SCIENTIFIC THINKING IN HUMANITARIAN ANALYSIS

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SCIENTIFIC THINKING - BRIEF SUMMARY

- *"Science is a way of thinking much more than it is a body of knowledge"* (Carl Sagan)
- *"The scientific mind does not so much provide the right answers as ask the right questions"* (Claude Levi Strauss)
- *"If you can't explain it simply, you don't understand it well enough"* (Albert Einstein)

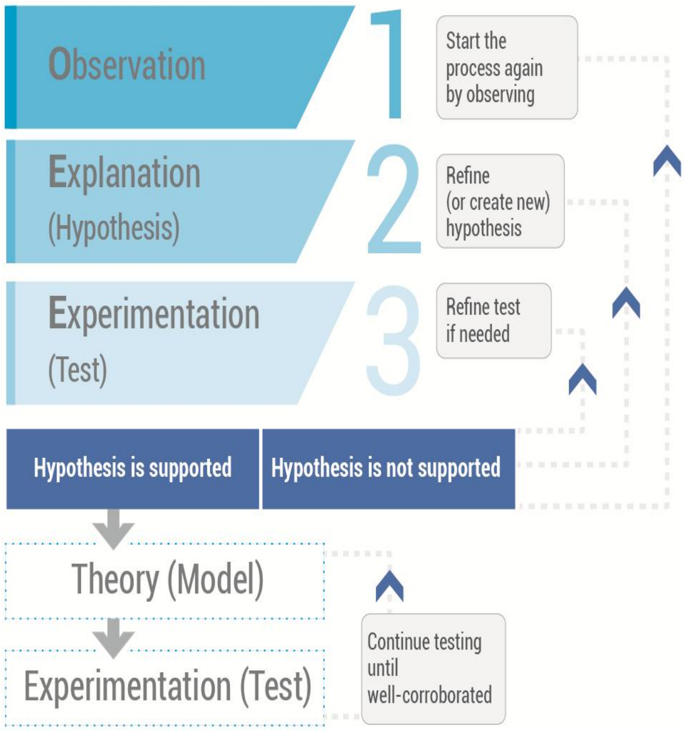
When we think about science, stereotypical visions of lab coats and formulas often spring to mind. However, scientific thinking can provide some of the structures and soft skills necessary in analysis in the humanitarian field, where we are often asked to rapidly solve problems and prioritize issues while under pressure. If we lack the necessary analytical mindset and structure for this task, analysis can lead to hasty, incorrect results and biased conclusions.

Science is mostly about applying a particular methodology, which implies generating and systematically testing hypotheses, using scientific thinking and soft skills. However, scientific thinking can be of relevance outside the academic discipline. The process is most often social in nature, rather than something that occurs only inside people's heads – a group of people may rely jointly on scientific thinking in the pursuit of a knowledge-based goal. Scientific thinking needs to be taught and cultivated so it becomes seemingly intuitive when humanitarians conduct analysis under pressure and tight deadlines.

THE SCIENTIFIC METHOD

At its most basic level, the scientific method can be summarised in a simple, three-step process.

1) First, we begin by carefully **observing** some part of nature.
2) If something emerges that is not well understood, we can speculate about explanations and come up with ideas and insights **(hypothesis)** to explain it.
3) We attempt to find some additional observations or experiments to **test the hypothesis**, to either shoot the idea down (*falsify* it) or support it (*corroborate* it).

