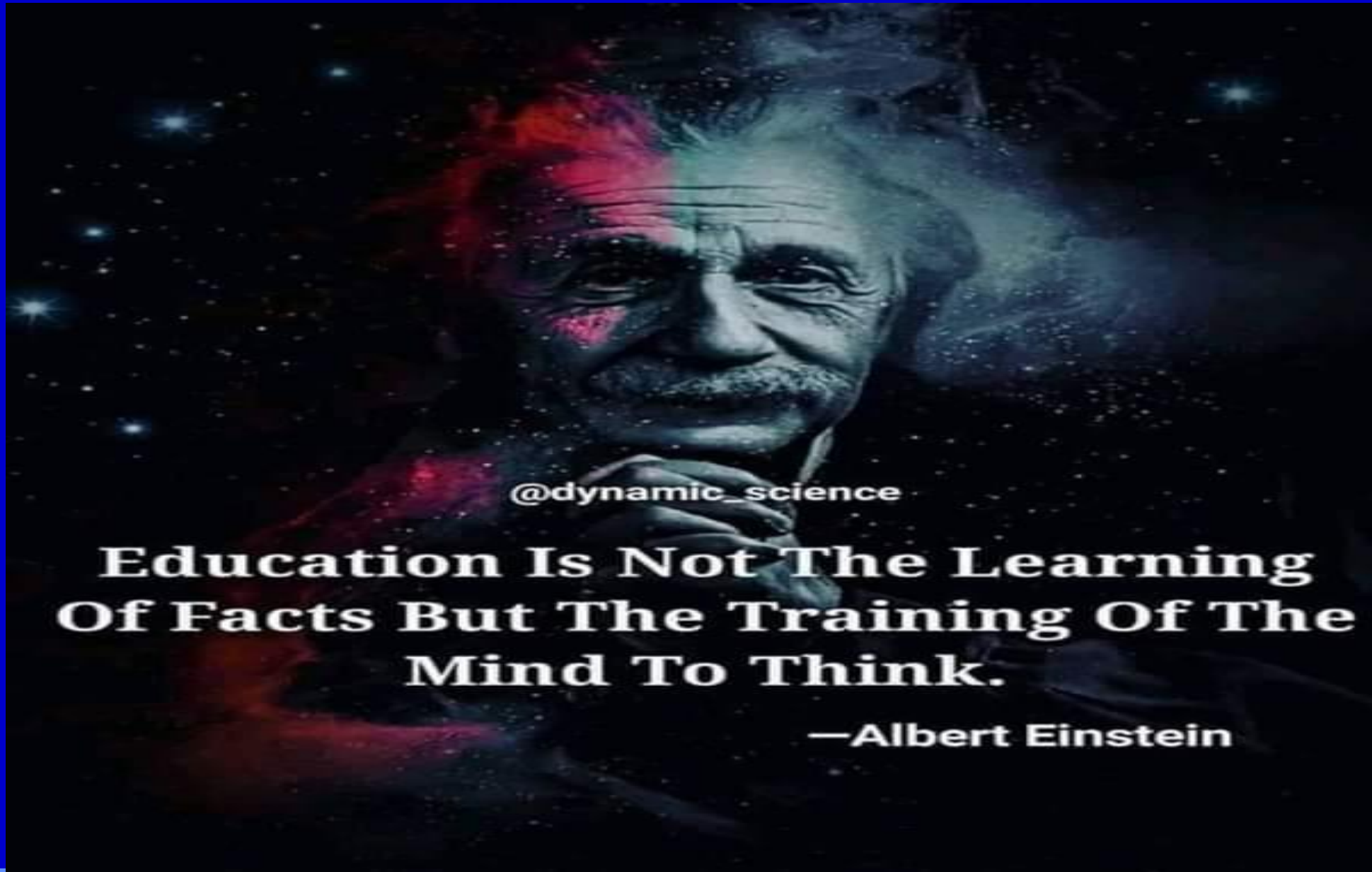




TOPIC

**INTRODUCTION TO CRITICAL
THINKING**





Automatic versus Controlled Processing

Imagine you were going to call your spouse to decide which of you was going to pick up the children from school.

How long would you prepare for that phone call?

Imagine you received an email from the COAS asking you to call him to discuss some comments you made at a briefing.

How long would you prepare for that phone call?



ELEMENTS OF THOUGHT

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.”**



CRITICAL THINKING





DEFINITIONS OF CRITICAL THINKING

➤ **Critical Thinking is a deliberate process of thought whose purpose is to discern truth in situations where direct observation is insufficient, impossible or impractical**

- ❑ **United States Army Publication, Planners Handbook for Operational Design**

➤ **Critical Thinking is the art of analyzing and evaluating thinking with a view to improving it.**

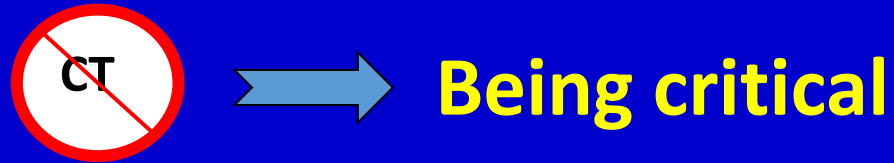
- ❑ **Foundation for Critical Thinking California USA**



DEFINITIONS OF CRITICAL THINKING

- **Critical Thinking is used to describe thinking that is purposeful reasoned and goal directed. (Diane Halpern)**
- **Methods of logical enquiry and reasoning**
- **Critical Thinking is the process of hunting down our assumptions with a view to checking their viability or suitability. (Stephen Brookfield)**

Critical Thinking



- Deliberate, conscious, and appropriate application of reflective skepticism (NOT cynicism)
- Purposeful, open-minded thinking with lots of self-awareness
- Identification and evaluation of evidence to guide decision making
- Both a set of skills and a habit of practice

- USAWC

CORE ELEMENTS OF CRITICAL THINKING

- **Communication.**
- **Analysis.**
- **Problem solving.**
- **Evaluation.**
- **Synthesis.**
- **Reflection.**



WHY CRITICAL THINKING

John F Kennedy 1917 - 1963

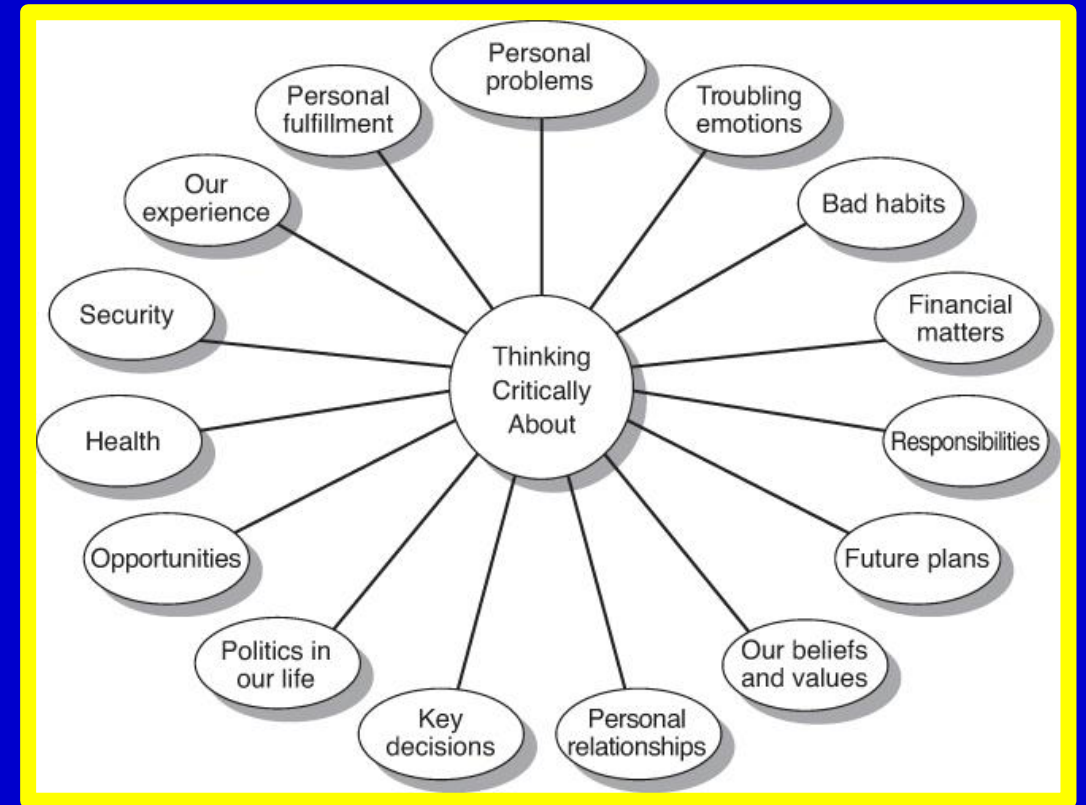
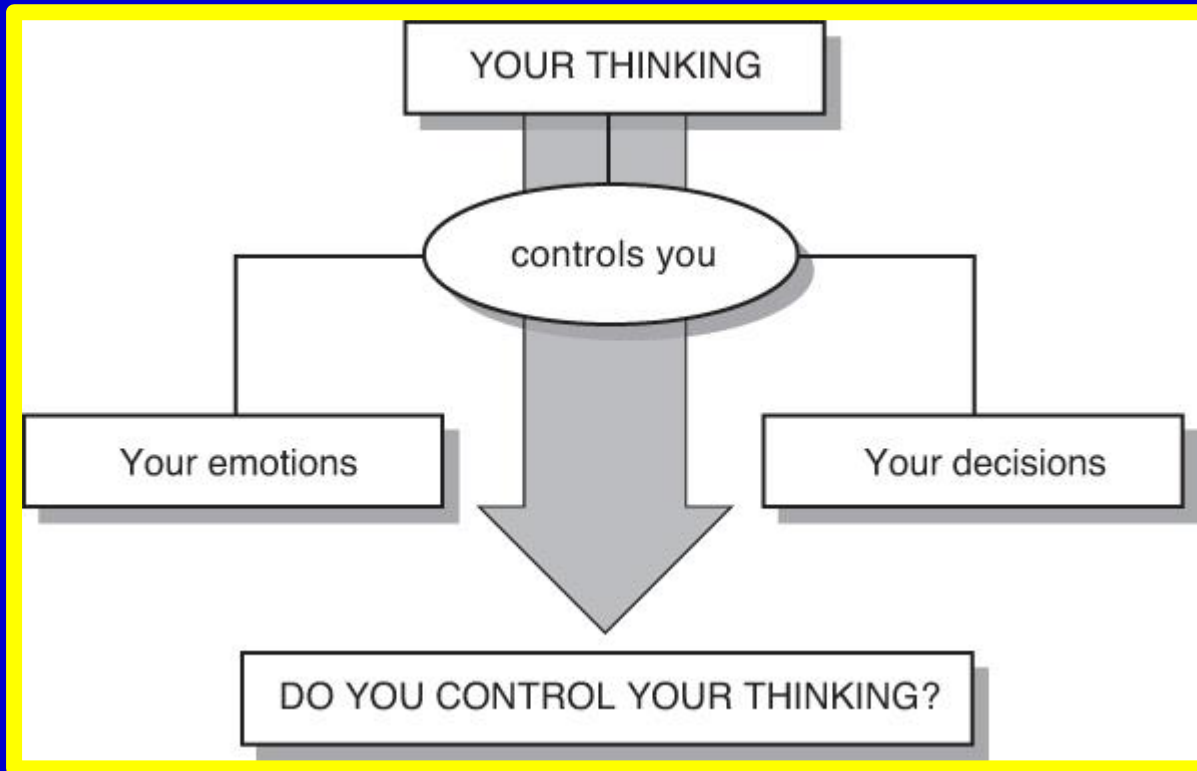
“Too often...

we enjoy the comfort of opinion
without the discomfort of thought.”



