PRESENTATION ON

INTRODUCTION TO CRITICAL THINKING

BY

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TEASERS

1. Poverty is the absence of choices in everyday life.

2. Wealth is the abundance of options/choices whose costs are simply favourable.

3. A problem is a situation we are yet to understand.

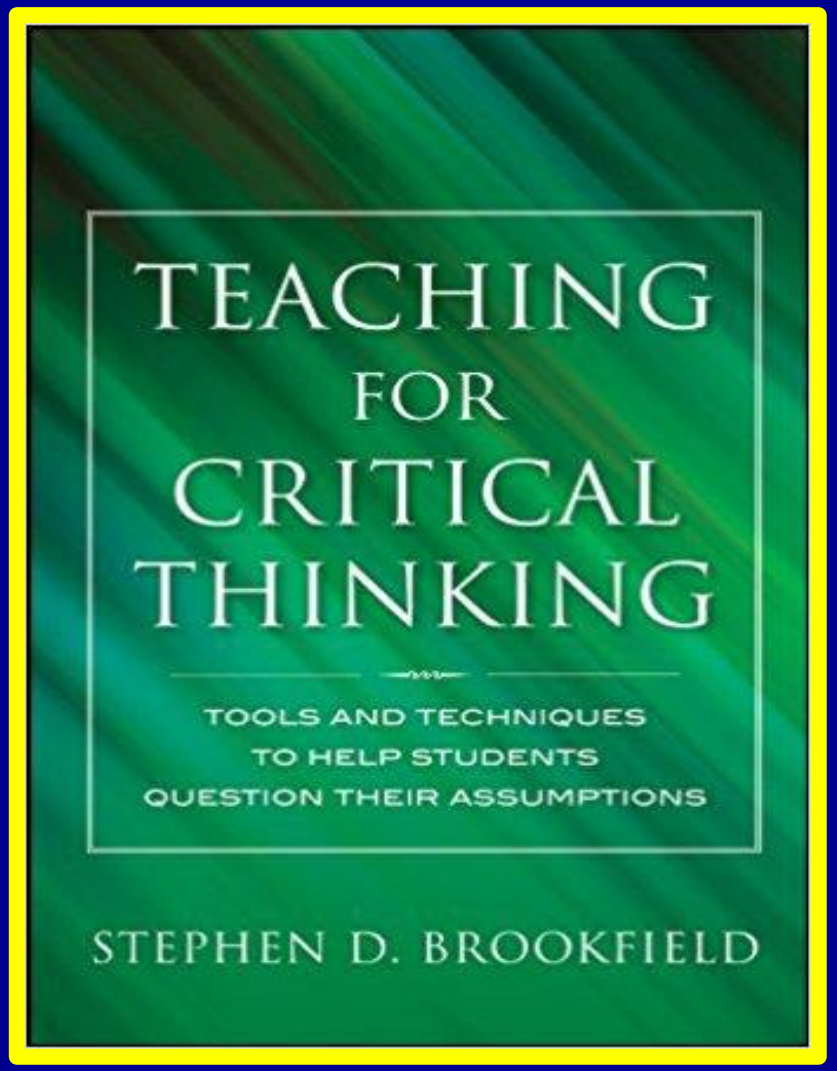
WHY ARE YOU HERE?

When you know your destination, your preparations become focused and clear

The mission of AWCN is to produce well trained, well educated and inspired operational level leaders for the NA (for your country's army in case of our allied participants)

The key words are training, education and inspiration. Training involves acquisition of skills; education basically means impartation of knowledge and inspiration revolves around mentorship and freely giving both in knowledge and deeds

WHY CRITICAL THINKING IN AWCN?



CRITICAL THINKING IS NOT A LECTURE BUT A MENTAL MODEL (A WAY OF THINKING, A WAY OF LIFE, WHO WE ARE)