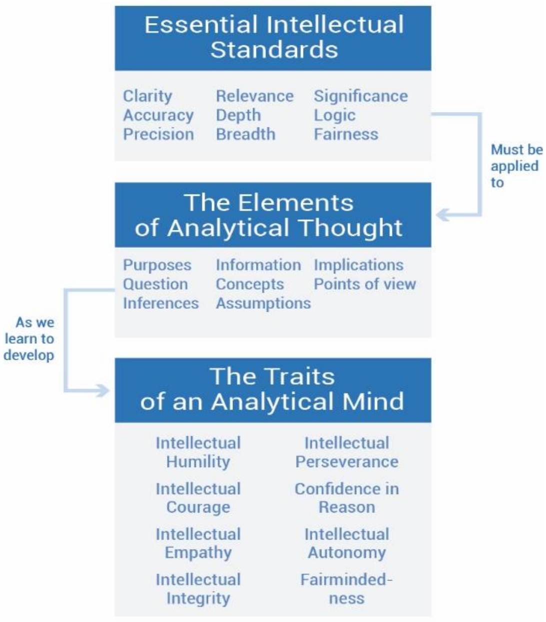


If the observations falsify the hypothesis, we must start over with a new hypothesis, or recheck our observations to make sure that the falsification is correct.

If the observations are consistent with the hypothesis, then it is corroborated, but it is not proven true. Science is not about finding the final truth, but about continually testing and trying to falsify our hypotheses, until they are extremely well supported. The hypothesis can then become a **theory (model)**, a well-corroborated set of hypotheses that explain a larger part of the observations about the world.

THE SCIENTIFIC SOFT SKILLS

In 2012, Richard Paul and Linda Elder developed a scientific framework that provides a clear and global picture of the scientific profile. The generic scientific thinking skills included in this framework, referred to as *soft skills*, can apply to all fields of study and thus are useful for analysis in the humanitarian field. The authors present three types of soft skills, highly useful in analysis:



Source: Richard Paul and Linda Elder (2012)

1. The **essential intellectual standards** that should be applied to the elements of analytical thought:
   - Clarity: a research should be understandable; its meaning can be grasped.
   - Accuracy: a research should be free from errors or biases; it should be true.
   - Precision: a research should be exact to the necessary level of detail.
   - Relevance: a research should relate to the matter at hand.
   - Depth: a research should contain complexities and multiple interrelationships.
   - Breadth: a research should encompass multiple viewpoints.
   - Significance: a research should focus on the important, not the trivial.
   - Logic: a research should not contain any contradictions; all parts should make sense together.
   - Fairness: a research should be justifiable, not self-serving or one-sided.

2. The **elements of analytical thought.** All scientific reasoning:
   - has a purpose
   - is an attempt to settle some question or solve some problem
   - is based on assumptions
   - is done from some point of view
   - is based on data, information and evidence
   - is expressed through, and shaped by, scientific concepts and theories
   - contains inferences or interpretations by which we draw scientific conclusions and give meaning to data
   - leads somewhere or has implications and consequences.

3. The **intellectual traits associated with an analytical mind** that result from the consistent and disciplined application of the intellectual standards to the elements of thought:
   - Intellectual humility: consciousness of one's biases, prejudices, self-deceptive tendencies and knowledge and viewpoint limitations.
   - Intellectual courage: disposition to question beliefs one feels strongly about, such as cultural or group beliefs, and a willingness to express one's views even when they are unpopular.
   - Intellectual empathy: ability to accurately reconstruct the viewpoints and reasoning of one's opponents and to reason from premises, assumptions, and ideas other than own, especially those one strongly disagrees with.
   - Intellectual integrity: recognition of the need to be true to one's own thinking and to hold oneself to the same intellectual standards expected from others (no double standards).
   - Intellectual perseverance: disposition to work the way through intellectual insights and truths despite the difficulties, obstacles and frustrations inherent in the task.
   - Confidence in reason: using reasonability as the fundamental criteria by which to judge whether to accept or reject any belief or position.
   - Intellectual autonomy: thinking through issues using one's own thinking rather than uncritically accepting the viewpoints of others.
   - Fairmindedness: consciousness of the need to treat all viewpoints alike, without reference to one's own feelings or vested interests, or the feelings or vested interests of one's friends, community or nation.