© Cranfield University

THE POWER OF YOUR THINKING

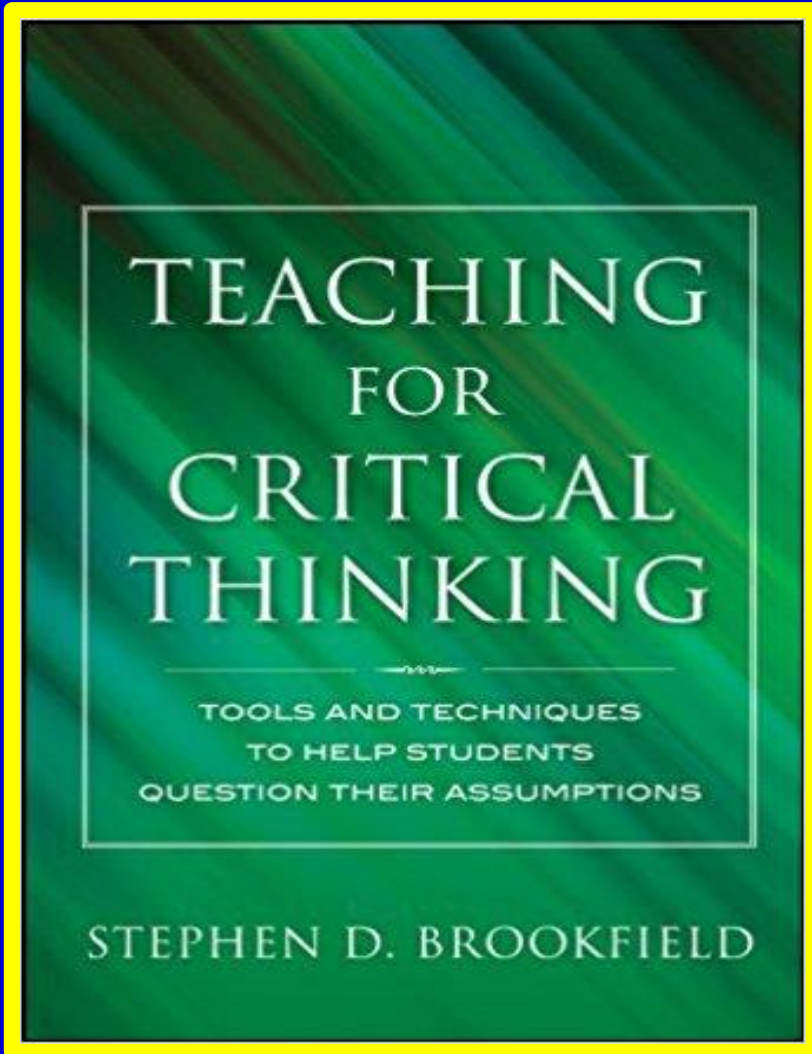




Why Critical Thinking?

- **Everyone thinks; it is our nature to do so. But much of our thinking, left to itself, is biased, distorted, partial, uninformed, or down-right prejudiced.**
- **Yet the quality of our lives and that of what we produce, make, or build depends precisely on the quality of our thought.**
- **Understanding is best gained through multiple perspectives.**

Why Critical Thinking?



WE DO CRITICAL THINKING SO WE CAN TAKE INFORMED ACTIONS - ACTIONS THAT ARE GROUNDED IN EVIDENCE CAN BE EXPLAINED TO OTHERS AND STANDS A GOOD CHANCE OF ACHIEVING THE RESULTS WE DESIRE

CRITICAL THINKING CAN'T BE UNDERSTOOD JUST AS A PROCESS OF MENTAL ANALYSIS; IT IS ALWAYS DONE FOR SOME WIDER PURPOSE (PROBLEM SOLVING)



TYPES OF PROBLEMS WE FACE

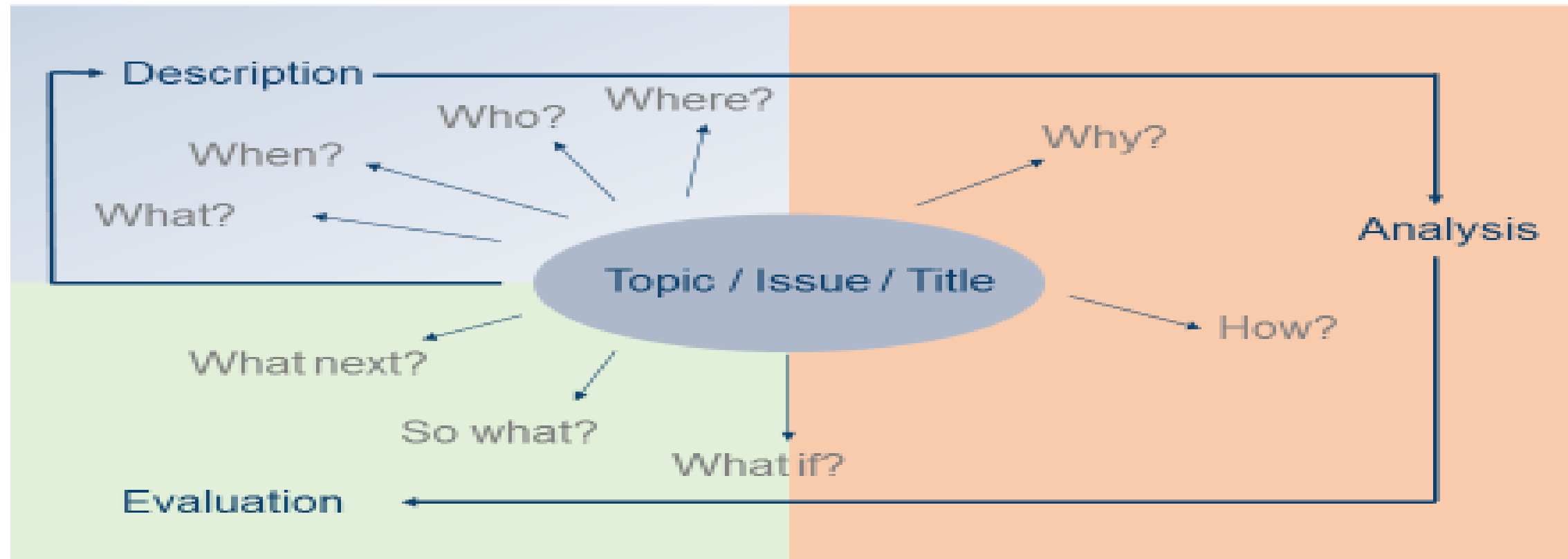
- **Tame problems. Require management actions and standard operating procedures**
- **Critical problems (crisis) require initiative, command and control**
- **Wicked problems (ill-structured problems). We need leadership and wide consultations. Chronic and complex in nature**



Questioning

Good questions are key to critical thinking. They are at the heart of critical thinking. Understanding is the key. So the right questions are those that aid our understanding the most.

Model to generate critical thinking



Model to Generate Critical Thinking (from Hilsdon, 2010, p.2)

Questions for sense-making

- What?
 - Who?
 - Where?
 - When?
- } Background information to contextualise a problem or a topic
- How?
 - Why?
- } Exploration of relationship between different/separate parts which form a whole.
- What if?
- } Possible alternatives
- So what?
 - What next?
- } Implications, solutions, conclusions and recommendations



