The Egmont Group
of Financial Intelligence Units

Egmont Strategic Analysis Course

Session 2

Introduction to critical thinking

Participant Manual

Version 30 October 2012

1. Introduction

In this session, we will examine cognitive challenges associated with analysis.

The main topics will be:

- Mindsets and Biases
- Critical Thinking
- Structured Analytic Techniques

2. Thinking about mindsets and biases

The human mind has numerous limitations, many of which are unknown to us. While these normal limitations cannot be changed, there are ways to mitigate their effects on analysis.

Mindsets

Mindsets are some of the things that can negatively affect your thinking processes, to the real detriment of not only your day-to-day activities, but also your work in strategic analysis.

Critical Thinking

Critical thinking is about the discipline one can employ to offset and even overcome the natural mindsets and biases we all have, in order to produce useful analytical products, among other things.

Activity 2.1 – Mindsets and biases
The Story – 'The Business Man'

Over the page you will find a very short story – 'The Business Man'.
You have 10 minutes to read this story and then individually, answer true or false to each of the statements about the story.

Do not turn the page until you are asked to begin.

The Story 1 – A business man

A business man had just turned off the lights in the store when a man appeared and demanded money. The owner opened a cash register. The contents of the cash register were scooped up and the man sped away. A member of the police force was notified promptly.

Please read the following statements and indicate whether true (T) or false (F)

T/F	Statements about the story
	1. A man appeared after the owner had turned off his store lights
	2. The robber was a man
	3. The man who appeared did not demand money
	4. The man who opened the cash register was the owner
	5. The store owner scooped up the contents of the cash register and ran away
	6. Someone opened a cash register
	7. After the man who had demanded the money scooped up the contents of the cash register, he ran away
	8. While the cash register contained money the story does not state how much.
	9. The robber demanded money of the owner
	10. A businessman had just turned off the lights when a man appeared in the store
	11. It was broad daylight when the man appeared
	12. The man who appeared opened the cash register
	13. No one demanded money
	14. The story concerns a series of events in which only three personas are referred to: the owner of the store, a man who demanded money, and a member of the police force
	15. The following events were included in the story: Someone demanded money, a cash register was opened, its contents were scooped up, and a man dashed out of the store

3. Mindsets and biases: The Achilles Heel of strategic analysis

What are mindsets? Mindsets refer to habitual or characteristic ways of interpreting or responding to information or situations.

What are biases? Biases refer to specific ways in which we make errors in judgement.

When undertaking strategic analysis, it is important to keep our mindsets and biases under control, because humans are not rational thinkers!!

Video

Watch this short video and consider how it may link to the task of interpreting information in an analytical context.

While a great deal has been written and said about the importance of using your instinct or intuition, this often poses a challenge for strategic analysis. Why? Because human beings are *not* rational thinkers

Tip! Be wary of what lies behind interpretations and the strong confidence we have in what we believe to be true!

4. Mindsets and biases: In general

Philosophy has as its core instrument, the ability to reason. For example, **Plato** formalized the **Socratic Method** as a process of debating between people of different viewpoints.

From here grew a discipline that formalized several forms of reasoning including:

- Deductive reasoning
- Inductive reasoning
- Abductive reasoning

Deductive reasoning starts with one or more general statements that are known, to reach a logical conclusion. In deductive reasoning, if the original statements are true, then the conclusion must also be true.

For example

Assertion 1 When it rains the lawn gets wet.
Assertion 2 It rained last night.

Conclusion The lawn will be wet this morning.

Inductive reasoning begins with observations that are specific and limited in scope, and proceeds to a generalized conclusion that is likely, but not certain, in light of accumulated evidence. Inductive reasoning takes a logical leap.

You could say that inductive reasoning moves from the specific to the general. Much scientific research is carried out by the inductive method: gathering evidence, seeking patterns, and forming a hypothesis or theory to explain what is seen.

Conclusions reached by the inductive method are not logical necessities; no amount of inductive evidence guarantees the conclusion.

Abductive reasoning typically begins with an incomplete set of observations and proceeds to the likeliest possible **explanation** for these observations. The direction of abductive reasoning is therefore opposite to deductive reasoning.

Abductive reasoning yields the kind of daily decision-making that does its best with the information at hand, which often is incomplete.

For example

Premise	When it rains the lawn gets wet
Premise	The lawn is wet this morning
Conclusion	It must have rained last night.