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I. The Scientific Method

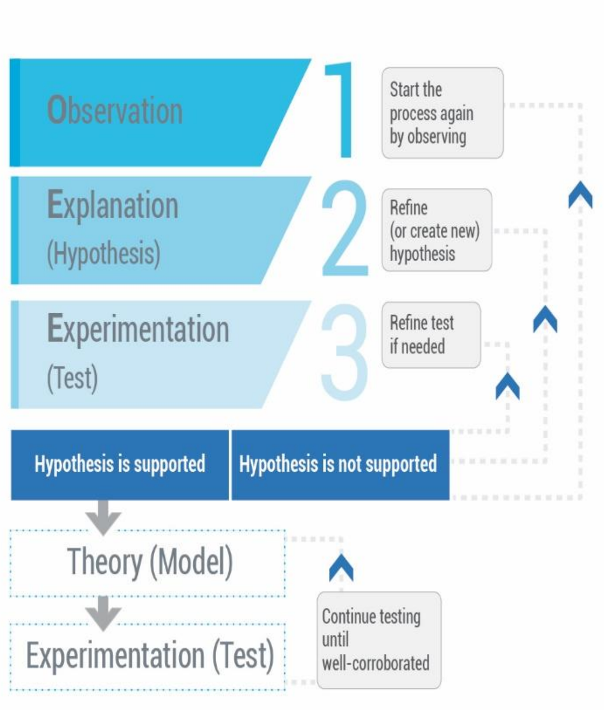
"There are many hypotheses in science which are wrong. That's perfectly all right; they're the opening to finding out what's right. Science is a self-correcting process. To be accepted, new ideas must survive the most rigorous standards of evidence and scrutiny." (Carl Sagan)

At the most basic level, the scientific method is a simple, three-step process:

1. **Observation:** we must first make sure we have a clear sense of the facts surrounding the phenomenon we are investigating through observation.
2. **Explanation:** we then need to introduce a set of factors (hypothesis or theory) that account for how and why the phenomenon in question has come into existence. This can be formulated using causality/correlation, causal mechanisms, scientific laws, underlying processes and functions.
3. **Experimentation:** the hypothesis/theory needs to be tested to either shoot down the previously formulated explanation (*falsify* it) or support it (*corroborate* it).

Scientific hypotheses must always be tentative and subject to further testing and can never be regarded as finally proven. It is a reiterative cycle where we always have to go back to the beginning, building on previous conclusions, and challenge them again. Science is not about finding the final truth, but about continually testing and trying to falsify our hypotheses, until they are extremely well supported.

The hypothesis can then become a *theory*, which is a well-corroborated set of hypothesis that explain a larger part of the observations about the world.



Step 1: Observation

We must first make sure we have a clear sense of the facts surrounding the phenomenon we are investigating through observation. Observation enables us to identify and focus on the relevant facts about the phenomenon under investigation.

OBSERVATION PROCESS The process of making a set of observations must be sensitive to a number of concerns to ensure we have included all information/ data needed:

1. Do we have a clear sense of what the relevant phenomenon is? It is necessary to think carefully about how key terms, such as definitions, are being used to describe the phenomenon.

2. Are we confident we have not overlooked something in the observation process? Once we have decided what constitutes the phenomenon, we should make a list of the information found in the first set of observations and then add in any overlooked items from a second set. Keeping a detailed written record of what is being observed is crucial to ensure that nothing is overlooked.

A set of observations may yield unanticipated information. Even though the data does not conform to the observer's sense of what is relevant, it can be nonetheless of some importance and needs to be considered.

3. What do we know for sure? What is based on fact and what on assumption? An assumption is a statement considered to be true based on logical reasoning, even if it has not been scientifically tested. Assumptions can be useful when facing information gaps or when there is a need to break down a complex process so it is easier to understand. Assumptions need to be clearly specified and explained when used in a research. We thus need to be aware of the assumptions that may innocently and discretely be embedded in loaded explanatory questions. A loaded question is one that cannot be answered without accepting as true something the question assumes. When we are unaware of the embedded assumptions, we run the risk of finding flawed results and conclusions.

Example: *Did the earthquake cause much damage to the building?* Either answer assumes that the building was damaged.