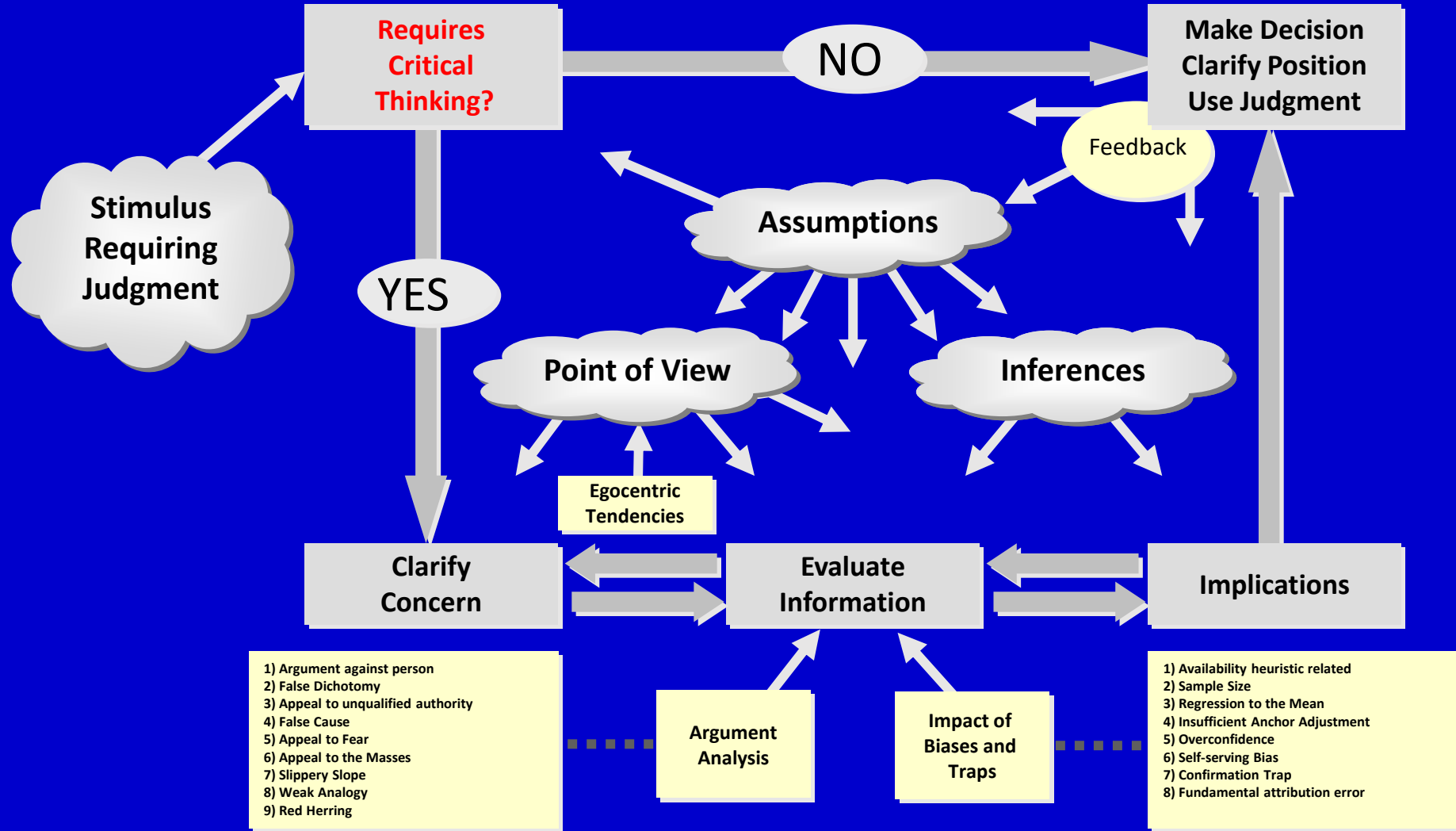
How Do You Develop Critical Thinking Skills?

- Create the need
 - perseverance
- Provide the basics
 - Critical Thinking knowledge
 - Self-awareness
- Apply and practice in structured environment

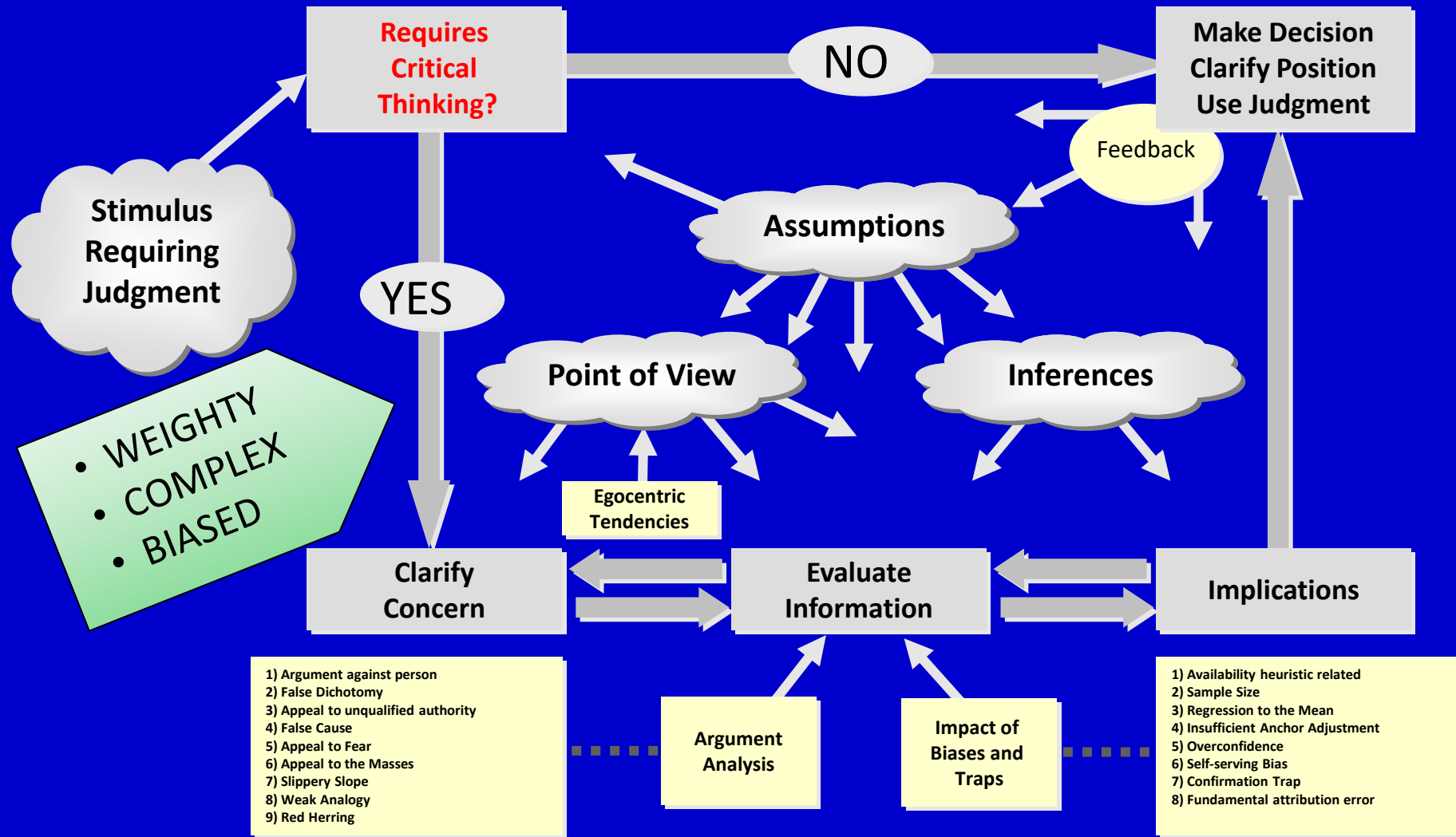


A CRITICAL THINKING MODEL

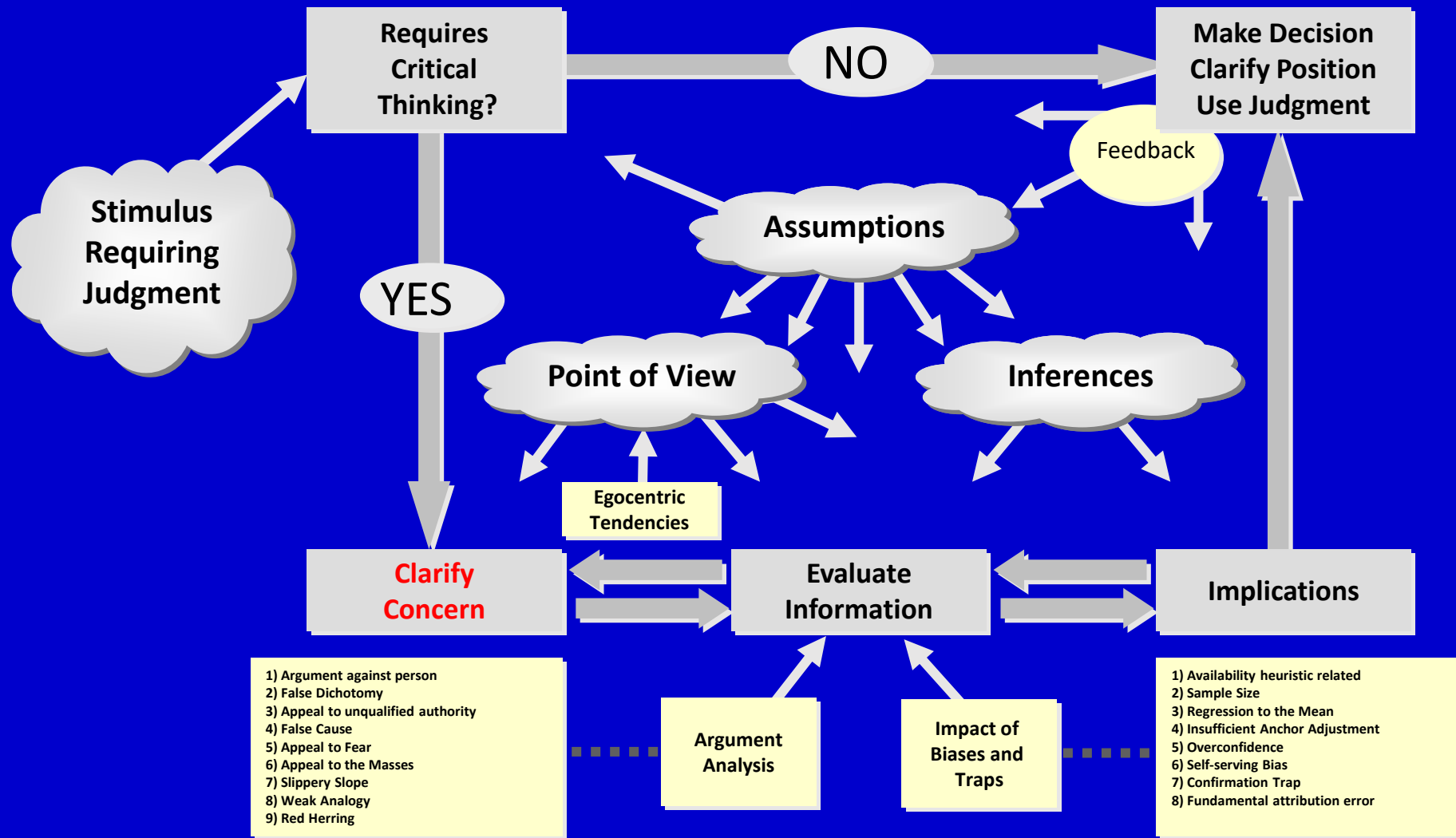
A CRITICAL THINKING MODEL



When should you apply Critical Thinking?



