of information it's very subtle and usually doesn't necessarily mean what you intended it to mean.

I remember showing them a particular chart with icons on and I introduced one with an icon that was nothing more than a picture of Osama bin Laden. And the whole class erupted, clearly it's about terrorism and it's about religious beliefs, extremes and very negative.

I said okay imagine I'd shown you that chart three or five years ago before you'd ever heard of Osama bin Laden or ISIS or any of the things that related to 9/11. As a human being it just looked like you know, it could be anybody's grandfather really, a bearded chap with a turban on and this that and the other.

There was no emotive link in that as a piece of data. But the moment the events in the world reached people's collective memory, that symbol took on a new meaning. So it had changed. The data hadn't changed.

So it wasn't that it was fresh data. It was just the data suddenly being revisited. It's kind of like these days where you have people saying, oh, well in 1973, comic X used a joke that was inappropriately homophobic or sexist or racist to which the answer is yes in today's times by our conventions of values of society in general it wouldn't be appropriate it would be cringe-worthy but in the language of the day it wasn't.

So you've got to understand not only how it was collected and everything else, all the things you were talking about for QA, you've also got to think about when and with what purpose. And I've always thought perspective really matters as well as context because no matter how and by whom and for what reason information was created your perspective on it will affect how you might use it to drive analysis and ultimately assessment of risk or threats or opportunities you know.

So you might watch a bombing sequence or some military action and if you're the family of the soldiers involved or the military personnel involved you're thinking I hope they're all right and they come home safely. If it's a nationally driven thing you might be thinking go whichever nation it is I hope we win in this kind of win-lose scenario, which is a nonsense of war. You know a zero-sum process shall we say of society: there's no winner in war; it's all relative if you're one of the people on the ground or family on the ground being hurt.

I was listening today about some very interesting perspectives on the nuclear bombing of Japan in world war two related to people who had survived the Holocaust and explaining what it was like for them on the ground going about their business they had nothing to do with shall we say the war or everything that was going on.

[It] just makes you realise that how information impacts your decision making or mine or a particular culture or a particular field you know matters and in the same way that you need to QA all the process of data gathering and information creation, you also need to QA forwards and try and prejudge who might use that information and use it in a different way so they might

misinterpret it in the same way that we're always very careful in law enforcement to put checks and balances on our products in an effort to make sure that they are not misused by people who haven't necessarily applied the same processes and rigor that we would apply. Does that make sense?

Mark

Absolutely, and it kind of makes me think that I think it's worth reflecting on. The information is so intrinsically tied to belief. And when you talked about kind of, I think one of the key words you used was certainty. We've evolved for rapid decision making and we've evolved for certainty because certainty is the antidote to anxiety to a certain degree. But certainty is not accuracy and certainty isn't necessarily quick. And I think it's important to understand ourselves as a human being and to understand our scope and our limits.

The assumptions we can make and I don't take us off into a kind of a psychological bias thing (Probably do a separate pod on that) but it's important and it's related to the information as a concept because essentially the concepts are beliefs.

They are internal states and it's how those states are formed, how those beliefs are formed and how strong those beliefs are. I think it's also important to recognise that people in their day-to-day lives, there are levels of belief.

There are things you can believe to be so true and so concrete, cast iron. There are things you are fundamentally uncertain of. There are things you may have suspicions of, you may have hypotheses about, you might have a general idea, a fuzzy idea.

You may be at work and you may actually think I don't want to take one side or the other. I want to sit on the fence in this one. And sometimes humans engage in a behaviour where they deliberately don't open certain doors or think about certain things because being in that space of not opening one door or another is sometimes helpful. And sometimes again, it's a kind of anxiety management technique.

So much of information is about that kind of biology, psychology, sociology even, kind of what's going on. And it makes working with information quite difficult. And it's also important to recognise that because it is conceptual, a lot of it is tied to language. Before I get to language, I also think it's important to recognise that we have, humans have the ability to have conceptual understandings of things before they acquire language.