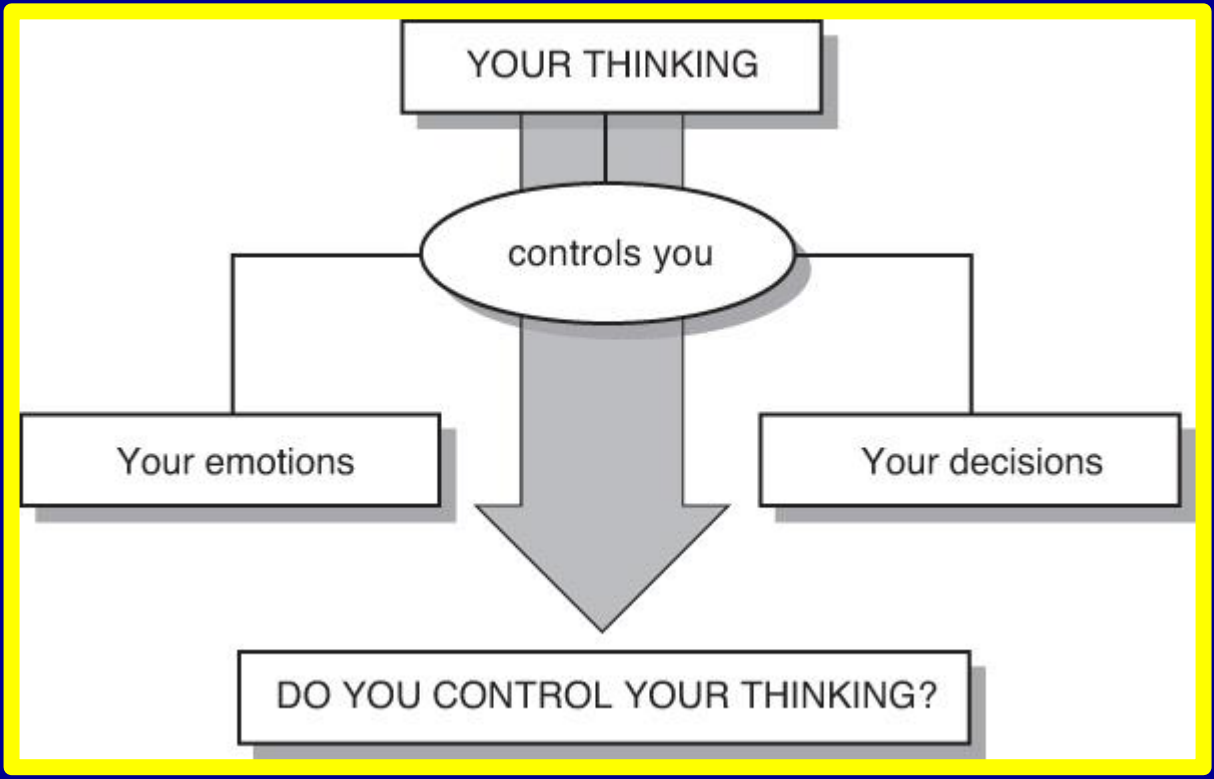
WHY CRITICAL THINKING IN AWCN? (CONT)

Dr. Richard Paul was an internationally recognized authority on critical thinking

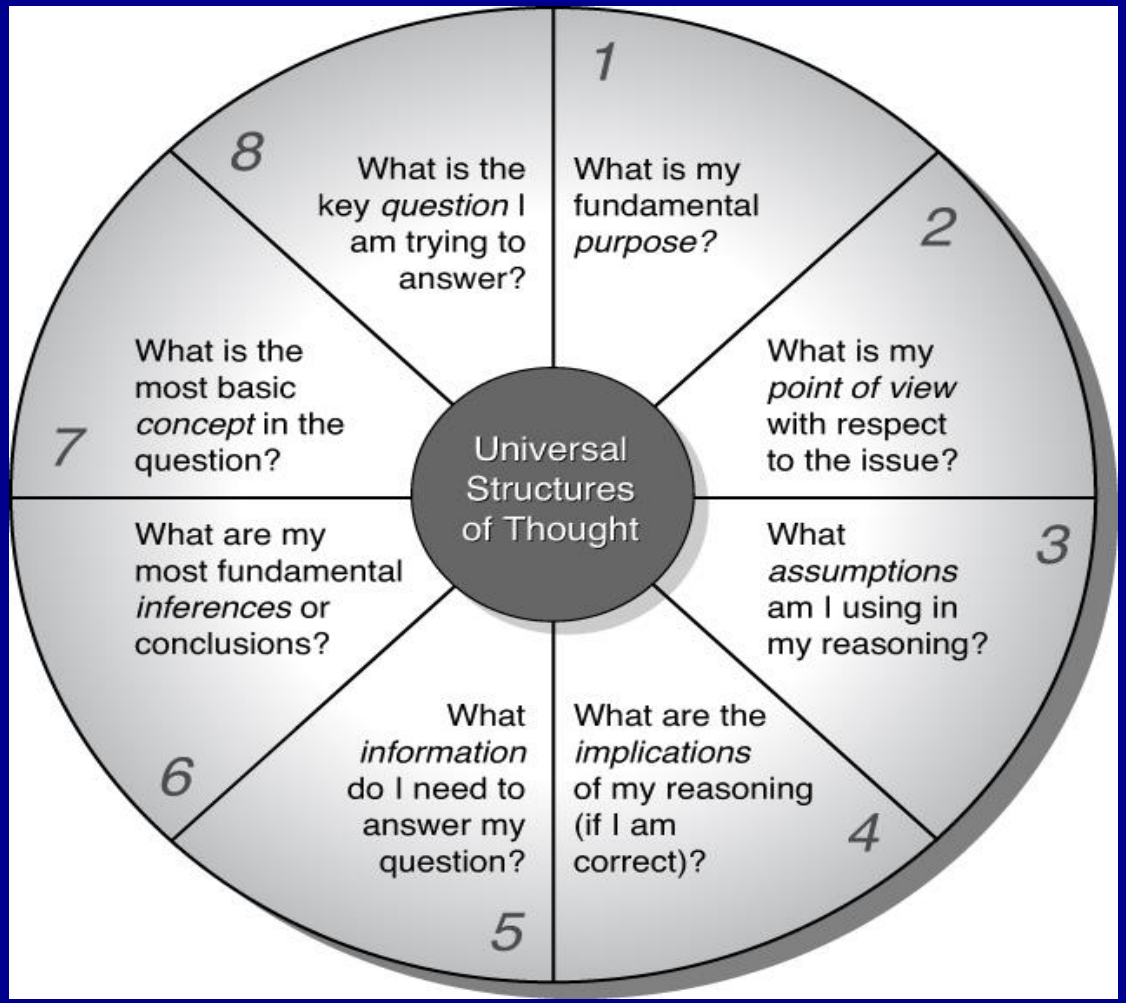
- "Everything we know, believe, want, fear, and hope for, our thinking tells us. It follows, then, that the quality of our thinking is the primary determinant of the quality of our lives." – Richard W. Paul, 25 Days to Better Thinking & Better Living: A Guide for Improving Every Aspect of Your Life