CRITICAL THINKING





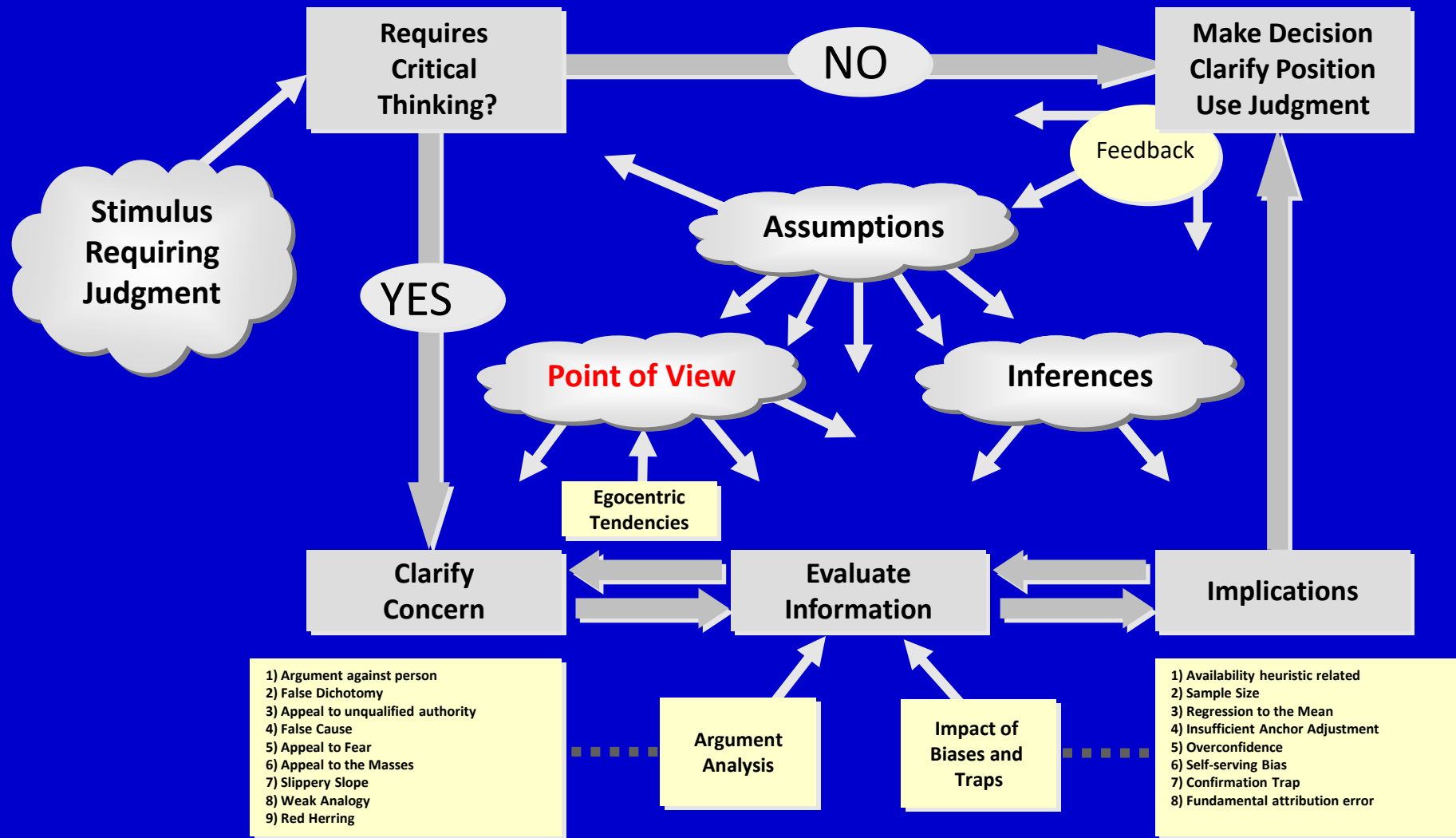
CLARIFY CONCERN

“People always come to me with solutions, but they haven’t really thought about the problem.”—GEN David G. Perkins

Questions to ask:

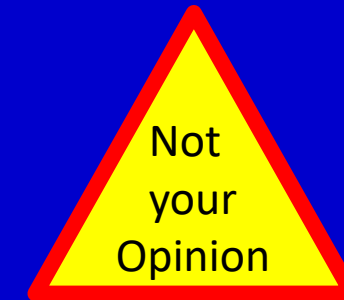
- What is my motivation for thinking about this?
- How is the issue defined and what are the sub-components?
- What problem am I trying to solve?
- How is the problem framed?
 - does the framing of the concern suggest the correct response?
- Am I addressing the root cause or merely what the root cause produced?
- Am I being proactive or just reactive?

CRITICAL THINKING



POINT OF VIEW

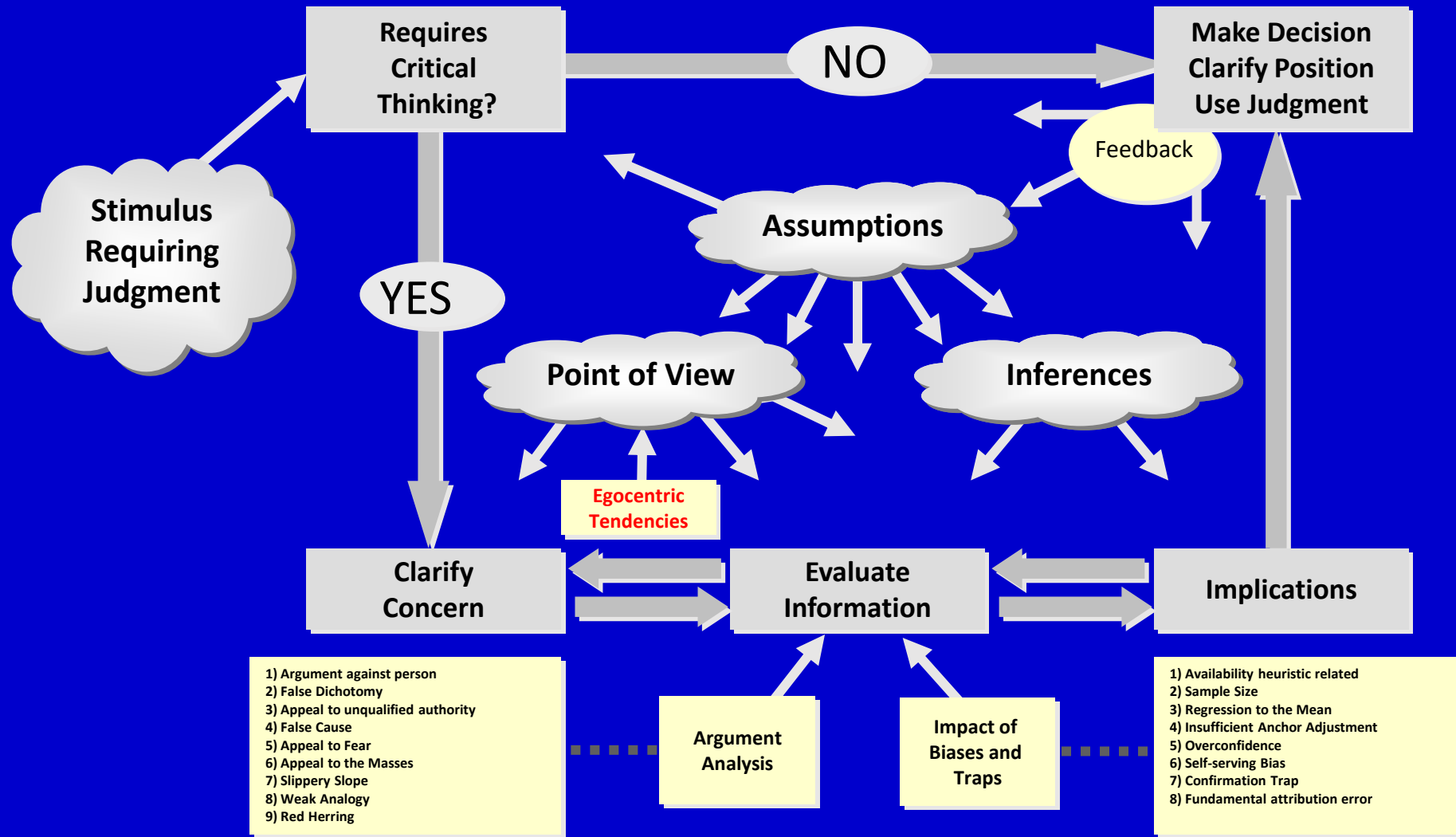
Assess the various Points of View



Questions to ask:

- What is my point of view or “angle” on this issue?
- What is the point of view of the person making the argument and what is the foundation of their position?
- What are other/opposing/relevant points of view?
- What is the impact of egocentric tendencies on my point of view and on others’?