I can't remember the name of the study, but I think there was a study a few years ago showing that kids up to the age of six months old can recognise predatory or threatening behaviour. Situationally, they can understand the predator-prey relationship.

I also think that when you think about child psychology, you think about things like object

permanence. I actually think object permanence is precisely backwards. I don't think that kids learn that things are objects, I actually think what's happening is I think we achieve concept permanence. I think up until that point, I think we kind of like animals in the sense that when you're playing peekaboo with a baby they see your kind of face disappear and reappear. That's all that's going on.

But the second you can play peekaboo and that kid knows that you've disappeared behind the hand, the concept of you is a thing. And you're out there in the universe, even though you're beyond their immediate sensory framework.

That conceptual permanence is kind of fundamental because I think that's crucial to what underpins information and our internal states, our belief states about information. And it's also kind of crucial to, in your example about OBL, sorry, it's Osama Bin Laden, you can say like, know, yeah, 1995 or before, the vast majority of people, just an old guy, somebody's dad, somebody's granddad, y'know, it's just, you y'know, nobody special. But suddenly things take a change and obviously you've got all the media and all the things that happened and it's a very, very different thing. Again, more biological responses, more context, more history.

So yeah, I know that was kind of eclectic around the houses, but I think that understanding the human information machine is important. And for anybody working in this space, the biggest thing they can do is try and understand themselves

I remember one of courses you did years and years and years ago, I think one of the detective courses, basically saying, you know, I have to break you down, not in an abusive way, but in sense, I have to get you to understand where your biases are, how you leap to assumptions, how do you jump to conclusions. I need to break your ability, your confidence down, because I have to get you to stop you from thinking things automatically. I have to get you to do things consciously, because if you can do it for yourself, you can then start to understand the world around you. And that's what makes good detectives and good analysts, right?

It's what makes it kind of the ability to kind of really stop everything, be aware of those internal processes and try and make sense of the world, but also make sense of how they're making sense. It's like critical thinking, right? It's that metacognition. It's that, okay, I am now aware of the information gaps I have, the things that I want, the things that I need. And if I can keep like that mindfulness, kind of monitoring and stuff going in, it helps me to become a better analyst, a better investigator. And hopefully establish a more accurate, to never be a hundred percent accurate, but certainly a more accurate version of the world.

Howard

Completely agree with you and that comes back to my point of when you are faced with new information or a task to look at information for a particular to try in an effort to identify something or answer a question you automatically start asking yourself well what data have I got right now

or have I been given is it the right data have I got enough to actually put into my information processing machine to start coming up with theories and testing them.

So we're always checking and rechecking. And in, in many, one of the many methodologies that we've used in the past, the Delphi approach, you know, you generate an intelligence product and you give it to other intelligence experts and say, read that.

And see if it makes sense to you. It's kind of like, and it's not mathematical. It's not like looking at the workings out for, you know, 59 times the square root of three equals X plus five. It's not that scientific.

But chances are, if people have been trained and experienced in your world, see what you're seeing, it's going to be of value. But what I really like about all of this is, as I say, we live in an imperfect world.

We never have enough data. We certainly never have enough time. Ourselves as intelligence operatives and analysts or our clients, law enforcement, investigators, society as a whole. Life isn't, you know, it's just not like that. But what life shows us is we can survive and prosper and do well even when we are dealing with imperfect data and imperfect information we can come up with theories and suggestions and perspectives that are of real value in the real world.

Whether it be choices you're making when you go shopping or whether you're going to put your underwear on before or after you put your trousers on or in law enforcement are you going to go in and kick somebody's door in but what a good information analyst or a good intelligence analyst will do as well as coming with a product and explaining how they've arrived at you know the sort of the the logic sequence the rationalisation and any checks and balances and limiters on limitations on the so you're making your client as aware as possible of the fragility of your product you're not making false claims for it.

What we also do, or good operatives do, is try and extrapolate ahead of each potential decision and outcome what will be the consequences if the work that we've done was wrong.

So I give you an imperfect theory of what's going on so you end up with taking a decision about, do I either do A or I do B or neutral, I do nothing.