However unlike deductive logic, in abductive logic, there may be many reasons that explain our observations.

Activity 2.2 - Reasoning

Below you find a number of statements. From these statements you will need to:

1. Develop a conclusion
2. Decide whether you used deductive, inductive or abductive reasoning to reach your conclusion.
3. Explain your reasoning

Statements:

1. Groups within Purpleana are known to fund terrorist activities.
2. Purpleana has widespread cultivation and export of opium.
3. Proceeds of opium cultivation are often used to fund terrorist activities.
4. There is known terrorist activity in Pinkova.
5. Purpleana and Pinkova have strong links.

Conclusion

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Reasoning

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6. Cognitive biases

In recent times, the limits of philosophy were recognized by extensive scientific research into how people make decisions and how the analytical process is biased in significant ways.

The notion of cognitive biases was first introduced by Amos Tversky and Daniel Kahneman in 1972.

After a decade of research, they demonstrated that human judgement differs considerably from what can be thought of as the rational decision maker.

In what was called "Rational Choice Theory", they explained that our tendency to make decisions based only on partial and distorted information is due to our use of what are called *heuristics*.

Heuristics are simple rules that we use in order to quickly make adaptive decisions in response to fairly complex situations.

Unfortunately, by their very nature, simple rules lead us to make systematic errors about what we perceive, what we consider as relevant information, and how we put information together to reach a conclusion.

Kahneman received the Nobel Prize in the mid-1970's for this work and its application to what became know as behavioural economics.

Applications of the study of decision-making

The study of decision-making has, over the years, been applied to many areas such as: economics, political science, and medicine.

In the area of intelligence analysis, one of the most widely known works on the topic of decision-making is the book, *The Psychology of Intelligence Analysis,* by Richards Heuer, at the Center for the Study of Intelligence, Central Intelligence Agency

Hueur outlines many cognitive challenges facing analysts, but let's take two of his observations for now:

- The mind is poorly "wired" to deal effectively with both inherent uncertainty and induced uncertainty.
- Even increased awareness of cognitive and other "unmotivated" biases does little, by itself, to help analysts deal effectively with uncertainty.

In other words, cognitive biases are automatic and innate to how we think. When they affect our assumptions, cognitive biases may lead to perceptual illusions.

***The Psychology of Intelligence Analysis,* by Richards Heuer**
https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/books-and-monographs/psychology-of-intelligence-analysis/index.html

7. Nature of bias

As extensive as the evidence and our understanding of the phenomenon might be, we can't do very much to prevent cognitive biases from occurring. Biases are automatic. They are, on the bright side, critical to our daily survival.

For example, the clarity of an object affects how far away we think it is. We assume that blurred objects seem further away than clear objects.

Both squares shown below are exactly the same size and are, of course, the exact same distance away from you, but the blurry one appears more distant.

Perceptual illusions

In general, we go through life making correct judgments about the physical reality around us, but occasionally our assumptions are incorrect.

These are called **perceptual illusions** and involve an apparently inexplicable discrepancy between the appearance of a stimulus and its physical reality. Perception dynamically interprets what we see in order to make sense of it. It uses our past experience and expectations.

a) Cognitive Biases

Cognitive biases are similar to optical illusions in that the error remains compelling even when you are fully aware of its nature. What we think is happening is not necessarily true, no matter how we try to compensate. No amount of awareness or introspection can prevent cognitive biases from introducing systematic errors into our analyses and judgments.

One aspect of this is that **past experience and expectations** play a key role, because they create context that leads us to select certain hypotheses over others.

b) Salient bias

Salience generally means something that is conspicuous or striking.

We are hardwired to filter sensory information based on the saliency of the stimuli, in the following order:

- Loud sounds
- Bright lights
- Motion
- Spatial position

This means that people are biased toward salient information, even if such cues contain less real information.

c) Confirmation bias

Confirmation bias refers to the fact that changing or disproving a hypothesis or belief, requires greater thinking effort than maintaining or proving the same hypothesis or belief. It is harder to deal with negative information than positive information. This leads to situations commonly called "self-fulfilling prophesies" for example, where the analyst unconsciously seeks out information that supports their thinking.

d) Misperception of cause and effect

Often people assume that if two events occur at the same time, then one has caused the other. We often assume things are linked because we have a need for order, coherence and predictability. It means that we don't have to think.

e) Likelihood of events

Things that will effect our predictions of the likelihood of an event are the **availability of examples** of that event and the **knowledge** of one factor that influences decisions.