Source: http://www.criticalthinking.org/pages/dr-richard-paul/818

THE POWER OF YOUR THINKING

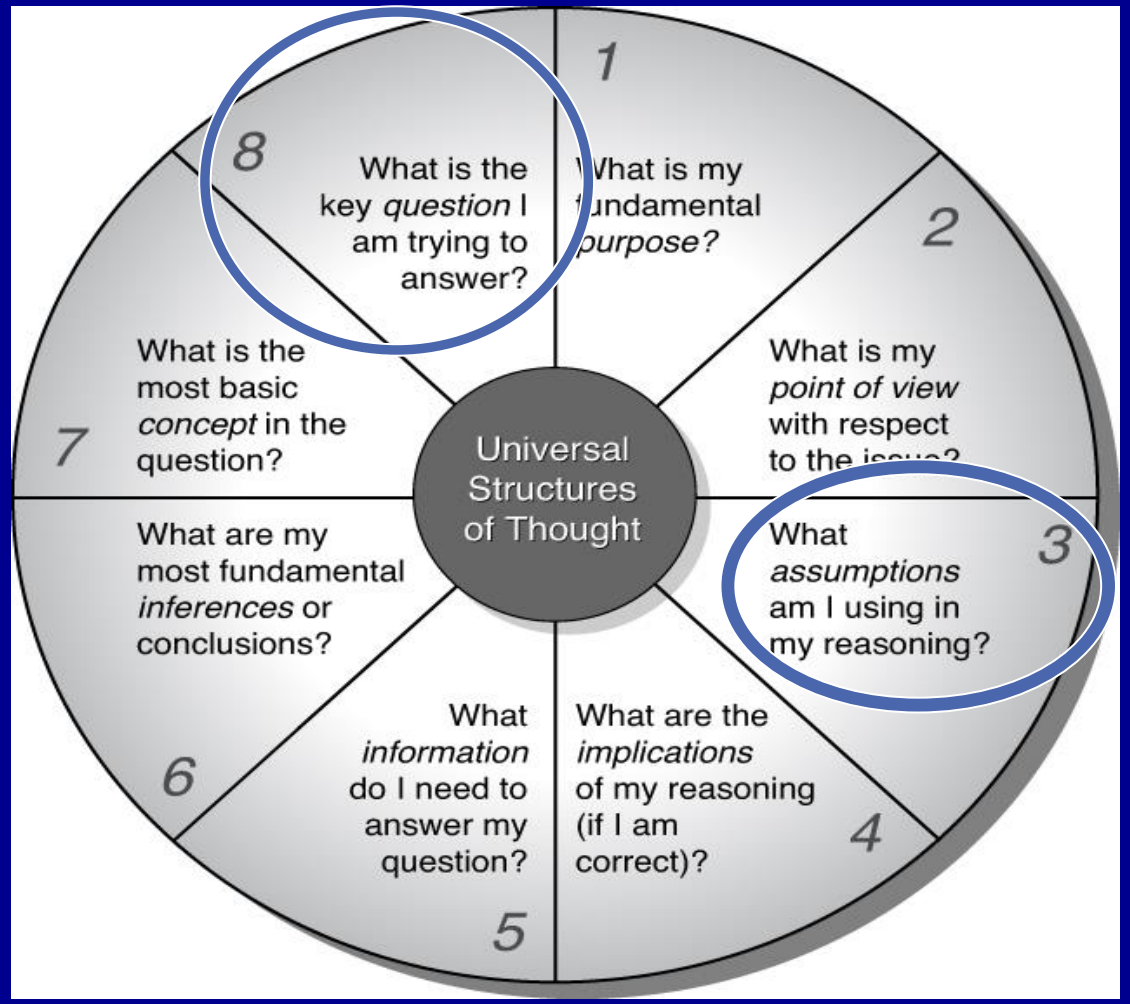


ELEMENTS OF THOUGHT/THE WHEEL OF THINKING



Whenever you are reasoning, you are trying to accomplish some purpose, within a point of view, using concepts or ideas. You are focused on some issue, question, or problem, using information to come to conclusions, based on assumptions, all of which have implications.