4. Have our observations been contaminated by expectation? An expectation is a belief that something will happen or be the case. Observations can be distorted when observed through the filter of expectation. Scientists should be aware of any heuristic or cognitive biases[1] in order to obtain accurate observations.

5. Have we considered any necessary comparative information? Part of the point of making a set of observations is to determine what, if anything, is unusual or significant about the data collected. The observations collected thus need to be compared to what is already known or assumed. We need to hunt for the right sort of comparative data: data that will allow us to decide whether our observations led to something that really does need explaining, such as trends, patterns, anomalies and relationships.

Anomalies One of the outputs found from observations can be anomalies. An anomaly is a phenomenon that does not square with the currently accepted ways of understanding nature. This is when the thought '*hang on a minute, this can't be right*', jumps to mind. Anomalies play a central role in the evolution of scientific ideas as they provide a way of testing the limits of our current understanding of how nature works and can suggest new and fruitful areas for scientific investigation.

Anomalies are regarded with scepticism and the burden of proof lies with the person who claims to have observed an anomalous phenomenon. The more extraordinary the anomalous claim, the more rigorous is the evidence required before accepting the claim.

Step 2: Explanation

A scientific explanation is an introduction of a set of factors that account for how and why the phenomenon in question has come to be the case. It can be formulated using causation/correlation, causal mechanisms, scientific/statistical laws, underlying processes or functions.

TYPES OF EXPLANATIONS

Hypotheses and theories can both be used to provide a scientific explanation. However, they involve different aspects of an explanation.

Hypothesis: can be anything from a vague hunch to a finely detailed account of how and why something has come to be the case. Hypotheses are tentative and unproven, and will typically offer an explanation for a limited range of phenomena, a single event, or a fact.

Example: If an earthquake-affected population learns about building standards and reinforced structures, it is probable that they will rebuild houses that are more earthquake resilient.

Theory: can be a well-developed, well-confirmed body of explanatory material. A theory tends to be more general and capable of explaining a much wider variety of phenomena. Theories will often contain well-confirmed rules and principles that reveal underlying explanatory similarities between apparently quite diverse phenomena. However, it is necessary to be aware that even a well-confirmed theory can be questionable. This can happen when supporting evidence turns out to be erroneous or inexistent, or when new conflicting evidence is found.

Example: Following a flood there will always be a high risk of waterborne diseases. This is because water and sanitation structures are disrupted and drinking water may mix with sewage.

[1] The ***heuristic bias*** is an intuitive mental shortcut used to solve a particular problem. It is usually helpful, as it allows you to quickly make sense of a complex environment. For example, a rule of thumb can be considered a heuristic bias. However, it can sometimes fail to produce a correct judgement and result in a ***cognitive bias***: the tendency to draw an incorrect conclusion in a certain circumstance based on cognitive factors.

EXPLANATION TOOLS/TECHNIQUES

1. CAUSATION AND CORRELATION One way to explain how or why something has occurred is to give an account of the events leading up to it.

Causation: is the relationship between cause and effect, where one event or thing triggers another one.

Example: IDPs occupying schools, using them for shelter causes an increased risk of children not receiving education.

Some complexities can arise in causation:

- effects can be the result of a combination of causes;
- both causes and effects can be about groups rather than individual facts or events;
- effects may result from several distinct causes;
- effects may not invariably be associated with a given causal factor;
- causal explanations can be positive (an increase in A causes an increase in B) or negative (an increase in A causes a decrease in B);
- causal explanations can involve a sequence of linked events.

Originally developed to prove causation between exposure to a chemical or biological agent and disease, Bradford Hill developed a list of criteria in 1965 that can be used when looking for cause and effect. Although not exhaustive, this list has an inherent logic that also can be applied to humanitarian analysis:

1. Strength: strong relationships are more likely to be causal than weak relationships.
2. Temporality: it is logically necessary for a cause to precede an effect in time.
3. Consistency: a relationship is more likely to be causal if it can be replicated with multiple observations from different populations under different circumstances and with different measurement instruments.
4. Plausibility: it is easier to accept a relationship as causal when there is a rational and theoretical basis for such a conclusion.
5. Coherence: the relationship should be coherent with related facts and theories, and there are no competing theories or rival hypotheses.
6. Specificity: a relationship is more likely to be causal if there is no other likely explanation.