People predict things such as the frequency of an event, or a proportion within a population, based on how easily an example can be brought to mind.

Essentially, availability operates on the notion that "if you can think of it, it must be important." Media coverage can help fuel a person's example bias with widespread and extensive coverage of unusual events, such as homicide or airline accidents, and less coverage of more routine, less sensational events, such as common diseases or car accidents.

***For example**, a person argues that cigarette smoking is not unhealthy, because his grandfather smoked three packs of cigarettes a day and lived to be 100. The grandfather's health could simply have been an unusual case that does not speak to the health of smokers, in general.*

f) Anchoring

Anchoring means that you have a tendency to rely too heavily, or "anchor," on one trait or piece of information when making decisions.

During normal decision-making, anchoring occurs when individuals overly rely on a specific piece of information to govern their thought-process. Once the anchor is set, there is a bias toward adjusting or interpreting other information to reflect the "anchored" information.

Through this cognitive bias, the first information learned about a subject such as information learned at an early age, can affect future decision-making and information analysis.

For example, *as a person seeks to buy a used car, he or she may focus excessively on the odometer reading and model year of the car, and use those criteria as bases for evaluating the value of the car, rather than considering how well the engine has been maintained.*

g) Group effect

Group effect occurs when group members try to minimize conflict and reach a consensus decision without critical evaluation of alternative ideas or viewpoints.

h) Schema-based processing

Schemas are filters for interpreting information.

Intelligence analysts use schemas about threats in deciding whether the information they receive is a source of concern. It is important to realise that most of the information is noise, subject to many interpretations.

i) Confidence in our judgements

The level of confidence on our decisions can affect the outcome or accuracy of our decisions.

The **overconfidence effect** is a well-established bias in which someone's subjective *confidence* in their judgments is reliably greater than the judgements' objective *accuracy*, especially when confidence is relatively high.

Confidence often means that you are unable to adapt to changes in performance.

8. Assumptions

Other influences on our decision making processes are assumptions that we may make.

An assumption is a statement accepted or supposed as true without proof or demonstration; an often unstated belief.

All human thought and experience is based on assumptions. Our thoughts must begin with something we take to be true in a particular context.

We are typically unaware of what we assume and therefore rarely question our assumptions. Much of what is wrong with human thought can be found in the uncritical or unexamined assumptions that underlie it. Of course, we recognize people we disagree with as having a point of view, but do we acknowledge our own? For this reason, assumptions have been characterized, as "the fog through which information is interpreted to arrive at …a conclusion."

One of the key characteristics of critical thinking is the on-going sense that, as humans, we always think within a perspective, that we virtually never experience things totally and absolutely. We need to think so as to be aware of our assumptions.

People often equate making assumptions with making false assumptions. When people say, "Don't assume", this is what they mean. In fact, we cannot avoid making assumptions and some are justifiable. Rather than saying "*Never assume*", we say, "*Be aware of the assumptions you make, and be ready to examine and evaluate them*."

Critical thinkers can and do make their assumptions explicit, they assess them, and correct them. As analysts we assess our facts for validity and reliability and it is just as important to assess our assumptions.

In truth, unacknowledged initial assumptions often negatively affect our gathering of facts.

Key assumption check list

A Key Assumptions Check is a most useful tool at the beginning of an analytic project, when an hour or two can be instrumental in ensuring that the impending assessment does not rest on flawed premises. However, rechecking assumptions can also be valuable at any time prior to finalising one's judgements.

The activity requires the analyst to consider how their analysis depends on the validity of certain assumptions, which they do not routinely question or believe to be in doubt.

A four step process can help with this challenge:

1. Review what the current analytic line on the issue appears to be; write it down.
2. Identify and articulate all the assumptions that are accepted as true for this analytic line to be valid, whether or not you intend to state them in your finished intelligence.
3. Challenge each assumption, probing why it "must" be true and whether it remains valid under all conditions.

   The following questions will help in this regard:

   - How much confidence exists that this assumption is correct?

- What explains the degree of confidence in this assumption?
- Is this key assumption more likely a key uncertainty or key factor?
- Could this assumption have been true in the past, but not now?
- If this assumption proves to be wrong, would the analytic line be significantly impacted?
- Has this process identified new variables that need further analysis?

4. Refine the list of key assumptions to contain only those that "must be true" to sustain the analytic line; consider under what conditions or in the face of what information any of these assumptions might not hold.