"Excerpt From: Richard Paul & Linda Elder. "Critical Thinking."



WHAT THEN IS CRITICAL THINKING? MANY DEFINITIONS BUT WE ZERO-IN ON ONE RELEVANT ONE.

CRITICAL THINKING IS THE PROCESS OF HUNTING DOWN ASSUMPTIONS IN ORDER TO TEST THEIR VALIDITY AND ACCURACY SO **WE CAN TAKE INFORMED DECISIONS-ACTIONS THAT ARE GROUNDED IN EVIDENCE, CAN BE EXPLAINED TO OTHERS AND STAND A GOOD CHANCE OF ACHIEVING THE RESULTS WE DESIRE** ***(stephen brookfield)***

UNDERSTANDING ASSUMPTIONS

CAMBRIDGE DICTIONARY DEFINES ASSUMPTIONS AS SOMETHING THAT YOU ACCEPT AS TRUE WITHOUT QUESTION OR EVIDENCE. **THEY ARE THE DAILY RULES THAT FRAME HOW WE MAKE DECISIONS AND TAKE ACTIONS**

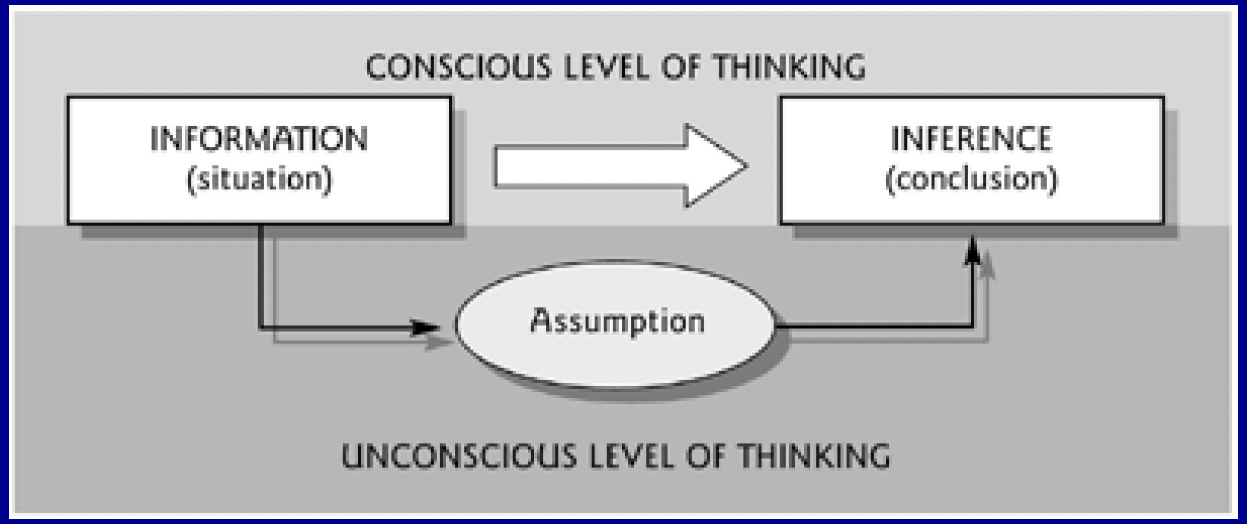
THERE ARE THREE TYPES OF ASSUMPTIONS

- **Prescriptive. Assumptions that are tied to mostly standards in friendship, marriages etc. They form how we think the world should work and how people should behave.**

- **Paradigmatic. Our assumptions that are tied to laws, principles, beliefs, ideology, norms, premises. They frame how we view the world**
- **Causal assumptions are those tied to concepts and relationships. Assumptions we have about why things happen the way they do.**

CHARACTERISTICS OF ASSUMPTIONS

1. Below the conscious level
2. Difficult to unearth.
3. Provisional



Inferences & Assumptions

Observation	Inference	Underlying Assumption
At an important power point briefing you see several misspelled words on the presenter's slides	They're dumb	Smart people spell well
	They were in a hurry	People who have time proofread their slides
	They're briefing someone's slides	Everyone proofreads their own slides
You meet a married couple in their late 30s who say they don't have any children	They have fertility issues	Everyone wants kids
	They're selfish	Unselfish people want kids
	They're smart	Teenagers are fun!!!

EXERCISES ON ASSUMPTION

Boy A
Competitive, fit, obedient, handsome, lacks true creativity, very orderly and craves clarity, neatness and tidy systems. Last boy in a family of four. Father is a successful lawyer and mum is an officer of the NA

Boy B
Smart, energetic, motivated, attention seeking and has mood swings. Very focused and has eyes for details. Has a retentive memory and hardly forgives. Loyal and loves the company of women. First child in a family of six. Parents are in the motion picture industry

Boy C
Introvert, loves solitary outdoors. Nature watching. Loves animals and house chores. Intelligent, careless when nothing is at stake, envious, pessimistic, realist and finds patterns in issues. very intellectually curious and a good communicator. Not easily intimidated. Middle child in a family of five. Parents are civil servants.