All criteria need not be fulfilled in order to demonstrate causation. Nonetheless, having several of them met greatly strengthens the argument that there is a relationship between a cause and an effect.

Correlation: when comparing two characteristics within a population it is found that they display some regular, measurable relationship. Like causation, a correlation can be positive (an increase in A is related to an increase in B) or negative (an increase in A is related to a decrease in B). A correlation does not necessarily imply a causal relationship. However, if two things are causally linked, they will be correlated.

Example: A rise in reported protection issues can be correlated with displacement, but did not cause the displacement. On the other hand, in the previous example of cause and effect between IDPs occupying schools and children not receiving education, there is both causation and, consequently, correlation.

2. CAUSAL MECHANISM Explanations can be provided by citing intervening causal factors that explain the effects of a more distant cause.

Example: Debris from the storm severed power lines, causing power outage.

3. SCIENTIFIC/STATISTICAL LAW consists of explaining an event by referring to a general law or principle, of which the event is an instance.

Example: Exposed healthcare workers run the risk of contracting Ebola. F is a nurse who works in a setting where the risk of exposure to Ebola is high. F has Ebola. Thus, it is likely that F has contracted Ebola from a patient.

4. UNDERLYING PROCESS By employing underlying processes, it is possible to explain something by reference to the workings of its component parts.

Example: A cholera outbreak is observed following an earthquake. Poor water and sanitation infrastructure, combined with insufficient hygiene standards and lack of immunisation in the population, makes the virus spread rapidly.

5. FUNCTION When employing a function, we explain something by reference to the role it fulfils in some larger design. Its existence is explained by illuminating its function in the big picture.

Example: In areas affected by regular flooding it is common to build villages on stilts to protect the houses from water-induced damages.

Step 3: Experimentation

In order to either shoot down the previously formulated explanation (falsify it) or to support it (corroborate it), the hypothesis needs to be tested.

Control Group: One difficulty with all research is one cannot be entirely sure that the detected effect arose from the expected cause. Another factor might have led to the same effect. To overcome this problem, scientists use *control groups* when testing a hypothesis. A control group is a group of subjects or conditions that is matched as closely as possible with the experimental group (similar characteristics), but is not exposed to any experimental treatment. Control groups provide an effective counter to the possibility that some unknown explanatory factor may have been overlooked.

Sampling: Sampling is the selection of a part of a population for the purpose of determining characteristics of the whole population. The accuracy of the sample, however, is a question that often arises. According to the *rule of large numbers*, the accuracy of a sample is a function of the sample size. The larger the sample, the greater the probability it will accurately mirror what is true of the population from which it was taken. The chances that a sample is accurate are measured by the *margin of error* and *confidence level*.

Margin of Error: a statistic expressing the amount of random sampling error – it decreases as the sample size increases, but only to a point. The size of the total population from which the sample is selected does not matter in the calculation of margin of error.

Confidence Level: provides the percentage of all possible samples that can be expected to include the true population parameter. A 95% level of confidence implies that if the study were conducted 100 times, results would be inconsistent only five times.

Example: A representative sample targeting refugees in a camp using registration figures as a baseline, has a margin of error of plus or minus 4% at a 95% level of confidence.

Statistical Significance: Scientists verify whether their results are *statistically significant* by performing a statistical hypothesis testing. This test consists in testing whether there is a relationship between cause and effect. When a statistic is shown to be significant, it means that a difference or relationship exists between the cause and effect. Significant differences can be large or small, depending on the sample size. Significant relationships can be strong or weak; thus, it is important to evaluate their strength.