Okay well which one should I choose? And part of the choice should be well if I choose A and it turns out that despite our best efforts A was wrong in this imperfect world, how bad would the consequences be?

Are there any contingencies that I can put in place now before I act and make further decisions to manage that risk.

if I do nothing that's an actual action inaction is a null response is an outcome; it's a decision for

action because it's no action you know if I don't retaliate what happens are they going to come in are we going to be killed or some crime in our world going to be carrying on.

Or option B. If I go down B it may be the one you have the most confidence in but if it also has the highest risk of being having a negative effect whatever the issues are that you're trying to control if you get it wrong sometimes you might go for the less beneficial solution because it's actually the it has the risk of being less impactful if it's incorrect.

Again, just as our imperfect systems for gathering data, for turning it into information, for analysing it to come up with theories to drive action, have all these issues and complexities, variables affecting it all the way through the process.

We try and think ahead, and try and manage those same variables and risks going forward to deal with imperfect outcomes.

And that's the problem. There's not one point anywhere in that process that anyone can say, this has been 100% scientific and that particular piece of information or whatever it is, that particular part of the theory, have 100% confidence, I'm totally confident there's no opportunity for error.

There's always opportunity for error because you've never got a total data sample because you don't know what reality is.

So live with it, learn to manage it. But this is why good intelligence operatives, they'll go through all this methodology, but they'll still come back to knowing in the back of their mind over years of experience. This passes the smell test if it can be so crude or, you know. It's not putting the hairs upon the back of my neck. I'm reasonably confident that practically if you go with this, it might not be a total solution, but it's not going to be a complete failure and disaster. Does that make sense?

Mark

Yeah, it reminds me... so I know we like recent cultural references on this podcast, but this is not exactly recent, but I'll go for it anyway.

It reminds me of the movie, Hunt for Red October, that kind of crucial scene of the briefing. So spoiler alert folks, I'm sorry. But it's also I one of my favourite movies and I can't recommend it enough.

But the scene where basically you have Alec Baldwin as the analyst giving the briefing to all these generals and senior politicians. Basically what's great about the scene is you see that kind of group formation of a belief

You know, at point [one], people know something's up, but they don't know what they haven't

seen the briefing yet. So everyone's around the table. They've all gotten out of bed in the middle of the night and they're all a bit tense. They knew something serious was going on.

Then the scene shifts to Alec basically presenting some slides saying, look, we've got these photographs of this new type of submarine. We've got these heat blooms of all these other Soviet warships warming up. Could be the early stages of an offensive action, could be war. So then you start to see the room shift to, oh, right, okay. Things, you know, it's the height of the Cold War. It's going to kick off. It's on. [Taking us to point 2] This is what's going to happen.

And then, one of the, think with the intelligence reps, the table says, okay, well, I'd like to add a bit of new information to the table, which is we've got a very sensitive information source that basically went to the head of the Soviet Navy saying that new submarine that Alec just briefed on actually the entire Soviet Navy has got orders to sink her because she's gone rogue. And we think that the, you know, he's, he's on his way to basically just nuke America of his own volition. So then we go to belief number three, which is, okay, you've got this rogue nuclear submarine, bolting for through the Atlantic heading for the US. Everybody's bricking it.

And then you've got Baldwin then actually putting together all that data so far, adding some information he has. And I can't remember exactly, but I think it's like he's met the captain before, he knows him, and he knew it was the anniversary of his wife's death.

Howard

He'd studied the Captain for his PhD as well hadn't he?

Mark

Yeah. He knew that he wasn't Russian, think, that he was [Lithuanian] actually, something rang true and he thought, actually, this guy's defecting. And he puts forward his view. So we're now at fourth view of what's going on.

Now the table thinks he's nuts and don't [buy it]. First of all, and if you're wrong, like your earlier point, New York's gonna glow in the dark very soon.

But then obviously the the most senior guy, think he's the defense secretary at the time, basically says, thanks everybody, we'll prepare for the worst case scenario and guess what, we'll try and sink it too, shoves everybody out the door and says, right then, about your idea, I like to keep my options open, tell me more about it and then the rest of the movie starts.