QUESTIONS
Which of the boys is likely to become
1. A military officer
2. A lawyer
3. A vet doctor

Many hundreds of years ago in a small Italian town, a Merchant had the misfortune of owing a large sum of Money to the Moneylender. 💰
The moneylender, who was Old and Ugly, fancied the merchant's Beautiful Daughter 👧♀so he proposed a bargain. He said he would forgo the merchant's debt if he could marry the daughter. Both the merchant and his daughter were horrified by the proposal. The moneylender told them that he would put a black pebble and a white pebble into an empty bag. ⚫⚪The girl would then have to pick one pebble from the bag. If she picked the black pebble, she would become the moneylender's wife and her father's debt would be forgiven. If she picked the white pebble she need not marry him and her father's debt would still be forgiven. But if she refused to pick a pebble, her father would be thrown into jail.
They were standing on a pebble strewn path in the merchant's garden.

As they talked, the moneylender bent over to pick up two pebbles. As he picked them up, the sharp-eyed girl noticed that he had picked up two black pebbles and put them into the bag. He then asked the girl to pick her pebble from the bag.
What would you have done if you were the girl?

If you had to advise her, what would you have told her?

Careful analysis would produce three possibilities:
1. The girl should refuse to take a pebble.
2. The girl should show that there were two black pebbles in the bag and expose the moneylender as a cheat.
3. The girl should pick a black pebble and sacrifice herself in order to save her father from his debt and imprisonment.

The above story is used with the hope that it will make us appreciate the difference between lateral and logical thinking.
The girl put her hand into the moneybag and drew out a pebble.

Without looking at it, she fumbled and let it fall onto the pebble-strewn path where it immediately became lost among all the other pebbles.

“Oh, how clumsy of me,” she said. “But never mind, if you look into the bag for the one that is left, you will be able to tell which pebble I picked.” Since the remaining pebble is black, it must be assumed that she had picked the white one.

And since the moneylender dared not admit his dishonesty, the girl changed what seemed an Impossible situation into an Advantageous one.

MORAL OF THE STORY:
Most Complex problems do have a Solution, sometimes we have to think about them in a Different way.

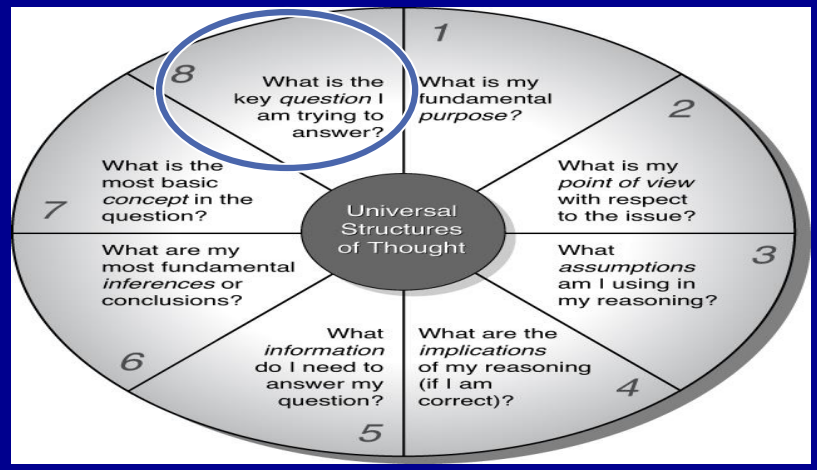
Thinking *"Out of the Box"*.

- Dan and his wife Jennifer decided to commit suicide after going through a hard and tough time in life
- So, they both agreed and decided to jump off a twenty-storey building.
- When they got to the topmost floor, they both agreed to count 1-3 and jump
- On the 3rd count, the wife jumped but Dan stayed back
- As Dan watched the wife fall, he saw her pulling out a parachute to land safely
- Now, the question is: WHAT ARE THE ASSUMPTIONS OF EACH PARTY?

QUESTIONS IN CRITICAL THINKING

LET US CONSIDER ANOTHER CRITICAL ASPECT OF THE ELEMENTS OF THOUGHT

QUESTIONS



QUESTIONS ARE BACK-END OF CRITICAL THINKING

ASKING THE RIGHT QUESTIONS

WHAT ARE THE BENEFITS OF ASKING THE RIGHT QUESTIONS. A KNOWLEDGE OF SYSTEMS THINKING HELPS US TO GENERATE DESIRABLE FEEDBACKS FROM THE SYSTEMS. UNDERSTANDING IS THE KEY. SO, THE RIGHT QUESTIONS ARE THOSE THAT AID OUR UNDERSTANDING THE MOST.