EXPERIMENT DESIGN. A well-designed experiment should anticipate and resolve any issues suggested by the following questions:

1. Can the possibility of a false confirmation or a false rejection be ruled out? When irrelevant factors[2], i.e., factors not connected to the claim at issue, are not controlled for during the experimentation, the test leads to incorrect results, and thus to a false confirmation or rejection of the claim at issue[3].

False confirmation: means the results confirm there is a relationship between the cause and effect under scrutiny, when in fact this relationship is inexistent.

Example: the fire alarm goes off in a building, indicating there is a fire. It is considered that the cause is the fire and the effect is the alarm going off. However, when firefighters arrive at the building to extinguish the fire, no fire is found. The alarm might have been caused by an irrelevant (extraneous) factor, such as a quick cigarette smoke next to the fire detector, without necessarily setting fire to the building.

False rejection: means the results reject the relationship between the cause and the effect under scrutiny, when in fact this relationship does exist.

Example: a blood test failing to detect the disease it was designed to detect, in a patient who really has the disease. Omitting extraneous factors such as the incubation period of the disease leads to false results. If the blood test is done during the incubation period, the disease might not be found in the patient even though it exists.

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[2] Also called *extraneous factors*.

[3] False confirmation/rejection are also referred to as ***type I and type II errors in statistical hypothesis testing*** or ***"false positive" and "false negative" in binary classification***, such as medical testing. A type I error implies detecting a relationship that is not present ("false confirmation" in our case or "false positive" in binary classification), while a type II error is failing to detect a relationship that is present ("false rejection" in our case or "false negative" in binary classification).

2. Is the claim at issue conceptually clear? The vaguer the claim, the harder it is to rule out the possibility of a false rejection or confirmation. To be able to rule out incorrect results, the claim at issue should be conceptually clear: provide simple and precise definitions of the claim, limitations, etc.

Example of a vague claim: Rituals like prayers or chanting, sometimes used in alternative medicine, may claim to heal various injuries. It is difficult to test the effect of the treatment as the interaction between the rituals and the human body cannot be clearly defined.

3. Is the difference between predictive success and failure clearly specified? It is necessary to design a test leading to a prediction that clearly spells out the difference between success and failure.

Example: When collecting key informant views on priority needs following a disaster, some trends may appear. But how much similarity in the responses is required to determine whether the assessment actually shows a trend or not?

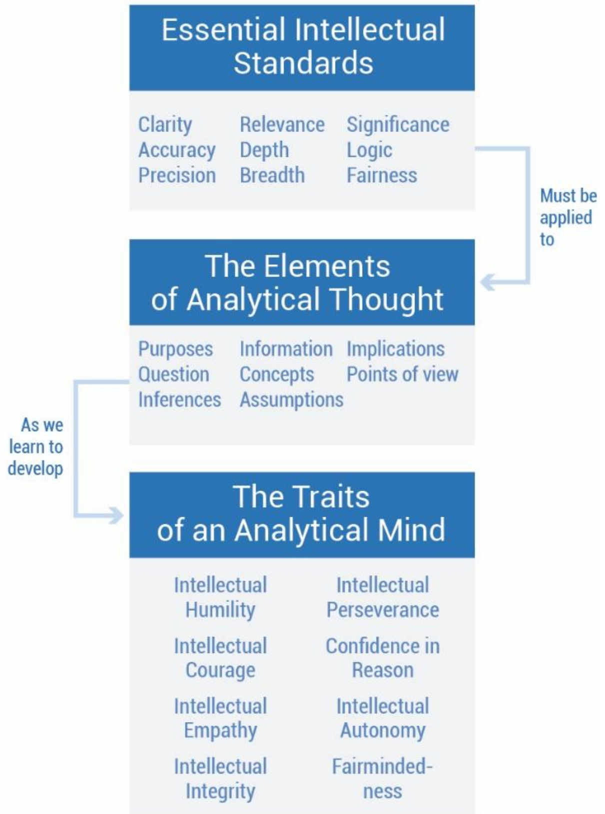
4. Have controls been imposed to eliminate the influence of experimenter or experimental subject expectations? When either the experimenter or the experimental subject has expectations on results, bias might arise. A solution to this bias is an experiment in which neither the experimenter nor the experimental subject is aware of the group (experimental or control) to which the subject belongs.