And I think in Hollywood history, I don't think I've seen any other movie that so succinctly shows a bunch of people around a table trying to make sense of something and you kind of see these shifts in views as things move along.

It's so fun. And you kind of see that that process, it happens everywhere, right? We do it as individuals, our views, chop, change, new information comes in, new information goes out. And sometimes the stuff that's politically expedient to believe. So you kind of, will yourself to believe it. Sometimes you just know something to be true, regardless of all the proof.

I think it's important for anybody to kind of reflect on when you have proven to be true, think on, well, why were you right in the first place? What led up to being, being right? Was it a happy coincidence or did your internal processes lead you to the right conclusion?

But also when you're wrong, when you are wrong, what led to that being wrong? You know, did you believe the wrong person? Did you make the wrong assumption?

And all of this comes back to what is information? How do we process it? What do we do automatically? What do we do consciously? What can we choose to do differently? And I think that's probably where we should end it.

So is there anything else? Any last words on what is information before I draw it to a close?

Howard

Just on that example, it's a really good one because it takes us right the way back to information has been in that scenario like everything we've talked about today, the raw material and the driver for human actions and behaviour in human thought. So it's this ultimately it's a social construct or it's a material that's driving social interactions

Yes, in that scenario everything's on steroids, so you'd assume their information from their machines is the best in the world. They know that their sensors and everything must be brilliant, their intelligence must be the best you could ever get, but that and the military must be the best trained people and you'd hope that the ones around the room are all altruistic and merit-based they don't have secret biases or they're actually just been elected by luck or some aberrant senior leader who likes them because they're compliant

But all those variations show that at the end you put what is basically a group of semi-sentient primates with all these behavioural flaws in a room deciding that something could decide the fate of the world and you watch the interplay, a bit like Lord of the Flies it's this power game.

Part of the skill of the information scientist and of the intelligence operative or analyst in predicting how people might receive that information is what's going to happen at that meeting.

A good analyst will have gone in there thinking I know general A thinks like this and general B thinks like that so I don't want to send them off into their rabbit hole of beliefs that says it must be a bomb so we have to blow them up or it must be a load of rubbish so we have to extract him and put the risk, know, safety of the world at risk.

You want people with open minds but often the intelligence analyst and the information scientist are the only ones in truth who in that moment, other people can be rational at any other time, but when you're placed in a crisis situation for any kind of decision in law enforcement, I've had hundreds of these.

For whatever reason, if you haven't planned for how that meeting will go and try to have contingencies to defuse it or bring it back on track, you aren't doing your job as a good intelligence analyst and a good information scientist.

Mark

I think that's true, but I also think it's incredibly sad in a way, isn't it? And it's underpinned, it shows you how biases and our flawed information strategies, because your instruction is quite correct.

Anybody in these fields should have an idea of which way the meeting might go and how false interpretations or other motivations behind certain interpretations might go. And you're not suggesting for one second that you should mislead or kind of corrupt or divert the process, but you do have to be mindful about how people might take things and run with it, how they might instinctively respond, how they might pragmatically or perhaps politically respond.

And in some respects that has a massive impact on the course of an investigation or an operation. And it's the same in the world of business, right, or anything else. I think isn't it interesting though, isn't it? If information gathering was so perfect and we all agreed how to do it, and we wouldn't need this level of planning beforehand, would we?

We'd kind of all be in the room achieving certainty and achieving accuracy. But human factors, as always, they kind of creep in, they?

Howard

The joy of life and it's its biggest penalty as well but information drives it all that's what's really sexy about this subject and why imperfect and indistinct though it is it's so important to try and get perspectives and understand things on everything about information how it works what it does how it can influence things even when we can't define it.

Mark

Well thank you for today and I'll invite everybody to join us on the next pod. Wish you all the best. Bye bye for now.

Howard

You too. Really enjoyed that one. Thanks Mark. Thanks everybody.