WHAT ARE THE QUESTIONS YOU ARE ASKING. NEVER ASK THE WHY QUESTIONS BECAUSE ITS TOO SUBJECTIVE. IF YOU WANT TO GET AT THE ROOT CAUSE TRY THE 'WHAT QUESTION'

QUESTIONS (CONT)

The Nobel Laureate Hebert Simon coined the term "bounded rationality" to describe how the complexity of most organizational environments limited the ability of managers to make economically optimal decisions. In his classic work, Administrative Behavior, Simon lists three constraints on optimization in decision-making:

1) **We cannot know the precise consequences of our decisions (essentially an argument for the under-determination of effects);**
2) **We cannot know the true value of the things we seek, i.e., we imperfectly anticipate how we will feel about an effect; and**
3) ***We cannot exhaustively specify causes, that is, there are always causes that we do not know or imagine.***

When working with Complex Adaptive Systems (CAS), miscalculation is not a possibility, it is a certainty. The objective is to limit our errors.?

QUESTIONS TO AID UNDERSTANDING

- What information do we need to answer the question?
- What conclusions seem justified in light of the facts?
- What is our point of view? Do we need to consider another?
- Is there another way to look at the question?
- What are some related questions we need to consider?
- What is the reason you are unwilling to listen to someone's reasons;
- What irritated you about your colleague's suggestion/s.

CEASED TO BE MISINFORMED

1. **C**ONCLUSION. Identify the claim or what the author wants you to believe.
2. **E**vidence. What are the premises used to support that claim/thesis in the document /article.
3. **A**ssumptions. Identify the assumptions and biases.
4. **S**trengths and weaknesses. Question the strengths and weaknesses of the assumptions.
5. **E**valuation. Consider the logical fallacies exhibited by the author and make your decision.
6. **D**eductions. Your views and opinions based of the aforementioned.

PART 3

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

- **Explanation.** Explain the behavior of the system, understanding where it is and how it got here. This explanation is the most fundamental task in systems thinking.

- **Prediction.** Predict the behavior of the system conditional on no new interventions on the part of the observer, describing the various places the system can go if we do nothing new, and the probability that the system will go there.

- **Intervention.** Intervene effectively in the system, altering the system's behavior to accord with our strategic aims. This is essentially prediction conditional on various potential interventions

- Cause and effect are at the heart of all strategic decision making. We make deliberate choices because we believe that what we choose now shapes what is to come.

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

❖ We mean that good strategy depends on the effective identification and manipulation of causal relationships Whether we want to maintain the status quo or transform the system, we must have a sense of the cause and effect relationships that support those conditions. Causation is the basis for both explanation ("Why did this thing happen?") and prediction ("What is going to happen?"). Both Are crucial to strategy

- ✓ Regularity and Probability: Pattern Recognition in Causation
- ✓ Counterfactuals: The Difference-Makers in Causation
- ✓ Physicalism: The Mechanisms of Causation
- ✓ Disposition: The Fuel for Causation

❖ The framework helps strategic leaders identify current and potential causal connections in Complex Adaptive Systems (CAS) and outlines the tools available to leaders to discover and exploit these connections.

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

- We also need fuel and something to light the fire. Other ways to describe necessity are:
- preceding discussion, we have introduced two essential concepts in causal reasoning: necessity and sufficiency
- X is necessary for Y. This means that Y cannot occur without
- X Other causes may also be necessary. Oxygen may be necessary for something to catch on fire, but oxygen is X is responsible for Y; Y is due to/attributed to X.3•X is sufficient for Y.

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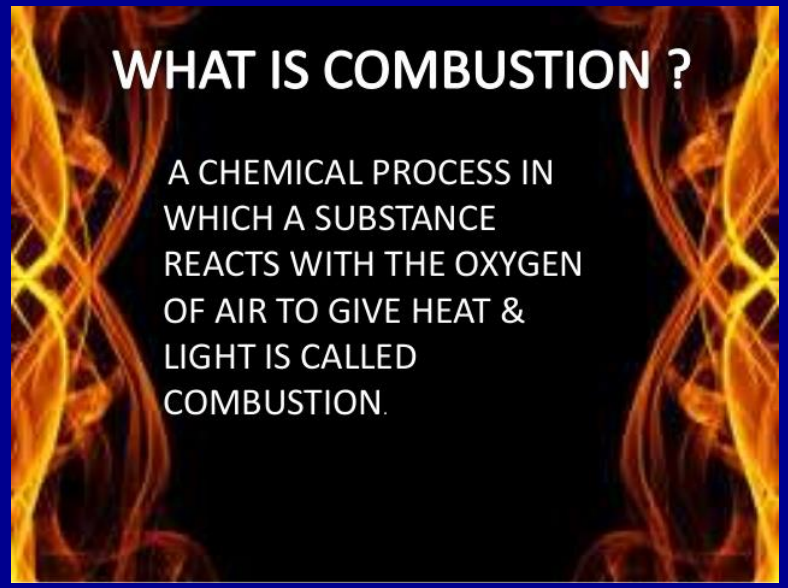
A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)



- This means that X produced Y, and that Y, could be the effect of other causes, as well. When we argue for the sufficiency of a cause, we leave open the possibility that other causes could yield the same effect. A bucket of turpentine-soaked rags may be sufficient to ignite a fire through spontaneous combustion, but fires can be started through a number of other means, as well.
- Other ways to describe sufficiency are:
- X enables/triggers/brings about/activates Y; Y responds to/is susceptible to X.
- X is necessary and sufficient to cause Y. This means that y is uniquely caused by
- x. There is no other way to produce y than through , and x alone is enough