II. The Soft Skills

"Sit down before a fact as a little child, be prepared to give up every preconceived notion, follow humbly wherever and to whatever abysses nature leads, or you shall learn nothing." (Thomas Henry Huxley)

The scientific method described in the previous section is not directly applicable to all types of research or assessments conducted in humanitarian settings. There are considerable overlaps however, and the scientific method requires a scientific mind-set that is highly applicable in humanitarian analysis.

The Paul-Elder Framework includes all soft skills and structures that scientific thinkers need to have and that can likewise be useful for analysis in the humanitarian field:



Source: Richard Paul and Linda Elder (2012)

1. The scientific essential intellectual standards that should be applied to the elements of scientific thought: clarity, accuracy, precision, relevance, depth, breadth, logic, significance and fairness.

2. The elements of scientific thought identify the purpose, question and assumptions of the research; emphasize the point of view from which the research is conducted; use data, information and evidence[4]; formulate inferences, interpretations or conclusions using scientific theories and concepts; underline implications and consequences of the research.

3. The intellectual traits associated with a cultivated thinker that result from the consistent and disciplined application of the intellectual standards to the elements of scientific thought:

[4] Data gives us information from which we select evidence:

- *Data:* the tables, fields and values that exist in the available stores, sources and files. It is our base material to analyse, manipulate and reconstruct to help with our analysis.
- *Information:* the content of our data; the output of a factual set of process outcomes on our data.
- *Evidence:* an explicit reason for why something happened that has emerged upon analysing the data and information against a hypothesis/set of hypotheses using a set of robust methods and processes.

intellectual humility, courage, empathy, integrity, perseverance and autonomy; confidence in reason, and fairmindedness.

ELEMENTS OF SCIENTIFIC THOUGHT

The elements of scientific thought (or scientific reasoning) must first be identified:

1. All scientific reasoning has a purpose.
2. All scientific reasoning is an attempt to settle some question or solve some problem.
3. All scientific reasoning is based on assumptions.
4. All scientific reasoning is done from some point of view.
5. All scientific reasoning is based on data, information and evidence.
6. All scientific reasoning is expressed through, and shaped by, scientific concepts and theories.
7. All scientific reasoning contains inferences or interpretations by which we draw scientific conclusions and give meaning to scientific data.
8. All scientific reasoning leads somewhere or has implications and consequences.

This list resonates with many key principles of humanitarian needs assessments. For example, all assessments need to have a purpose: most often it is to support decision-making to solve a problem. Furthermore, assessments start from a point of view, collect data, and then interpret data to reach conclusions that ideally lead to decisions having positive implications and consequences.

ESSENTIAL INTELLECTUAL STANDARDS

Certain standards must be applied in order to check for the quality of reasoning about a problem, issue, or situation. Consequently, a scientist, or a humanitarian analyst, must meet the most significant universal intellectual standards:

1. Clarity: a research should be understandable; its meaning can be grasped.

Questions: Could you elaborate further on the assessment objective and make it more specific?

2. Accuracy: a research should be free from errors or biases; it should be true.

Questions: How sure are we on that? How could we find out if that is true? How could we verify that conclusion?

3. Precision: a research should be exact to the necessary level of detail.

Questions: Could you be more specific? Will it be possible to disaggregate the findings relating to population groups any further?

4. Relevance: a research should relate to the matter at hand.

Questions: How does this assessment question relate to the overall information need and help us reach the assessment objective?

5. Depth: a research should address complexities and multiple interrelationships.

Questions: What underlying vulnerabilities and risks explains the needs further? What cross sector/cluster linkages or cross-cutting issues exist that add complexities to the needs?