CRITICAL THINKING

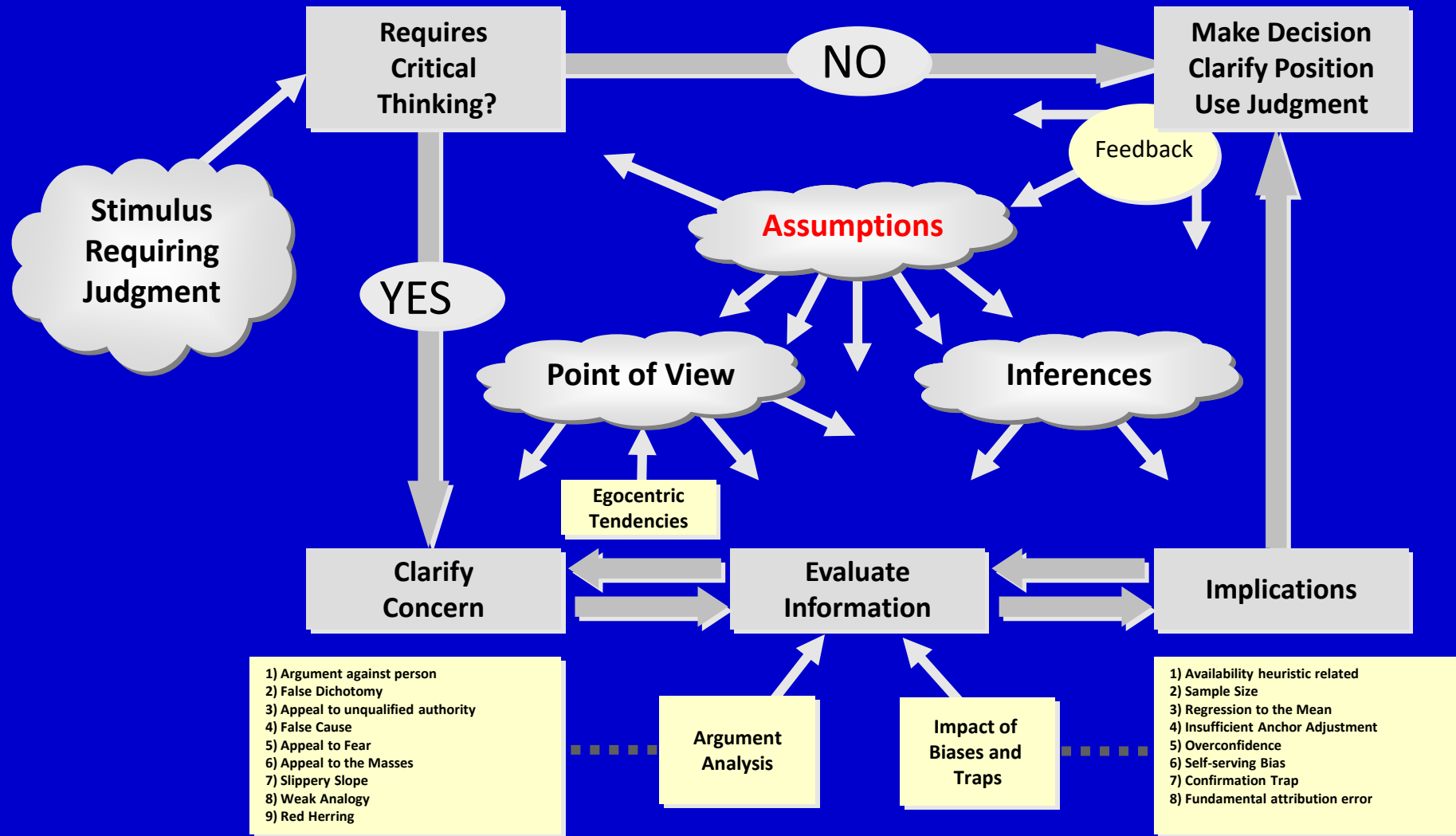




EGOCENTRISM

- What is it? Several definitions – they're all relevant
 - + Regarding oneself and one's own opinions or interests as most important
 - + Seeing the world from a narrow, self-serving perspective
 - + Holding to the belief that you've figured out how the world works and your view is correct
- Natural dispositions:
 - Egocentric memory
 - Egocentric righteousness
 - Egocentric myopia (i.e., short-sightedness)
 - Egocentric blindness

CRITICAL THINKING



ASSUMPTIONS

- Are the taken for granted beliefs about the world.
- Are unexamined beliefs.
- Things accepted as true or certain to happen, without proof.
- A hypothesis that is taken for granted.



ASSUMPTIONS

- **Assumptions are those aspects of our lives/concepts that we take for granted or we don't question. They provide a broad platform for interpreting the world around us**
- **They are not bad in themselves, but need to be interrogated in Critical Thinking**

ASSUMPTIONS

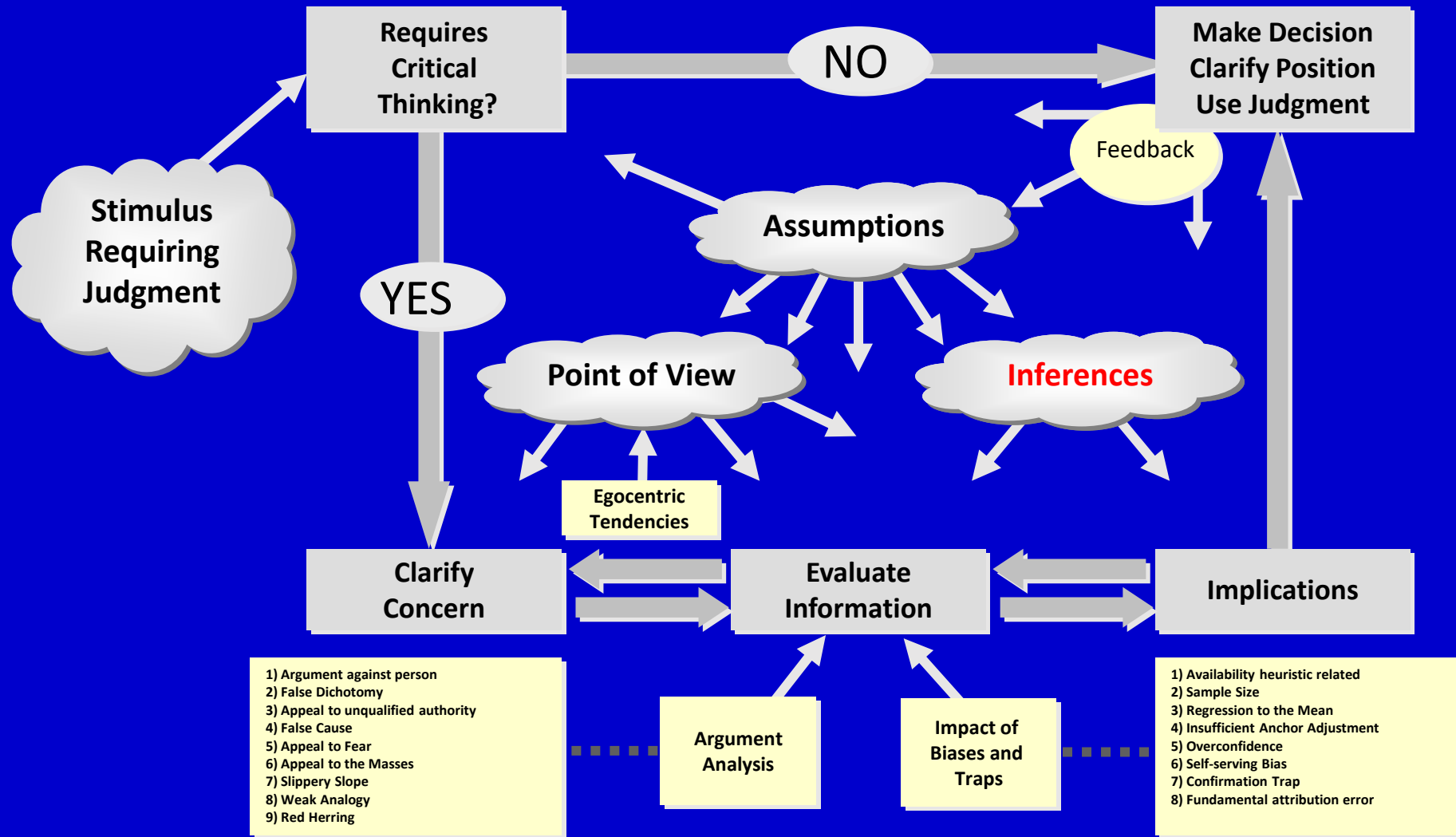
Clarify the relevant Assumptions (Yours AND Theirs)

- You tend not to question your own assumptions

Questions to ask:

- Are my assumptions clear to me?
- Can I fully justify what I am taking for granted?
 - challenge mental models
- Does the person presenting me information have valid assumptions?
- Do my assumptions about causality really make sense?

CRITICAL THINKING





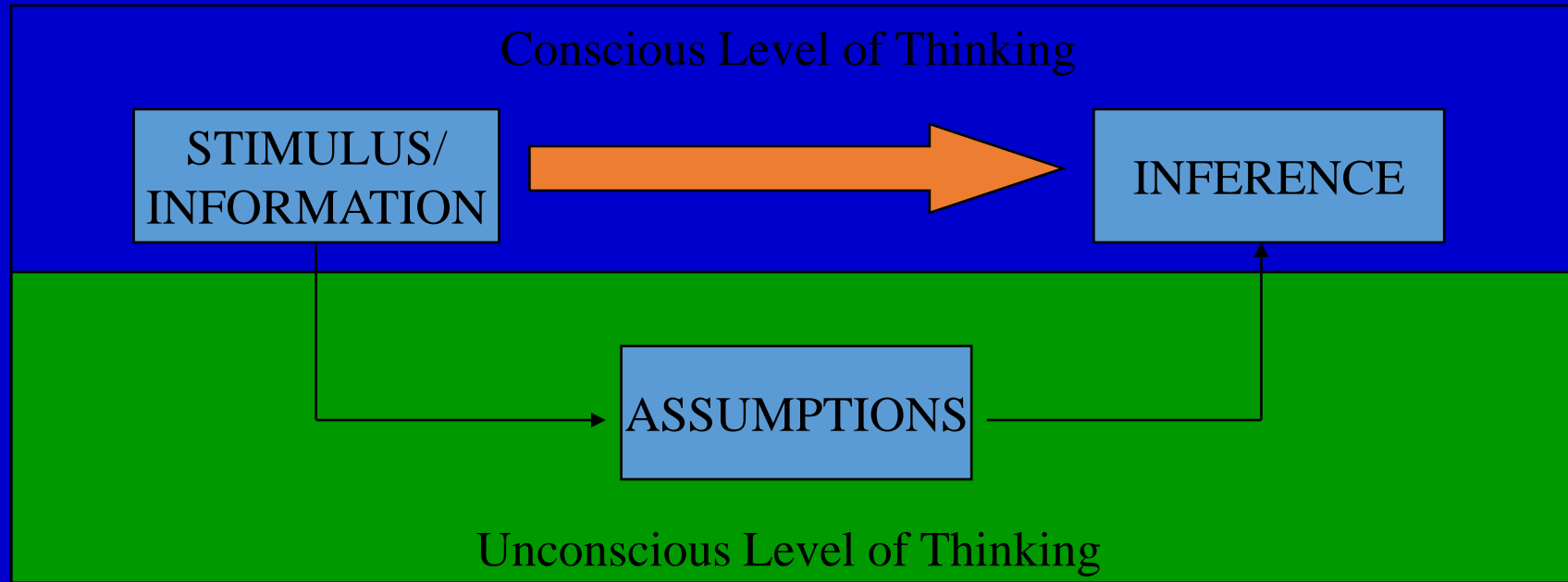
INFERENCES

Question Inferences

- **All communication requires the receiver to fill in gaps between given bits of information to understand the intended meaning.**
- **An inference is a “mental leap.”**
- **Things to ask:**
 - **Do my conclusions logically follow from the evidence?**
 - **Is my inference based on a faulty assumption?**
 - **What alternative inferences flow from the information and data?**



INFERENCES AND ASSUMPTIONS





INFERENCES (as they relate to Assumptions)

Observation

Inferences

Underlying Assumptions

At an important power point briefing you see several misspelled words on the presenter's slides

They're dumb.
They were in a hurry.
They're briefing someone's slides.