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A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

- The Regularity and Probability Views of Causation "Causation by Association (but not Explanation)" What it is: The Regularity View of Causation posits that
-
  - ✓ X is the cause of Y if and only:
  - ✓ X is contiguous to Y in space and time
  - ✓ X precedes Y; and
  - ✓ All events of type X are regularly followed by events of type Y

- We use the regularity view all the time. In its purest form, a Regularity account of causation simply identifies an association between two facts. It is the basis for observational learning and pattern
- Recognition fire produces heat, heat causes burns. Regularity is the basis for much of our learning, and for psychological conditioning (think of Pavlov's dog and the association between the bell ringing and food arriving). However, the classic, deterministic formulation of Regularity is quite limiting. In complex systems the list of effects that always follow given causes is very short.

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

- How we find it
- Statistical Modeling. We quantify reality by measuring things, then transforming measurements into observational data samples, and inputting data into statistical models.

- Finally, we look for statistically significant correlation between variables of interest. Statistical modeling has subsequently become the primary method for using probability to identify and corroborate a cause relationships in medicine, epidemiology, and many of the social sciences.

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A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

COUNTERFACTUALS

❖ **Shorthand: "The Difference-Makers" What it is: Whereas the regularity view of causation identifies causes through their constant (or probabilistic) conjunction with effects, counterfactual causal reasoning is completely focused on necessary (or dependent) connections between causes and their effects.**

- ✓ **Counterfactual reasoning asserts that X is a cause of Y if**
- ✓ **If X, then Y, i.e., where we see X, we see Y; and 2.**
- ✓ **If not X, then not Y. In the closest non-X world, Y is false, i.e., when we keep the rest of the world constant but remove X, Y does not happen.**

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS CONT)

- Counterfactual causal reasoning is highly intuitive and pervasive, particularly in thought experiments. When we claim that the 9/11 caused the invasion of Afghanistan, for example, we reason based on a
- counterfactual (no 9/11, no political basis for the invasion of Afghanistan).

- How We Find It: We identify counterfactual causes in
- Three ways:1) physical experimentation; 2) statistical analysis; and 3) thought experiments. The first two are empirically based. The third is purely deductive

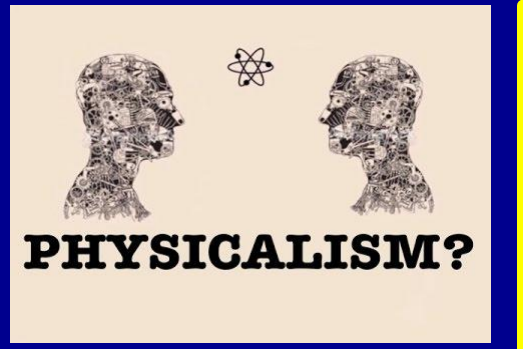
A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS CONT)

Physicalism (the mechanism of causation)

Shorthand: "Inside the Black Box of Causation"

What It Is: Physicalism is a view of causation that focuses on the mechanisms that link cause and effect in a system. What causes IED attacks? Physicalism would draw our attention the process of fabricating, placing and triggering the explosive device. It helps us to identify points that allow us to disrupt that process. Equipping vehicles with technology to jam a cellular signal transmitted by a trigger man to an emplaced IED is an example of an intervention prompted by a physical perspective. What causes an infectious disease outbreak? Contact between the infected and uninfected is one cause. Physicalism would suggest limiting this contact by rapidly identifying and isolating the sick.

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)



- The causal perspective, physicalism is perhaps the most military in its outlook. It orients strategists to elements of a system that are either obstacles to or enablers of success. In cases of obstacles, physicalism invites us to remove them. The causes of illegal trafficking in narcotics are the transporters and distributors of drugs. The causes of an insurgency are the insurgents themselves. Intercept drug shipments and we stop the drug trade. Kill insurgents and we end the insurgency.
- The notion of "centers of gravity" in CAS is best captured by the physical causal lens. This is a strategic philosophy that the military finds very familiar
- Two good starting points for such analysis are the locations of inputs and outputs in a system. Choke points in a system are also useful. But any analytical approach that explores causation at the interface between causal agents and their effects is applying physical reasoning.

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

- Physicalism reduces complex, adaptive systems into a set of constituent parts and connections between them, and then invites us to disrupt, change, or enable system behavior by manipulating the system's composition and structure. It is a powerful way to comprehend and intervene in the causal dynamics of a system, but—as with RPV and counterfactuals—it has weaknesses.

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

- **Disposition: "Causal Powers," or "the Fuel of Causation"**

- **What It Is: Disposition describes the relationships between causes and their effects. It refers to the way in which entities have "powers" that produce effects and are "waiting to be released or stimulated into action," as the philosopher Stephen Mumford writes. "Each event that occurs can be thought of as an effect of a power manifesting itself in a causal process." As a rule of thumb, as we move further away from effects in space in time, our arguments for causation are more likely to be dispositional.**

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

- Suppose we ask, "What caused the civil war in country X?" If our explanation cites the nation's ethnic, religious, and linguistic diversity, and/or the unequal allocation of wealth and political power, then we are employing a dispositional causal argument. We are not saying that these conditions necessarily lead to conflict. Dispositional causes generally concern sufficient but not necessary conditions. They are conditions with causal relationships that may be triggered given a certain change in context.