6. Breadth: a research should encompass multiple viewpoints.

Questions: Have we managed to capture the views of all affected population groups, including vulnerable groups? Do we need to look at this from another perspective, or do we need to look at this in other ways?

7. Logic: a research should not contain any contradictions; all parts should make sense together.

Questions: Does all this make sense together? Are all the data from all the sectors/clusters consistent with each other? Is this implied by the data we have?

8. Significance: a research should focus on what's important, not trivial.

Questions: Is this the most important problem to consider? What are the priority needs? Which of these facts are most important?

9. Fairness: a research should be justifiable, not self-serving or one-sided.

Questions: Do I have any vested interest in the outcome of this assessment which keeps me from looking at it objectively? Am I culturally or organizationally biased and misrepresenting the view of the affected population?

This list of intellectual standards is not exhaustive. Other standards, such as completeness, validity, rationality, sufficiency or feasibility, could also be included. However, the ones developed here are considered the most significant for analysts.

INTELLECTUAL TRAITS OF A SCIENTIFIC MIND

To become fair-minded and intellectually responsible scientific thinkers, humanitarian analysts must develop some intellectual dispositions. These determine the level of insight and integrity with which analysts think. They are mutually interdependent and it is hard to deeply develop any one of them without also developing the others.

1. Intellectual humility: consciousness of one's biases, prejudices, self-deceptive tendencies and knowledge and viewpoint limitations.

Questions: What do I really know about the situation I am investigating? To what extent do my knowledge of the situation, pre-conceived ideas, or biases influence my ability to think objectively? How do the beliefs I have uncritically accepted keep me from thinking scientifically?

2. Intellectual courage: disposition to question beliefs one feels strongly about, such as cultural or group beliefs, and a willingness to express one's views even when they are unpopular.

Questions: To what extent am I conscious about my biases which may impede my ability to think analytically? To what extent have I demonstrated a willingness to go against my pre-conceived ideas when sufficient evidence is presented against them? To what extent am I willing to stand up against the majority (even when senior decision makers and politics seek to influence the results)?

3. Intellectual empathy: ability to accurately reconstruct the viewpoints and reasoning of one's opponents and to reason from premises, assumptions, and ideas other than one's own, especially those one strongly disagrees with.

Questions: To what extent do I accurately represent analytical viewpoints I disagree with? Can I see insights in others' analysis of humanitarian needs, and prejudices in my own?

4. Intellectual integrity: recognition of the need to be true to one's own thinking and to hold oneself to the same intellectual standards expected from others (no double standards).

Questions: To what extent do I expect of myself what I expect of others? To what extent are there contradictions or inconsistencies in the way I structure my analysis? Do I take short-cuts or assume too much? To what extent do I strive to recognize and eliminate self-deception when reasoning through humanitarian issues?

5. Intellectual perseverance: disposition to work the way through intellectual insights and truths despite the difficulties, obstacles and frustrations inherent in the task.

Questions: Am I willing to work my way through complexities in a humanitarian context or do I tend to give up when I experience difficulty? Can I think of a difficult humanitarian crisis where I have demonstrated patience and determination in working through its difficulties?

6. Confidence in reason: using reasonability as the fundamental criteria to judge whether to accept or reject any belief or position.

Questions: Am I willing to change my position when the data leads to a more reasonable position? Do I adhere to analytical principles and evidence when persuading others of my position, or do I confound matters to support my position? Do I encourage others to come to their own conclusions or do I try to force my views on them?

7. Intellectual autonomy: thinking through issues using one's own thinking rather than uncritically accepting the viewpoints of others.

Questions: Do I think through humanitarian issues on my own or do I merely accept more dominant views that are reported? Having thought through an issue from a rational perspective, am I willing to stand alone despite irrational criticisms of others?

8. Fairmindedness: consciousness of the need to treat all viewpoints alike, without reference to one's own feelings or vested interests, or the feelings or vested interests of one's friends, community or nation.

Questions: Am I treating others' points of view that differ significantly from my own by the same standards as I treat my own?

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