   Identifying hidden assumptions can be one of the most difficult challenges an analyst faces, as they are ideas held, often unconsciously, to be true and are therefore seldom examined and almost never challenged.

   It is often difficult for an analyst to identify his or her own assumptions. Accordingly, this technique works better when others are involved.

Activity 2.3 – Assumptions – The story of Billy and Tom

You have 10 minutes to read the text and individually answer the true or false questions. As you answer each of the questions, think about each of the steps in the key assumption check list.

Billy and Tom were lifelong friends. Everything they did was with the other in mind. They had even considered going into the ministry together, but had decided against it at the last minute.

Both were happy with the way things had worked out for them in the army. They had joined on the "buddy system" to insure that they could stay together, and that their friendship would continue. Currently, they were stationed at Camp Bingo, a minor supply base in a war zone, miles away from enemy action.

Things couldn't have been more perfect for the two of them.

One day while the two were on a routine patrol just outside the camp, an enemy soldier suddenly appeared in the bushes and opened fire. At least one of the bullets hit Billy.

Seeing Billy fall, Tom turned just in time to witness the sniper run off. Tom raised his rifle and took aim. He pulled the trigger, but there was no shot. His rifle had jammed. In an instant, he was in pursuit.

Moments later, he spotted the sniper who lay writhing in pain on the ground. The sniper had fallen after breaking a leg when he tripped on a prominent tree root overgrown with weeds. As Tom approached, the sniper began to yell, "I surrender! I surrender!"

Tom glanced over his shoulder in Billy's direction, then approached the sniper.

	Statements about the story
	1. Billy and Tom had been friends all of their lives.
	2. Both had doubts about their religious beliefs.
	3. The sniper spoke English well.
	4. Tom and Billy graduated high school together.
	5. When the sniper opened fire, Billy and Tom were side by side.
	6. Tom walked with a limp.
	7. In his anger over Billy's death, Tom wanted to kill the sniper with his bare hands.
	8. Tom and Billy were unhappy in the Army.
	9. Had the sniper not lost his rifle when he tripped, he would not have wanted to surrender.
	10. Tom cleaned his rifle regularly.
	11. Camp Bingo was not in the United States.
	12. Camp Bingo was a dangerous place.
	13. The sniper was working alone.
	14. Another member of Billy and Tom's patrol stopped the sniper by shooting him as he was running off.
	15. Tom approached the sniper as he lay writhing in pain on the ground.

9. Reducing the risk of mindsets, biases and assumptions

The best approach to reducing the risk of mindsets, biases and assumptions is through critical thinking and structured analytic techniques.

Challenges for the Analyst

Richards J. Heuer, in ***The Psychology of Intelligence Analysis***, makes some fundamental points about the cognitive challenges intelligence analysts face:

1. The mind is poorly "wired" to deal effectively with both inherent uncertainty (the natural fog surrounding complex, indeterminate intelligence issues) and induced uncertainty (the man-made fog fabricated by denial and deception operations).

2. Even increased awareness of cognitive and other "unmotivated" biases, such as the tendency to see information confirming an already-held judgment more vividly than one sees "disconfirming" information, does little by itself to help analysts deal effectively with uncertainty.

3. Tools and techniques that gear the analyst's mind to apply higher levels of critical thinking can substantially improve analysis on complex issues on which information is incomplete, ambiguous, and often deliberately distorted.

   Key examples of such intellectual devices include techniques for structuring information, challenging assumptions, and exploring alternative interpretations.

a) Critical thinking

Critical thinking is:

- Careful examination of the thinking process, itself
- Going beyond rote memory and simple knowledge
- Embracing the 'how?' and 'why?' forms of thinking

There is a great deal of academic literature on the nature and definition of "critical thinking," mostly in the fields of education and psychology, and it seems that every author has his or her own twist on them. You might do some further reading to try to get a fuller understanding on the topic.

Definition

Critical thinking is making sense of the world by carefully examining the thinking process, itself, to clarify and improve our understanding.

Critical thinking goes beyond rote memory and simple knowledge, and encourages the 'how?' and 'why?' forms of thinking.

Components of critical thinking

According to one author, there are four main components of critical thinking:

1. Identifying and challenging assumptions is central to it;
2. Challenging the importance of context is crucial;
3. Critical thinkers try to imagine and explore alternatives;
4. Imagining and exploring alternatives leads to **reflective** skepticism.