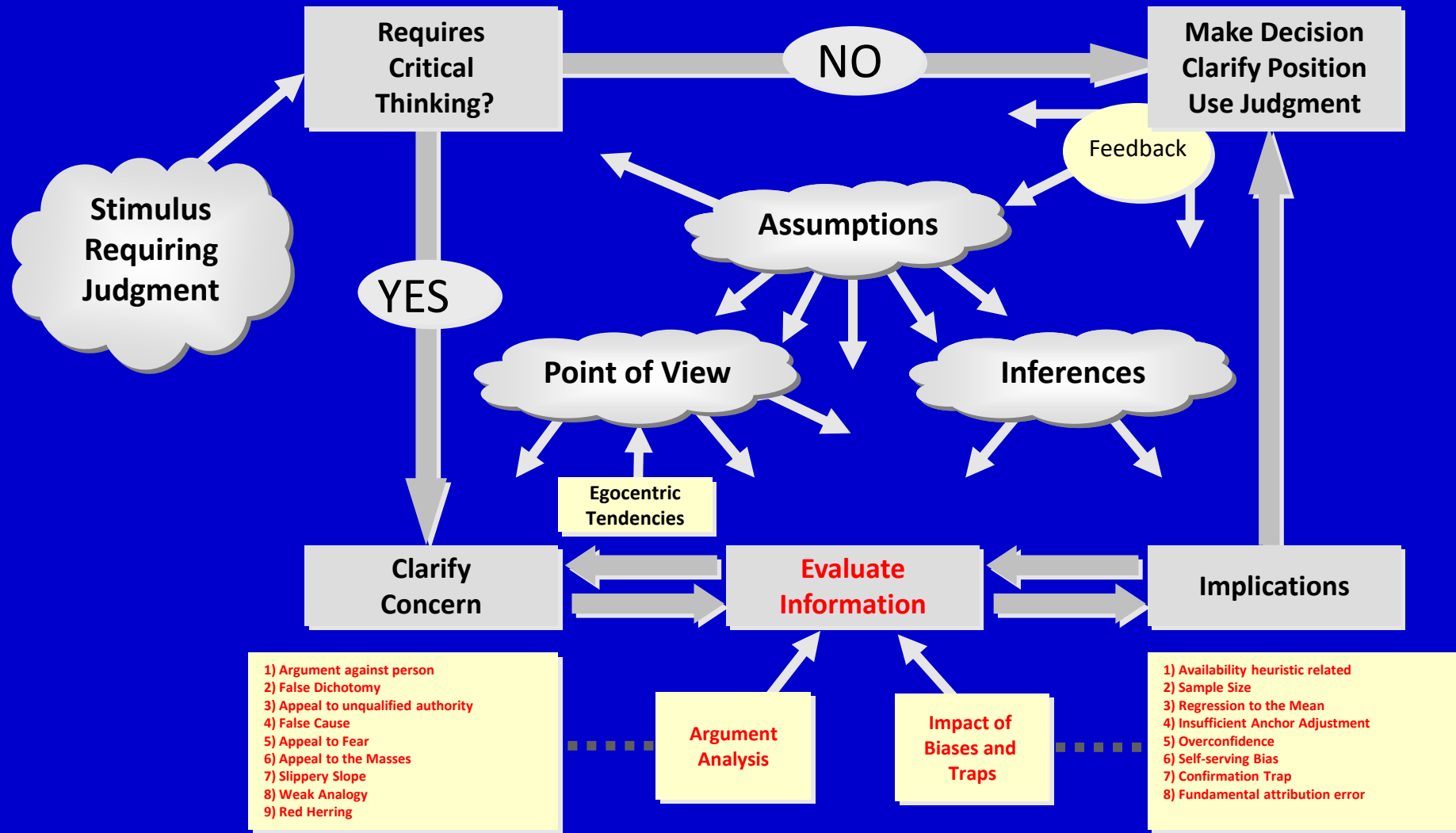
Smart people spell well.
People who have time proofread their slides.
Everyone proofreads their "own" slides.

You meet a married couple in their late 30s who say they don't have any children

They have fertility issues.
They're selfish.
They're smart.

Everyone wants kids
Unselfish people want kids
Teenagers are so much fun!!!

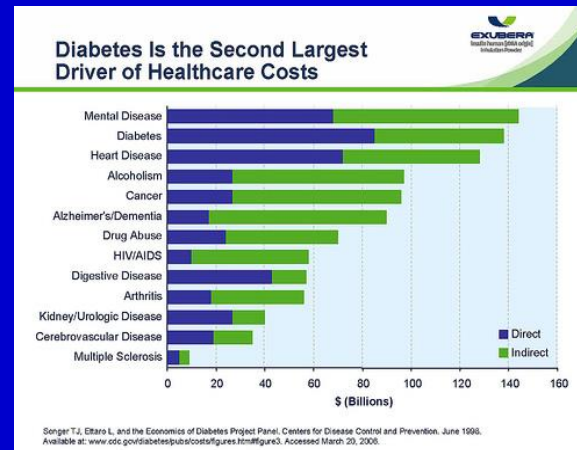
CRITICAL THINKING



EVALUATE INFORMATION

Things to consider:

- Heuristics and biases
- Logical fallacies



Microsoft Excel - S1 Scheduling

Macros for Multi-Week Schedules	Start Date for Monthly Schedule	Week Schedule Status
Create Week 1 Team Schedule	1	Done
Create Week 2 Team Schedule	8	Done
Create Week 3 Team Schedule	15	Done
Create Week 4 Team Schedule	22	Done
Create Week 5 Team Schedule	29	Done

Schedule for Week of: 29-Mar-2005

Employee Names are Ok	Max Hours per Week	This Week Scheduled Hours	Cumulative Scheduled Hours	Days Off	Shift Preference			Prior Week			
					D	S	N	Mon	Tue	Wed	
Smith, Chuck	40	40	176	Thu Fri	1						
Adams, Carol	40	40	184	Sun Mon	1						
Adams, Fox	40	40	184	Mon Sat	1						
Clark, Otto	40	40	176	Thu Fri		1		1			
Green, Ron	40	40	184	Sun Mon		1					
Green, Sally	40	40	168	Tue Wed			1		1		
Mason, Andy	40	40	176	Thu Sat				1		1	
Mason, Hog	40	40	168	Tue Wed				1			1
Mason, Lou	8	8	40								
Mason, Val	8	8	32								



BIASES & HEURISTICS

Heuristics – Rules of thumb

Cognitive Bias – Inappropriately applying a heuristic during decision-making

Biases tend to originate from three common heuristics:

- **Availability:** If I remember it, it must happen a lot
- **Representative:** How does what I'm seeing look like something I've seen before?
- **Anchoring and Adjustment:** People make assessments by starting at an initial value and adjusting to get a final decision



BIASES

1. Emanating from availability heuristics
2. Sample size
3. Regression to the Mean
4. Insufficient Anchor Adjustment
5. Self Serving Bias
6. Confirmation Trap
7. Fundamental Attribution Error

Availability Heuristic

Individuals judge events that are more easily recalled from memory, based on vividness or recency, to be more numerous than events of equal frequency whose instances are less easily recalled.

Example: A supervisor doing a performance appraisal on two separate, and equally capable subordinates gives the subordinate who stood up and challenged the supervisor at the last departmental meeting a lower rating.





Sample Size

2) Representativeness Heuristic

- Sample Size – When assessing the reliability of sample information, individuals frequently fail to appreciate the role of sample size.

Example: The 1st Bn had three attempted suicides last month. There are 300 soldiers in the battalion. The 1% attempted suicide rate is 4 times the Army average and 10 times the national average. Clearly there's a problem in the 1st battalion.

One can be constantly amazed at how many important decisions are made in an organization based on inferences drawn from a sample size of 1.



Representativeness Heuristic

Regression to the Mean – Individuals tend to ignore the fact that extreme events tend to regress to the mean on subsequent trials.

Example: A battalion leads the Division in DUIs for three consecutive months preceding the battalion change of command. In the first month of the new commander, the battalion has a DUI rate lower than the Division average. The Division Commander is impressed with the performance of the new commander.



Anchoring and Adjustment Biases

Insufficient anchor adjustment – Individuals make estimates for values based upon an initial value (derived from past events, random assignments, or whatever information is available) and typically make insufficient adjustments from that anchor when establishing a final value.

Military personnel are masters at this bias. For a host of reasons, probably closely associated with constant personnel turnover and a lack of total knowledge about a specific job, military personnel base estimates “on last year’s numbers.” Whether we’re talking about a unit’s budget, how long a war will take, or how many casualties we’ll have, we use our previous numbers and experience as an anchor and adjust accordingly, rather than use current information to develop a value.



Overconfidence

5) Anchoring and Adjustment Biases

- Overconfidence – Individuals tend to be overconfident of their infallibility of their judgments when answering moderately to extremely difficult questions.

Example: When receiving a briefing from a subordinate and you ask him the probability of an event occurring, keep in the back of your mind that this probability is inflated. If the subordinate says, “sir, we have a 90% probability of the surge succeeding by September,” assume it’s more like 70% and you’ll be closer to reality.





Self-Serving Bias

6) Self-Serving Bias – We are more likely to attribute our successes to internal factors and our failures to external factors. When I asked my son why he did poorly on a test he'll tell me because the teacher asked questions that weren't in the book; if I ask him how come he received an "A", he'll say "because I'm smart."

In his book, *Good to Great*, Jim Collins looks at those factors that allow good companies to turn into great companies. Collins asserts that the leaders of the comparison companies (those that did not make the list of great companies) tend to "look out the window for something or someone outside themselves to blame for poor results, but would preen in front of the mirror and credit themselves when things went well." This is related to egocentric tendencies.





The Confirmation Trap

(7) General Biases

- The confirmation trap – Individuals tend to seek confirmatory information for what they think is true and fail to search for disconfirmatory evidence. People typically look for data that supports their position or decision, and negate information that disconfirms it.

This is even more of an issue in the military, with its rigid authority structure, where subordinates tend to give the boss stuff to make him/her happy.

