SOCI 101
INTRODUCTION TO SOCIOLOGY

PROFESSOR
KURT REYMERS, PH.D.
(DR. K)

1

B. Doing Social Science

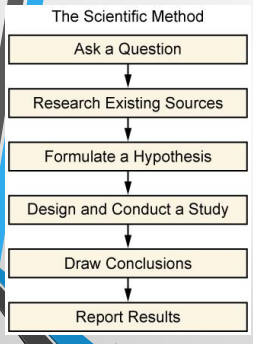

Figure 2.2

1. To gain scientific knowledge, one must pose an argument; **inductive** (or **ampliative**) **reasoning** starts with the conclusions drawn by a **scientific theory,** or **a system of ideas intended to explain, especially based on general argumentative premises.**
Example: *In the past, ducks have always come to our pond. Therefore, the ducks will come to our pond this summer.*

Deductive reasoning begins with premises, drawing them from specific instances, as with math exercises.
Example: *If x = 4, and*
if y = 1,
then 2x + y = 9.

The point of the institution of Science is to establish beliefs based on truth.

2

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2. Where do beliefs come from?

Knowledge and belief comes in four different ways:

IDEAL SCIENCE
- **i) Observation** ("empirical evidence")
  PERCEPTION : BELIEF
  (I see a chair. I believe it exists.)
- **ii) Reason / Logic** ("rationality")
  PRINCIPLE : BELIEF
  (2+2 = 4)

X

FUNDAMENTALIST RELIGION
- **iii) Intuition / Faith**
  PERSUASION : : : : : : : : : : : : : : : : : : BELIEF
  ("I want to believe" – *The X-Files*)
- **iv) Authority**
  POLITICS : BELIEF
  ("Believe me, the 2020 election was rigged.")

IDEOLOGY: *a* ***non-scientific*** *system of belief, often religious or political; NOT objectively truthful, yet thought to be "gospel" (absolute truth); for example, "Capitalism", "Communism", or "Christianity".*

When ***absolutist*** *(like with fundamentalism or authoritarianism), ideology can be a* ***dangerous weapon*** *for social manipulation.*

BEWARE OF THOSE CLAIMING TO TELL YOU THE ABSOLUTE TRUTH

3

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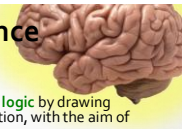

3. What is "reason"?
It is the capacity of **consciously applying logic** by drawing conclusions from new or existing information, with the aim of seeking the truth.

a. ***Reasoning:*** The production of arguments used in thinking or debate, especially to form conclusions, inferences, or judgments typically based upon evidence.

b. ***Argument:*** An argument is made up of **premises and conclusions**. They can be related in order to produce predictable results (**deductive reasoning**) or probabilistic results (**ampliative reasoning**, as with *inductive* or *abductive* reasoning).

c. ***Critical Thinking:*** Critical thinking is the use of reason and argument when choosing one's beliefs.

d. ***Evaluating Evidence:*** Evidence can be evaluated based on its strength of contribution to the premises and conclusions of an argument. Not all evidence is equal, based its the logical consistency between the premises and conclusions.

e. ***Logical Fallacies:*** Fallacies are errors in logic that are often difficult to detect. Click for **15 classic logical fallacies**.

4

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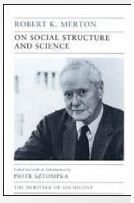

4. What are the NORMS of science?

We can use the acronym NOTTUS to identify them:

N **= Natural (vs. Supernatural)** – science seeks to explain natural phenomena

O **= Observable (vs. Invisible)** – uses senses and tools to enhance the senses

T **= Testable (vs. Untestable)** – can make predictions; results must be consistent

T **= Tentative (vs. Omniscient)** – science is not all-knowing; hypotheses and theories must always be open to disconfirmation

U **= Uncertain (vs. Certain)** – science has a degree of improbability; there is no such thing as "perfect knowledge"

S **= Social (vs. Isolated)** – science is social; it requires replication of testing by different people and an openness to sharing results (peer review)

5

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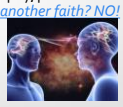
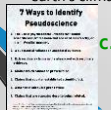
5. What is NOT science?

a. Non-science: events or phenomena that simply do not meet the NOTTUS criteria and therefore fall outside of the realm of science. This includes any belief system (ideology or religion), philosophy, personal opinions and attitudes, and ethics. *But isn't science just another faith? NO!*



b. Protoscience: science that is emerging or nearing fulfillment of the categories of NOTTUS; with more time, and better tools, new discoveries emerge. For example, research on patterns of electricity in our earth's climate system, mental telepathy or the search for aliens (SETI).



c. Pseudoscience: "Pseudo-" means false in Latin and so these are claims that appear to be scientific, but the claims do not meet the strict standards of NOTTUS; for example, astrology or scientology.

6

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6. On Testing and Evidence: In science, what is crucial in establishing a truth claim are the **types of evidence** one has to back up that claim. But **not all types of evidence are equally strong.**

Weak ↕ Strong

Quantity →

Quality →

a. **Anecdotal and expert evidence** (stories from lay people or individual experts – sometimes the *weakest* evidence).

b. **Experimental evidence** (not widely used in sociology, because it puts people in "unnatural" situations, but provides *greater strength*)

c. **Surveys and Questionnaires** (very widely used in sociology; can collect vast amounts of information; typically reliable but not always valid)

d. **Case Studies/Observation over time** (very widely used in sociology; can be **participant** or **non-participant;** typically valid but not always reliable)

7

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7. What makes a method valuable?

a. Reliability means ***generalizability of research*** or **the degree to which the research gives the same results when repeated in different settings.**

It is achieved through *large* ***quantity*** of results.

*(Ex: **surveys and questionnaires** – lots of people can fill them out, but the questions are limited. **Quantitative research** methods often achieve good reliability of results.)*

b. Validity means ***accuracy of research***

or **the degree to which the study measures *exactly* the reality it claims to be measuring.**

It is a measure of the ***quality*** of results.

*(Ex: **case studies and ethnographies** really get into the details. **Qualitative research** methods achieve good validity of results.)*

8