Note this last one – it is relatively easy to be skeptical of others' thoughts and ideas. It is much more difficult to be skeptical of one's own thoughts and ideas. Nevertheless, it is very important to maintain a level of reflective skepticism, to keep ourselves on the right track. **[Brookfield, S. Developing critical thinkers: Challenging Adults to Explore Alternative Ways of Thinking and Acting, 1987]**

The same author identified a number of aspects of critical thinking, four of which are:

- **Critical thinking is a process, not an outcome** – as with the other things we do, the activity, itself, is not the goal, but its effective results are
- Manifestations of critical thinking vary according to the contexts in which it occurs – there is **no "one size or way fits all"**
- Critical thinking is a positive and productive activity – the word "critical" is very definitely used in a most constructive way; the intent is certainly not to break our thinking into unusable bits, but to help us clearly see what its composed of;
- Critical thinking is emotive, as well as rational – it involves values and feelings, and how those interact with our methodical thinking. **[Brookfield, S. Developing critical thinkers…, 1987]**

Emotions and critical thinking

The mind is like a rider atop an elephant.

The mind has been compared to a **rider atop an elephant**, where the rider is the rational, conscious mind and the elephant is the emotional, unconscious, automatic part of the mind.

It has also been likened the relationship between a **crocodile and crocodile wrestler**, where the crocodile is an image for our emotions. Crocodiles lie in wait, just beneath the surface of the water, just as intense feelings lie in wait just beneath the surface of our emotional masks.

The mind is like a person wrestling a crocodile!

Both crocodiles and emotions pounce suddenly, without warning, when their prey comes along. Emotions and crocodiles are primitive; aggressive throwbacks to an ancient, fierce time.

We need emotions. We cannot simply turn off emotion and live as logical cyborg-like beings. We could not exist solely with our rational mind. We would not know how to make decisions, tag events as dangerous or even which general direction to head in without emotion.

However, our emotions can only be of real benefit if they are balanced by a critically thinking rational consciousness.

What is critical thinking?

What do you think are the qualities of a critical thinker?

Which of these qualities would you expect of a strategic analyst?

Bloom's Taxonomy – Six levels of Cognition

Much of our current understanding of critical thinking originated with a taxonomy proposed in 1956, by a committee of educators led by Benjamin Bloom. Here you will see six levels or objectives necessary in critical thinking.

Firstly you must be able to remember or demonstrate knowledge of relevant information, then you must be able to demonstrate an understanding of the information so that it can be applied to solve problems.

It is not until you have been through these three stages that you can then effectively analyze, evaluate and create something that is meaningful.

Remember, analysis is the breakdown of information that is then assessed and evaluated and reconstructed to form an intelligence product.

A well cultivated critical thinker:

- raises vital questions and problems, formulating them clearly and precisely;
- gathers and assesses relevant information, using abstract ideas to interpret it effectively;
- comes to well-reasoned conclusions and solutions,
- thinks open-mindedly;
- communicates effectively with others to determine solutions to complex problems.

Critical thinking is a discipline, not a formula. There is no straightforward production line for strategic analysis – critical thinking helps us to overcome this challenge.

Critical thinkers distinguish the evidence or raw data upon which they base their interpretations or conclusions from the assumptions and the initial hypotheses that connect data to conclusions.

Uncritical thinkers find it difficult or even impossible to describe the evidence or experience without coloring that description with their interpretation.

We can say that critical thinking is the examination of one's purpose, problem, assumptions, concepts, empirical grounding, reasoning leading to conclusions, implications and consequences, alternative viewpoints, and frame of reference – the very things we've been discussing, so far, during this course.

Unfortunately, it **isn't** easy for most normal human beings to think critically and do good analysis, especially strategic analysis, right off the top of their heads. It actually takes considerable practice for most people to get it right.

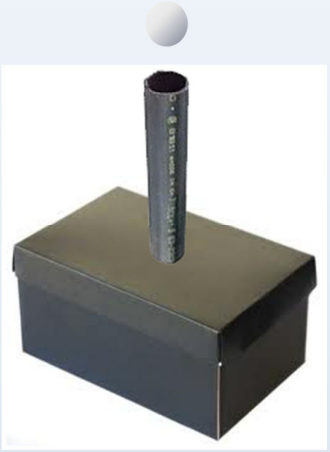
Simply following reporting formats and repeated formulas is no guarantee of a good product. In fact, doing so, without employing critical thinking, is more likely to result in the very challenges we discussed during the first part of this session.