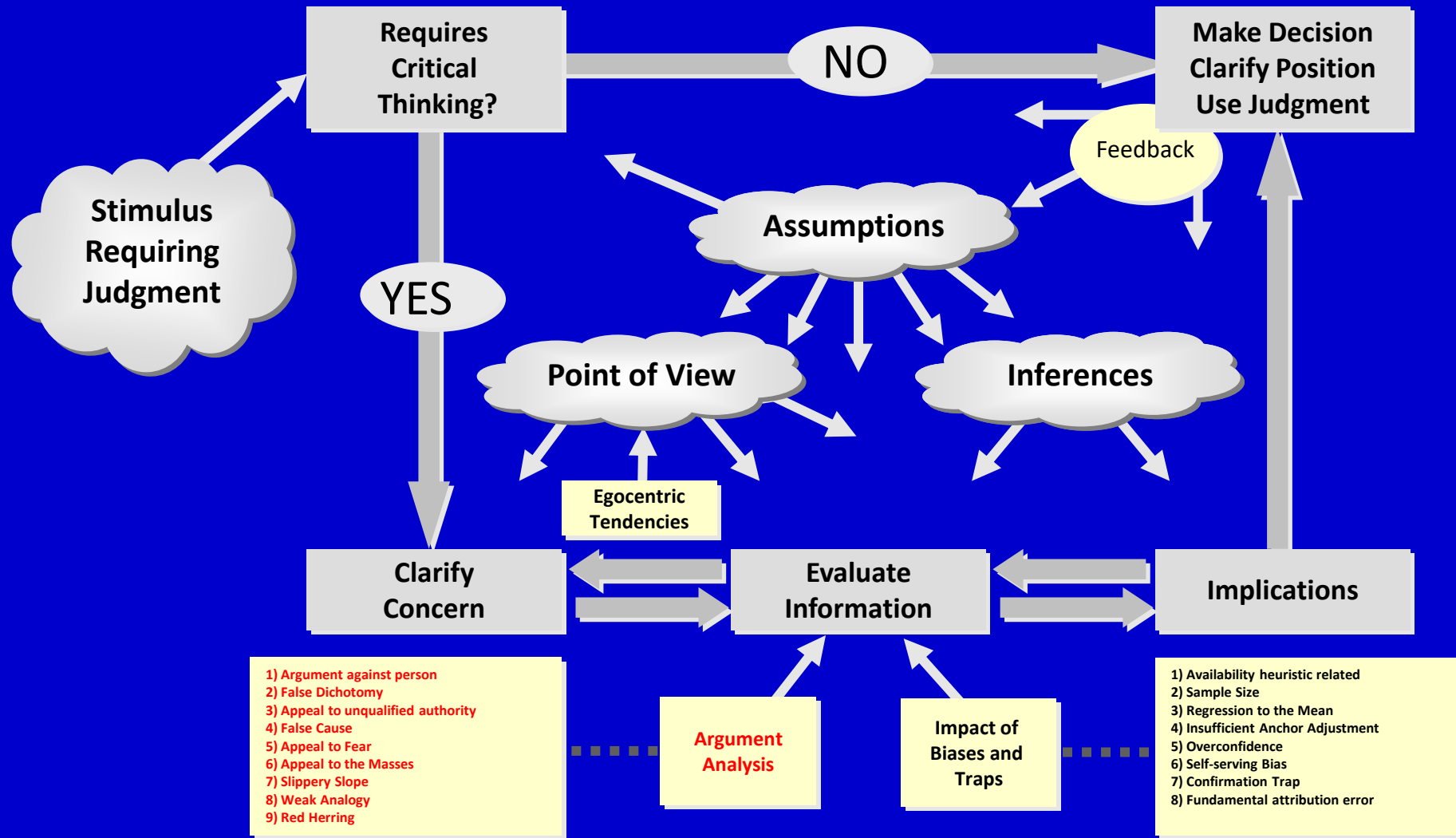


Fundamental Attribution Error

8) Fundamental Attribution Error – people tend to have a default assumption that what a person does is based more on what "kind" of person he is, rather than the social and environmental forces at work on that person. When a soldier comes late to work, our first thought is “that individual doesn’t care/ is incompetent, etc.” when in fact they could have a perfectly acceptable reason for being late. Attribution Theory provides a model to help evaluate attribution.



CRITICAL THINKING





LOGICAL FALLACIES IN ARGUMENT ANALYSIS

Logical Fallacies: Unsound reasoning techniques used for the purpose of persuasion.

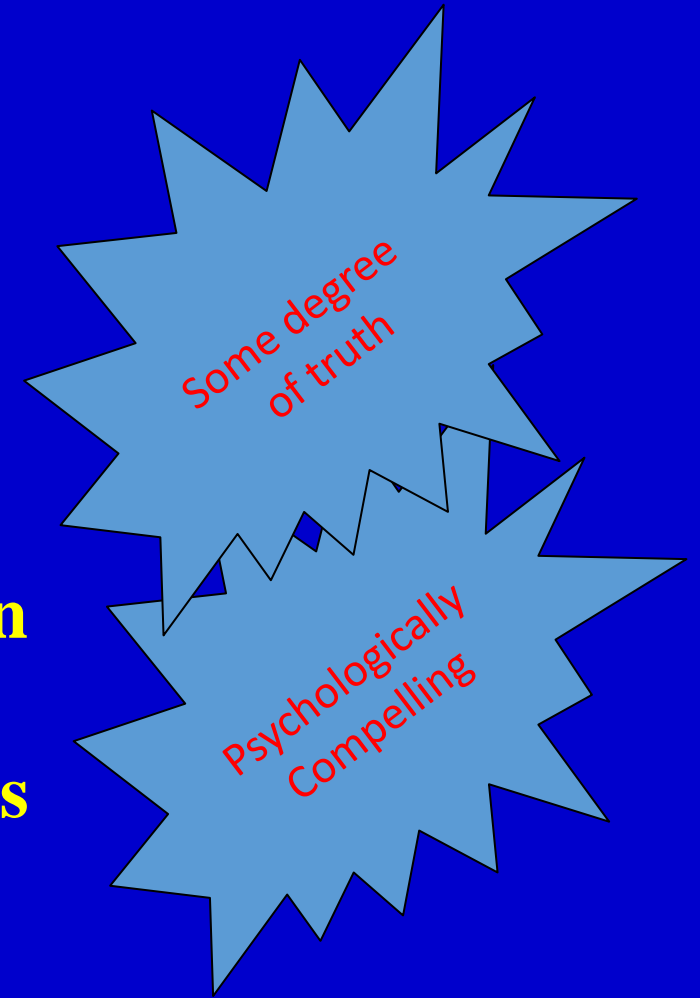
Examples include:

1. Argument Against Person
2. False Dichotomy
3. Appeal to Unqualified Authority
4. False Cause
5. Appeal to Fear
6. Appeal to the Masses
7. Slippery Slope
8. Weak Analogy
9. Red Herring

LOGICAL FALLACIES

Why do we commit or get persuaded by fallacies?

1. Lack of knowledge
2. Careless mental posture/emotional disposition
3. Worldview/egocentric/ethnocentric tendencies



Ad Hominem

Fallacy: Arguments against the person (ad hominem). The person is attacked instead of their position/argument.

Abusive: “his positions on global warming are from outer space. He’s a typical left-wing liberal hippie.”

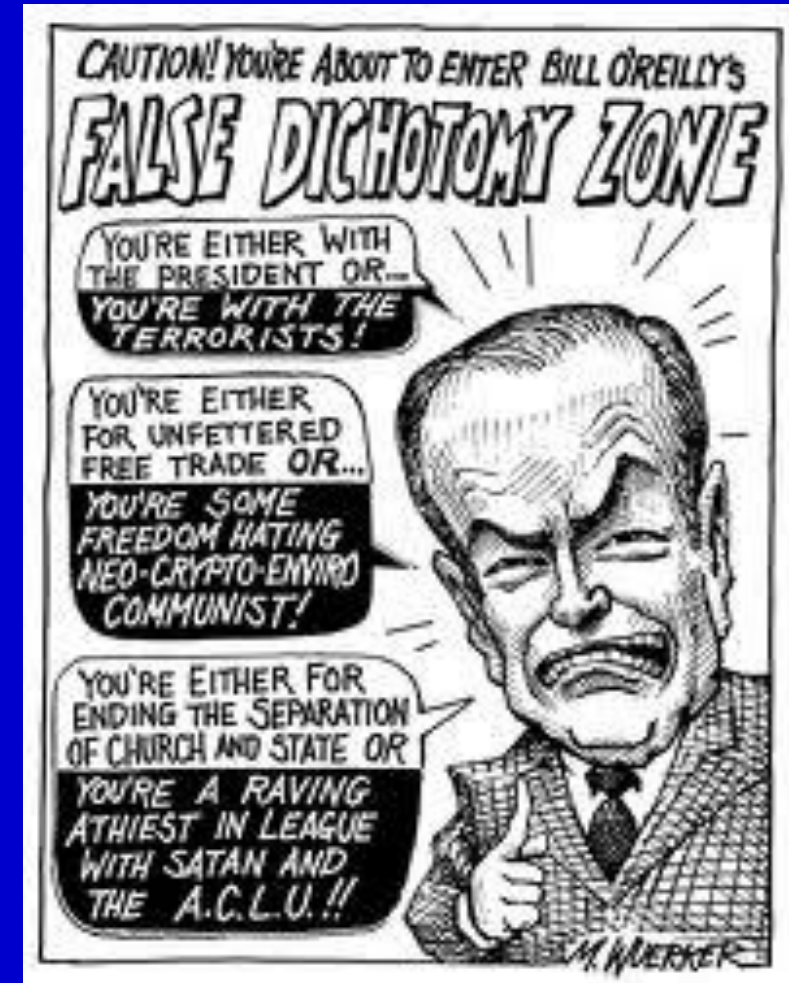
Circumstantial: “what would you expect from that guy, he writes for the New York Times.”

False Dichotomy

* **Fallacy: False Dichotomy.** Presenting two unlikely alternatives as if they were the only ones available.

Example:

- “We either attack Iran with tactical nukes to destroy their nuclear-producing facilities or prepare for every Middle Eastern country to have nuclear weapons by 2020.”



Unqualified Authority

* **Fallacy: Appeal to Unqualified Authority.** Cited authority in an argument lacks credibility.

Example:

- Using a retired Air Force General to convince viewers that the land campaign in Iraq is too complex.

- Supporting your position on a medical issue by quoting a lawyer's assertion that, "the marginal benefit of the treatment isn't worth the marginal cost."





False Cause

Fallacy: False Cause. Conclusion depends on nonexistent or minor causal connection.

Example:

- “September 11 shows the ease that terrorists can enter the United States and do us harm. We obviously need to build a wall on the Mexican Border.”

