Notes for PHIL 2330 – Science and Society
Jan 20 – Spring 2022

From Chapter 1 of Samir Okasha's *A Very Short Introduction to the Philosophy of Science* --- Okasha thinks that what makes science special is its method. One famous example of a philosopher who tries to spell out the scientific method is Karl Popper.

Popper 1963 (*Conjectures and Refutations*) : The criterion of the scientific theory is its falsifiability, or refubility or testability.
Falsifiable = make observable predictions

The logic of falsifiability makes sense whereas the apparent "logic" of confirmation is actually a fallacy.

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| If H then O | If H then O |
| Observe O | Observe NOT O |
| Conclude H | Conclude NOT H |
| "Logic" of confirmation | Logic of falsification |
| Affirming the consequent<br>Deductively invalid | Modus tollens<br>Deductively valid |

Okasha thinks that testability is important, but Popper's theory isn't quite right.

If there are any counterexamples to Popper's claim, they would be one of two types:

Claim ; "A theory is scientific if and only if it is falsifiable (makes predictions you can check)
Counter example types:

1) it is falsifiable but not science
2) it is science but not falsifiable

Okasha's example of a problem for Popper is astronomers between 1781 (discovery of Uranus) and 1846 (discovery of Neptune). Newton's theory predicted a certain orbit for Uranus and astronomers observed that the actual path was different.

- If Popper was right they should have dismissed Newtons theory as it was falsified. But they didn't. Instead, they assumed that there was a problem elsewhere with background assumptions. As it turns out, they were right. There was a planet further away (Neptune) pulling on Uranus.

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Two types views about modern science and its history:

View 1: science is roughly continuous and exists everywhere (all cultures – goes back very far into the past). Science is basically any attempt to investigate the world (prediction and explanation)

View 2: modern science is a special kind of thing- started roughly in the scientific revolution and has spread throughout the world. Here modern science is very different from ancient science. – Scientific Revolution occurred in Europe roughly between 1543 (Copernicus) and 1687 (Newton)

Okasha's view seems to be a version of view 2 – and it is the method (experiments, testing, mathematics) which is the big change in the scientific revolution.

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Kelly James Clark agrees that the method sets science apart from non-science. Something like the hypothetico-deductive method (hypothesis testing). But he thinks "science" can't really be defined exactly.

He says the same thing about religion (that is can't be defined explicitly)

William Alston: religion is a web of "religion making characteristics"

1. Belief in supernatural beings.
2. A distinction between sacred and profane objects.
3. Ritual acts focused on sacred objects.
4. A moral code believed to be sanctioned by the gods.
5. Characteristic religious feelings (awe, sense of mystery, and adoration).
6. Prayer and other forms of communication with gods.
7. A worldview,or general,picture of the world as a whole,and the place of the individual therein.
8. A more or less total organization of one's life based on the worldview.
9. A social group bound together by the above.

## According to Clark, there are three main ways to interpret the relationship between science and religion (C.S.I.)

*Conflict*: Science and religion are in continual conflict, both historically and fundamentally.

*Separation*: Science and religion are entirely independent, and operate within separate realms.

*Integration*: Science and religion are fundamentally related, and can correct and enhance each other.

Conflict

- Galileo had to pledge not to teach and advocate the copernican theory (the idea that the earth moves around the sun) because it contradicted the scriptures

But then in 1632 galileo published “the system of the world” (proof of the Copernican doctrine) Rome then accused him of heresy (belief or opinion that contradict religious doctrine) and imprisoned him. Doctrine= belief or set of beliefs held and taught by a group
Darwins “orgin of species” demonstrates conflict between science and religion
Peter Atkins; “the limitless power of science” believes science defeats religion and we should accept science as king. He uses science as a religion substitute.

Seperation

- Separation model- science and religion are in different realms so they cannot conflict.
- science rests on human observation and reason, religion rests on divine revelation
- Gould said that science and religion belong to separate domains  called “non overlapping magisteria” NOMA
- Domain of science vs. domain of normative (meaning, values, purpose)

Integration

- Integration model encourages mutual interaction between science and religion. Science and religion are both sources of knowledge and are about the same thing (or at least overlap). Yet they don’t conflict – instead they work together.