- One of the most famous passages from Thucydides' History of the Peloponnesian War offers a dispositional explanation for why the war happened. Thucydides writes, "The real cause I consider to be the one which was formally most kept out of sight. The growth of the power of Athens, and the alarm which this inspired in Lacedaemon, made war inevitable." Thus, in his view, the growing imbalance of power inclined the Greek city-states toward war.

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

- Disposition is the most theoretical of all causal perspectives. RPV and Disposition, together, generally form the basis for theoretical work in the Social Sciences. When we talk about personality, culture, economic conditions, demography, or political and legal structures as causes of things, we are almost inevitably making dispositional arguments.
- How We Find It: Most dispositional causes are discovered through a process of inference that is based on both experience (empirical observation) and abstract reasoning

- Dispositional insight therefore requires a combination of observation and creativity. Because dispositions in social systems are often not observable (e.g., personality, culture, etc.), causal arguments that employ them involve inference, as well.
- For example, suppose we spend a week on a road-trip with a colleague. During the trip, we repeatedly observe our colleague becoming enraged at the behavior of other drivers, hurling verbal abuse at them, and making obscene gestures. From this colleague's observable behavior we may infer a dispositional explanation for what caused these episodes, even though that cause is not something that we can actually observe: "He has a bad temper."

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

- Disposition is an essential causal perspective, and a powerful tool for understanding why things happen. Its strengths are unique, but it is ideally applied in combination with other modes of causal
- A pluralistic view of causation helps us to see how multiple interventions may be necessary to maintain (or change) system conditions. It also helps us to recognize the unintended consequences of interventions. For example, viewed from a physical perspective, violent action against an insurgency may be extremely appealing.

- Insurgents are agents of violence, and if we destroy these agents, we interrupt the production of violence in the system. But what does this intervention look like from a dispositional standpoint? How does an insurgent-killing strategy affect the tendency of the system to produce more insurgents? When we kill insurgents, we may gain the favor of the part of society that is sympathetic to US interests or to the government that we support. But we may also radicalize the opposition, empower those who favor greater violence (instead of a political settlement).

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

QUESTIONS ABOUT REGULARITY AND PROBABILITY

1.What agents, resources, behaviors, or structures do we regularly observe close to (in space and
time) an effect?
2. What agents, resources, behaviors, or structures significantly affect the probability of an event,
either increasing or decreasing it?
Questions about Counterfactuals
3. What agents, resources, behaviors, or structures may be necessary to the system condition that
we wish to produce or avoid, i.e., a given system condition cannot exist without them? Put
differently, what are the difference makers?
4. What types of experimental approaches are available to us to test the necessity of this

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

Questions about Physicalism

5. To what extent is the system reducible to a subset of causal relationships?
6. What are the causal interfaces of the system? That is, where and when are decisions made, resources produced, actions triggered, or energy or information transferred, and what parts of the system are closest to those locations in space and time?

Questions about Disposition

7. What are the observed properties of the system (e.g., agents, resources, rules for behavior, structure) that contribute to the system condition that we wish to produce or avoid?
8. What latent dispositions or capacities in the system may be relevant to the condition that we wish to produce or avoid, and what changes in the systemic context may trigger them?

Questions about Intervention

"bounded rationality" to describe how the complexity of most organizational environments limited the ability of managers to make economically optimal decisions. We cannot know the precise consequences of our decisions

A STRATEGIC FRAMEWORK FOR THINKING ABOUT CAUSAL ASSUMPTIONS (CONT)

We cannot know the true value of the things we seek, i.e., we imperfectly anticipate how we will feel about an effect; and 3) We cannot exhaustively specify causes, that is, there are always causes that we do not know or imagine

When working with CAS, miscalculation is not a possibility, it is a certainty. The objective is to limit our errors. In this vein, we suggest two final questions:

9. To what extent are any of the causal relationships that we have identified through these causal lenses subject to manipulation? That is, can we feasibly introduce, remove, reduce, or increase them?
10. What is the range and consequence of miscalculation?

We must analyze and plan because we reject the idea that we are powerless to change our environment. But we also must remain open to the possibility that we may be (sometimes catastrophically) wrong.

WISDOM NUGGETS

DOSSIER LOOP OF EVERY DAY PROBLEM-SOLVING

1. Define the problem
2. Options. Creative thinking (Divergent thinking), reframing the problem statement.
3. Selection. Select the desired option. Convergent thinking into the area of familiarity. Define the desired outcome/end state.
4. Strategy. Build a strategy around that option and consider the mitigation of risks. Do the FAS-R Analysis.
5. Implement.
6. Evaluate progress and risks.
7. Review strategy.

END OF OUR DIALOGUE

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Any Question?