Exercise 2.4 - The Bomb

Your task is to disarm a "pipe bomb".

The "explosive" to be removed is contained in a sphere the size of a ping-pong ball that rests at the bottom of a PVC pipe 10 inches in height and only a fraction wider than the explosive sphere.

The pipe stands erect and is embedded in a shoebox. The only way to disarm the bomb is by removing the sphere from the pipe.



As a group you have been given the following:

A paper bag containing –

- *sandwich*
- *lollipop*
- *chips*
- *spoon*
- *paper napkin*
- *small piece of string,*
- *rubber band*
- *paper clip*
- *clothes pin*

A standard sized sheet of paper with a warning NOT to risk detonating the "bomb" by turning it over or taking it apart

Using these materials you must disarm the bomb.

Notes:_____

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Strategic Analysis Course

Module 2

Introduction to critical thinking

1

Session Overview

- Mindsets and biases
- Critical Thinking
- Structured Analytic Techniques

2

Activity

2.1 Mindsets and biases

Be wary of what lies behind interpretations and the strong confidence we have in what we believe to be true

3

Mindsets...the *Achilles Heel* of Strategic Analysis

What are **mindsets?**

- Habitual or characteristic ways of interpreting or responding to information or situations

What is **cognitive bias?**

- Specific ways in which we tend to makes errors in judgment

Humans are not rational thinkers!!

4

Mindsets and Biases: In General

Philosophy of reasoning

- Deductive reasoning
- Inductive reasoning
- Abductive reasoning

Deductive reasoning

One or more general statements that are known, to reach a logical conclusion.

Example

Statement 1 – When it rains the lawn gets wet
Statement 2 – It rained last night
Conclusion – The lawn will be wet this morning.

Mindsets and Biases: In General

Inductive reasoning

Begins with observations that are specific and limited in scope, and proceeds to a generalized conclusion that is likely, but not certain.

Abductive reasoning

Typically begins with an incomplete set of observations and proceeds to the likeliest possible explanation.

For example

Premise – When it rains the lawn gets wet
Premise - The lawn is wet this morning
Conclusion - It must have rained last night.

Activity

2.2 Reasoning

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Video Exercise

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Mindsets and Biases: In General

Cognitive biases → Systematic errors in judgement

'Heuristics' Simple rules → Partial or distorted information → Conclusion

- Tversky & Kahneman (1972) → Nobel prize

Mindsets and Biases: In General

Applications:

- Economics, political science, medicine, military
- Intelligence analysis
  - Heuer's 1999, ***The Psychology of Intelligence Analysis***

Available electronically - CIA USA, library

https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/books-and-monographs/psychology-of-intelligence-analysis/index.html

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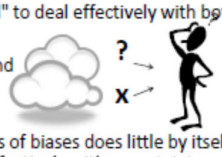
Mindsets and Biases

Richards Heuer said:

The mind is poorly "wired" to deal effectively with both

- inherent uncertainty and
- induced uncertainty



Even increased awareness of biases does little by itself to help analysts deal effectively with uncertainty.

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Mindsets and Biases: Nature of Bias

- Biases are automatic - not much we can do
- Critical to survival

Distance illusions

Clarity of an object —effect→ judgement of distance

Blurred objects → overestimation of distance

Clear objects → underestimation of distance

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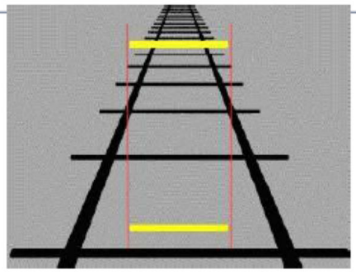
Mindsets and Biases: Nature of Bias



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Perceptual illusions

- Optical Illusions - discrepancy between visual appearance and physical reality
- Famous optical illusions: Muller-Lyer Illusion, Ponzo Illusion, Poggendorf Illusion, Upside-Down T Illusion, Zollner Illusion, the Ames Room, and Impossible Figures

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Mindsets and Biases: Nature of Bias

Biases are like optical illusions

- Awareness does not prevent it

Influences on bias -

- Past experiences and expectations
- Cultural differences affect biases

Western cultures more susceptible to Muller effect than non –Western cultures

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Mindsets and Biases: Examples of Bias

Salience bias

- We respond more to striking stimuli

Confirmation bias

- We tend to find information to support what we think

Misperception of cause and effect

- Just because two things often occur together does not mean that one causes the other.
- But often we do, because it is easier.