- “Stressed out people often smoke. Soldiers smoke a lot. We need to reduce the stress on soldiers so that they stop smoking.”



Appeal to Fear

* **Fallacy: Appeal to Force/Fear.** Harm will come if you don't accept my conclusion.

Examples:

- AWC student last year: “Ya, we don't have to buy new aircraft carriers, but in 2020 when China destroys our Navy, you'll remember I warned you.”

- Prosecuting lawyer to jury: “If we don't convict this soldier of rape, who knows who his next victim will be; it might be your spouse.”





Appeal to the Masses

Fallacy: Appeal to the Mass/Bandwagon. Use individual's desire to belong to convince to accept argument.

Examples:

- "Let's all agree at the beginning of the year not to ask questions in Central Hall lectures."
- "We'll all meet on Saturday mornings to have softball practice in order to win the AWC championship."

Slippery Slope

Fallacy: Slippery Slope. Conclusion depends on unlikely chain reaction.

Example:

- “If we pull out of Iraq we send a message to terrorists that we have no will to fight. They’ll then attack us on all fronts.”

- “If we pass laws against owning armor-piercing bullets, then before long, Nobody will be able to own a hunting rifle.”



Weak Analogy

Fallacy: Weak Analogy. Conclusion depends on analogy that is not strong enough to support the conclusion.

Example:

“Iraq is like Vietnam.”
... It’s a quagmire; run!

The new animal is like a sheep:
1. Four legs, 2. Sheep sized, 3. Fleecy.
Therefore:
It’s a suitable addition to the flock!



Red Herring

Fallacy: Red Herring. The red herring fallacy is committed when a presenter diverts the attention of a reader or listener by subtly changing the subject or more overtly distracting the receiver of the information with some flashy, eye-catching topic that will most assuredly divert the listener's attention.

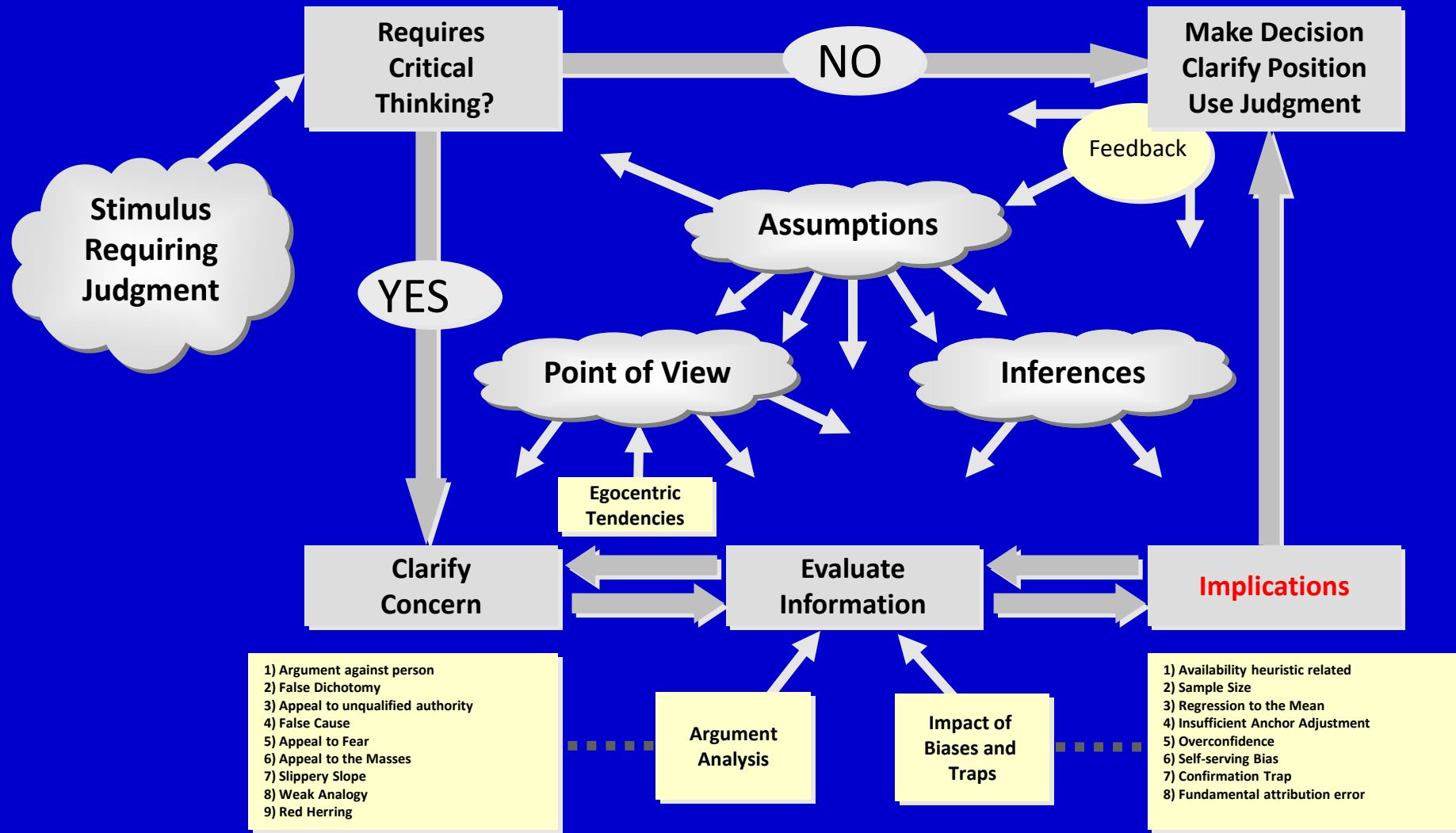
Examples:

- During 2006-2008 it was not uncommon for Army leaders to respond to questions about the lowering of standards for new enlistees and recruitment challenges by responding that current re-enlistment rates are higher than ever, especially for units returning from Iraq. They don't really address the issue of recruiting, but instead subtly change the focus of the conversation to retention.





A CRITICAL THINKING MODEL





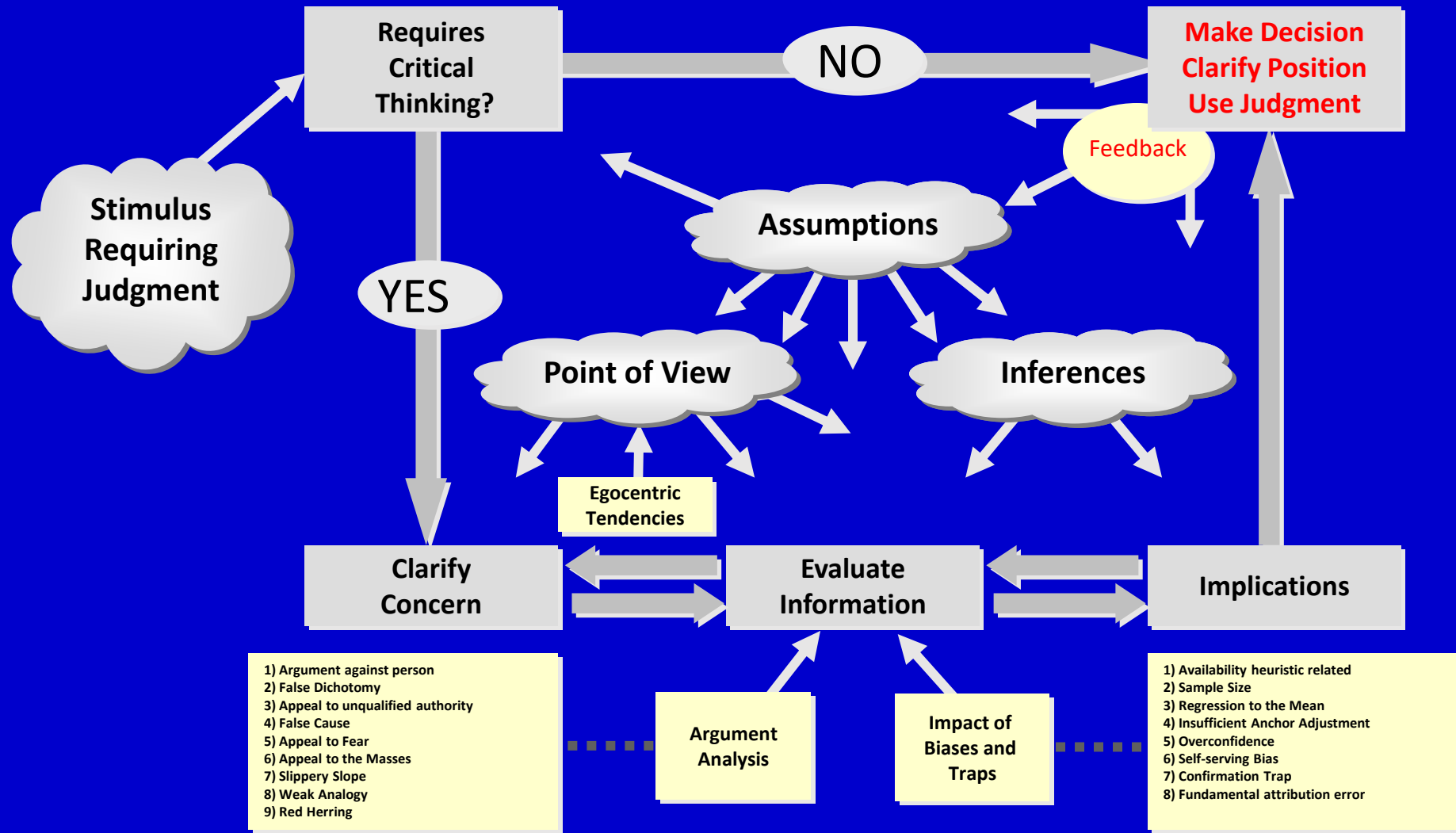
IMPLICATIONS

Questions to ask:

- What are the possible, probable, and inevitable implications of this decision?
- What are the short-term consequences of accepting the inferences initially posited, of accepting the opposing perspective, or of accepting the perspective developed through critical thinking?
- What are the long-term consequences?
- What are other 2nd and 3rd order effects?

People tend to think through the unintended consequences of policies or decisions they oppose, but not the policies or decisions they support.

A CRITICAL THINKING MODEL





WHAT CRITICAL THINKING IS NOT

- **Argumentative.**
- **Critical or cynical of other people.**
- **Manipulative.**

