

## Problem Description

- When working on difficult intelligence issues
  - Which is the correct explanation?
  - Which is the most likely outcomes?



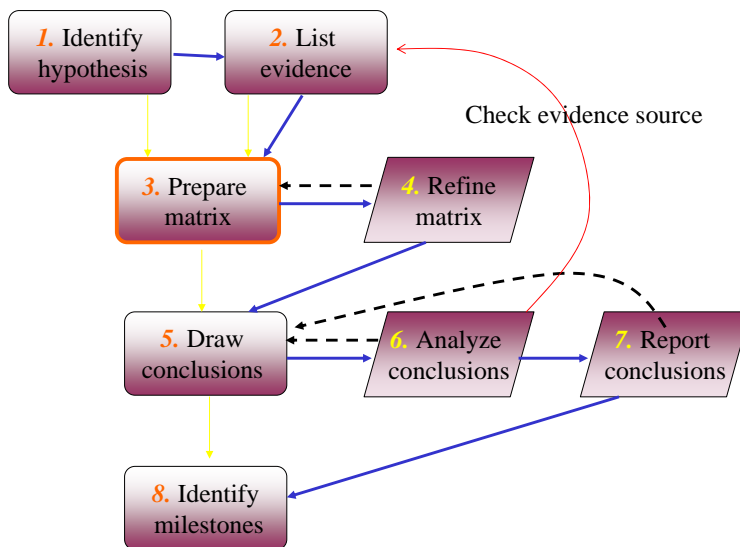
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## Analysis of Competing Hypotheses

- Used to
  - Aid judgment on important issues
  - Minimize cognitive limitations
- Basic insights from
  - Cognitive Psychology
  - Decision analysis
  - Scientific method

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## Eight-Step of ACH



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## Step 1: Identify Hypothesis

- Hypothesis generation vs. hypothesis evaluation
  - Generation: bring together all possibilities
  - Evaluation: focus on
- Disproved vs. unproven
  - For a disproved hypothesis there is positive evidence that it is wrong
  - For an unproven hypothesis, there is no evidence that it is correct

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## Step 2: List Evidence

- Don't limit to the evidences current available
- For each hypothesis, list support and contradict factors
- Absence and presence of evidence
  - E.x, If the dog barked in the night?  
no. nobody heard it barked (absence)

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## Step 3: Prepare Matrix

	H1	H2	H3
<b>E1. Saddam public statement of intent not to retaliate.</b>	+	+	+
<b>E2. Absence of terrorist offensive during the 1991 Gulf War.</b>	+	+	–
<b>E3. Assumption that Iraq would not want to provoke another US attack.</b>	+	+	–
<b>E4. Increase in frequency/length of monitored Iraqi agent radio broadcasts.</b>	–	+	+
<b>E5. Iraqi embassies instructed to take increased security precautions.</b>	–	+	+
<b>E6. Assumption that failure to retaliate would be unacceptable loss of face for Saddam.</b>	– –	+	+

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## Question: will Iraq Retaliate for US Bombing?

- H1: Iraq will not retaliate
- H2: It will sponsor some minor terrorist actions.
- H3: Iraq is planning a major terrorist attack, perhaps against one or more CIA installations

	H1	H2	H3
<b>E1. Saddam public statement of intent not to retaliate.</b>	+	+	+
<b>E2. Absence of terrorist offensive during the 1991 Gulf War.</b>	+	+	–
<b>E3. Assumption that Iraq would not want to provoke another US attack.</b>	+	+	–
<b>E4. Increase in frequency/length of monitored Iraqi agent radio broadcasts.</b>	–	+	+
<b>E5. Iraqi embassies instructed to take increased security precautions.</b>	–	+	+
<b>E6. Assumption that failure to retaliate would be unacceptable loss of face for Saddam.</b>	– –	+	+

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## Step 4: Refine Matrix

- Diagnostic value – likeliness of hypothesis
  - High-temp indicate sickness, but can't determine which illness
- Reconsider the hypotheses
  - Add, or need finer distinction
  - Combine
- Reconsider the evidences
  - Put in missing factors
  - Delete evidence that have no diagnostic value

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## Step 5: Draw Conclusions

- Work down the matrix, looking at each hypothesis
- Proceed by trying to disprove the hypotheses rather than prove them

	H1	H2	H3	
E1. Saddam public statement of intent not to retaliate.	+	+	+	disprove
E2. Absence of terrorist offensive during the 1991 Gulf War.	+	+	-	
E3. Assumption that Iraq would not want to provoke another US attack.	+	+	-	
E4. Increase in frequency/length of monitored Iraqi agent radio broadcasts.	-	+	+	
E5. Iraqi embassies instructed to take increased security precautions.	-	+	+	
E6. Assumption that failure to retaliate would be unacceptable loss of face for Saddam.	-	+	+	

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## Step 6: Analyze Conclusions

- Analyze how sensitive your conclusion is to a few critical items of evidence
  - The consequences if the evidence were wrong
  - Check the original source

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## Step 7: Report Conclusions

- Decision-maker need to make decisions on the basis of a full set of alternative possibilities
- The importance is eliminating not confirming
- Discuss the relative likelihood of all the hypotheses

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## Step 8: Identify Milestones

- Analytical conclusion should always be regarded as tentative
- Specify in advance things will change possibly

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## Summary and Conclusion

- Key differences b/t competing hypotheses from conventional intuitive analysis

	Competing hypotheses	conventional
Num of possibilities	Full set	Most likely one
Diagnostic value	Greatest	Maybe no
Use of evidence	Refute	Confirm

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## Things to Remember

- ACH's Way to analyze
  - Not by satisfying strategy
  - But by simultaneous evaluation
- Note the important difference b/t
  - Disproof and no proof

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