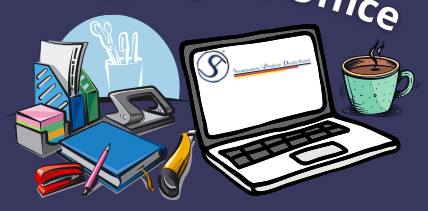
INTELLIGENCE CHEAT SHEET



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HYPOTHESIS GENERATION AND TESTING

1 Why do I use Hypotheses?

The phenomena that Intelligence deals with are characterized by the fact that there is often only incomplete and contradictory information. In order to arrive at valid explanations and conclusions despite these challenges, analysts can make use of hypotheses:

A Hypothesis is a potential explanation or conclusion that is to be tested by collecting and presenting evidence to see if it can be falsified.

In this context, working with Hypothesis Generation and Testing creates a series of advantages:

Structured Approach:
Formulating hypotheses and testing them provides a structured approach to complex problems, ensuring all relevant aspects are considered.

Systematic Information Evaluation:
Hypotheses enable systematic evaluation of information, promoting objective and evidence-based analysis.

Identification of Knowledge Gaps:
Working with hypotheses helps identify knowledge gaps, guiding targeted collection activities.

Promotion of Collaboration:
Struktured Analytic Techniques e.g. for Hypothesis Generation and Testing foster collaboration among analysts and integrating diverse perspectives for comprehensive analyses.

2 How do I generate Hypotheses?

There are different ways to generate a good set of Hypotheses. You could use, e.g. Simple Hypothesis or the Multiple Hypothesis Generator™.* If you do not have a favorite Hypothesis, Simple Hypothesis is a good starting point:

1. Clearly define the question for which you want to generate hypotheses.
2. Assemble a diverse group and go through the available information and explanations for the issue or behavior or activity to be assessed.
3. Ask each participant to write up to three hypotheses on a Post-It.
4. Use situational logic, historical analogies, and theories to stimulate creativity.
5. Collect the cards and attach them to the wall or a whiteboard.
6. Go through the list together to remove duplicates.
7. As a group, check whether all relevant actors and influencing factors have been taken into account. If necessary, add further hypotheses.
8. Cluster the different hypotheses into hypothesis groups and give these groups names (test question: which hypotheses can be subsumed under which common heading (hypothesis group)).
9. Check whether the respective opposite of a hypothesis or a hypothesis group should also be considered. If yes, add another hypothesis / hypothesis group.
10. Check whether the hypotheses are mutually exclusive and collectively exhaustive (MECE). *Note: Very important!*
11. Select the most promising hypotheses for further consideration.

**Cf. Heuer, Richards / Pherson, Randolph: Structured Analytic Techniques for Intelligence Analysis, 2nd Edition, CQ Press, California, 2015, p. 171 ff. and 173 ff.*

3 How do I test Hypotheses?

The best method for hypothesis testing is the Analysis of Competing Hypothesis (ACH). It can be used whenever there are several alternative explanations for phenomena that have happened, are happening, or will happen. ACH is time-consuming and should be used especially when erroneous conclusions must be avoided. It can also be used when analysts want to be able to show retrospectively how (with which hypotheses and which evidence/information) they arrived at analytical conclusions and judgments.

1) Identify all plausible hypotheses:

Generate as comprehensive a set of hypotheses as possible. Make sure that the hypotheses are as mutually exclusive as possible.

2) Make a list of all relevant information:

Record all information, evidence, and assumptions that might be relevant to the evaluation of the hypotheses. This includes information that you would expect to see if one or more of the hypotheses were true. The ACH must reflect this thinking and judging as accurately as possible.

3) Transfer all elements into a matrix:

Make a matrix. Put all hypotheses in the top row and all evidence/information/assumptions etc. in the left column.

4) Assess the diagnosticity of the information:

For each box within the matrix, ask the question:
"To what extent would I expect to see this information, assumption, etc. (item in the left column) if this hypothesis (in the top row) were true?"
Put a C in the intersection box if you would expect to see this information should a hypothesis be true - that is, if a piece of information is consistent with the hypothesis. If a piece of information is inconsistent fill in an I. If a piece of information is not applicable to a hypothesis, enter N/A. If the information is particularly convincing, you can also enter two CC or II.

5) Discuss areas of disagreement :

Differences of opinion between analysts are often due to different interpretations of the hypotheses (rarely also of the information). It is usually worthwhile to discuss points where analysts' opinions diverge and to take them into account when assessing diagnostic power.

6) Check the hypothesis set:

Check whether several hypotheses should be combined into one hypothesis or whether further hypotheses would need to be added.

7) Draw initial conclusions:

Add up the inconsistencies (I / II) for each hypothesis and rank the hypotheses accordingly. The hypothesis with the most inconsistencies tends to be the least likely and the hypothesis with the fewest inconsistencies tends to be the most likely.

8) Check the confidence-level:

Examine the extent, if any, to which your initial conclusions depend on a few critical pieces of information. Imagine what it would mean for the analysis should the information be false, misleading, or interpreted differently.

9) Select and evaluate the most robust hypotheses:

Evaluate the relative probability of all hypotheses that you deem relevant. Use the inconsistency value as a guide. To evaluate the relative likelihood of the hypotheses that you consider relevant, consider each hypothesis as one comprehensive case, which you are trying to make.

10) Identify indicators for future observations:

Make two lists. On list one, note future events or additional research efforts that would further support your argument. On list two, note what you would need to observe or find out that would weaken your argument.Evaluate and validate your indicators and then monitor them regularly to remain alert to events that would change your previous assessment.

**Cf. Pherson, Randolph / Heuer, Richards: Structured Analytic Techniques for Intelligence Analysis, 3rd Edition, CQ Press, California, 2020, p. 157 ff.*