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Mindsets and Biases: Examples of Bias

Likelihood of events

- Availability of knowledge and examples
- Anchoring *eg on a specific piece of information*

Anchoring

- Reliance on one trait or piece of information

Group effects

- Coming up with consensus within a group to avoid conflict without critical thought

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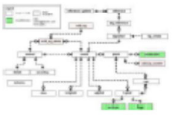
Mindsets and Biases: Examples of Bias

Schema-based processing



- Organised pattern of thought or behaviour
- System of organising and perceiving new information
- Most of the information is noise, subject to many interpretations
- Intelligence analysts use schemas about threats in deciding whether the information they receive is a source of concern

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Mindsets and Biases: Examples of Bias

Examples of schema

Pearl Harbour attack

Hitler attack

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Mindsets and Biases: Reinforcing the Obvious

Confidence effect

- Overconfidence effect

  Confidence fails to adapt to changes in performance

  Subjective confidence > objective accuracy

- Managing confidence through feedback
  - Needed right away
  - Must be useful
  - "Pat on the back" or "Not good enough" is not effective feedback

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Assumptions

Assumption

Statement that is accepted or supposed as true without proof or demonstration → 'Unstated Belief'

- Be aware of your assumptions
- Evaluate for validity and reliability

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Identifying and Challenging Assumptions

Key Assumptions Check

1. Review and articulate what the current analytic line appears to be.
2. Identify and articulate all relevant (key) assumptions.
3. Challenge each assumption.
4. Refine the list of key assumptions to contain only those that "must be true."

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Activity

2.3 Key assumption check list

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Reducing risk of mindsets, biases &assumptions

Apply critical thinking and structured analytical techniques

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Challenges for the analyst

Richards Heuer:

1. The mind is poorly "wired" to deal effectively with uncertainty (fog).
2. Increased awareness of biases does little to help.
3. **Critical thinking tools and techniques can substantially improve analysis on complex issues.**

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What is Critical Thinking?

- Careful examination of the thinking process, itself
- Going beyond rote memory and simple knowledge
- Embracing the 'how?' and 'why?' forms of thinking

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What is Critical Thinking?

Components of critical thinking

Identifying and challenging assumptions is central

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Challenging the importance of context

↓

Trying to imagine and explore alternatives

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Reflective skepticism

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What is Critical Thinking?

Aspects of critical thinking

- Critical thinking is a process, not an outcome
- Manifestations of critical thinking vary according to the contexts in which it occurs '*no one size fits all*'
- Critical thinking is a positive and productive activity
- Critical thinking is emotive, as well as rational

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Emotions and Critical Thinking

Rational conscious mind

The mind is like a rider atop and elephant

Intense feelings that lie in wait just below the surface of our emotional mask

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Critical Thinking

Question ?

What is critical thinking?

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Critical Thinking

Question ?

What do you think are the qualities of a critical thinker?

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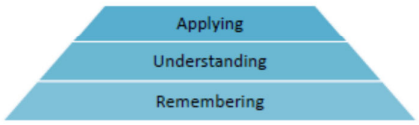
Bloom's Taxonomy – Six Levels of Cognition



Critical Thinking

...the intellectually disciplined process of actively and skilfully conceptualizing, applying, analyzing, synthesizing or evaluating information gathered from or generated by observation, experience, reflection, reasoning or communication.

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Critical Thinking

...the examination of purpose, problem, assumptions, concepts, empirical grounding, reasoning leading to conclusions, implications and consequences, alternative viewpoints, and frame of reference.

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Activity

SATs

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Activity

Disarm the Pipe bomb

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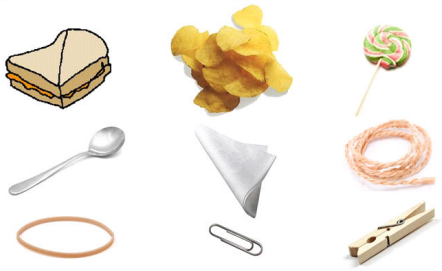
Activity - Pipe bomb

Activity - Pipe bomb

Activity - Pipe bomb

Activity - Pipe bomb



Activity - Pipe bomb

WARNING:
Do not turn this device over or try to take it apart!

Activity - Pipe bomb

WARNING:
Do not turn this device over or try to take it apart!

Questions

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