

Reflections on facts and values

Gerbrand Komen, 4/2 2016

Summary

A distinction should be made between facts and values. However, non-epistemic values do play a role in climate science, and therefore also in the scientific justification of factual statements. This leads to discussions in science and society, and strengthens the relevance of values in discussions on policy options.

Contents

- 1. Is/ought 2
- 2. Facts..... 2
- 3. Epistemic reasoning and the justification of factual statements 2
- 4. Values 3
- 5. Can one distinguish facts and values? 4
- 6. Why would one want to distinguish between facts and values? 4
- 7. Are facts and values independent of each other? 4
- 8. What *facts* are relevant in the climate debate?..... 5
- 9. What *values* are relevant in the climate debate? 5
- 10. Values governing policy options..... 5
- 11. Values in scientific reasoning 5
 - Epistemic values 5
 - Non-epistemic values 6

1. Is/ought

In my introduction I started off with the is/ought distinction. It is clearer to distinguish *factual* (descriptive) *statements* and *normative statements*:

- Factual (descriptive) statements are statements about the world as we see it
- Normative statements are statements about the world as we would like to see it

2. Facts

<http://plato.stanford.edu/entries/facts/> shows how complex the discussion on this concept is.

<https://en.wikipedia.org/wiki/Fact> lays out (some of) this complexity in a more accessible way.

I propose this definition for the sake of our discussion:

A factual (descriptive) statement is a *fact* if it really occurred or is actually the case. The usual test for a statement of fact is verifiability—that is, whether it can be demonstrated to correspond to experience.

Examples

- Someone who hallucinates and observes a spider (while others don't see this spider) might say 'I observe a spider'. This is a statement about the world as seen by the speaker. But in reality there is no spider. So, the spider is not a fact. The hallucination itself is a fact.
- When I say Bengtsson has an impressive scientific track record, then I base my statement on facts: my conversations with him, his publications and his functions in science, and values expressing what I found valuable in these conversation, publications and functions, but it is a statement of my perception of the world as it is, not about the world as I would like to see it. If others have the same perception you could say that it is a fact that Bengtsson has an impressive track record. Of course, others might dispute this fact.

Factual (descriptive) statements are called *scientific* (or epistemic) *facts* if justified by *epistemic reasoning*. Scientific justification of a fact is the result of epistemic reasoning.

So:

Justified factual statements are called *facts*.

Factual (descriptive) statements are called *scientific* (or epistemic) *facts* if justified by *epistemic reasoning*.

3. Epistemic reasoning and the justification of factual statements

Epistemic reasoning is reasoning that follows *epistemic rules*.

Epistemic rules are rules that tell us in some general way what it would be most rational to believe under various epistemic circumstances (Paul Boghossian, Epistemic rules. Journal of Philosophy 105 (9):472-500 (2008) https://www.academia.edu/241405/Epistemic_Rules).

There is no consensus as to what these epistemic rules are, but I found the following useful:

“Scientific reasoning for me is reasoning about what to make of evidence, properly constrained by respect for the evidence.”(Heather Douglas)

This implies two rules:

- one ought to reason correctly
- the evidence ought to be respected

People could have different views of what constitutes ‘respect for the evidence’. My interpretation is: taking measurements, theories, models and publications serious. I am not sure whether you could consider the track record of the messenger as evidence.

It seems useful to make a distinction between these oughts and a description of what scientists really do when they are reasoning. That’s why I introduced the concept ‘epistemic reasoning’ to distinguish the ideal from the reality of ‘scientific reasoning’ i.e. the kind of reasoning that scientists use in practice.

I define scientists loosely as people with a scientific education, working in a research institution and/or publishing books or scientific papers in peer reviewed journals.

Cognitive science and social psychology study the actual process of reasoning (see https://en.wikipedia.org/wiki/Motivated_reasoning).

4. Values

[https://en.wikipedia.org/wiki/Value_\(ethics\)](https://en.wikipedia.org/wiki/Value_(ethics)): In ethics, *value* denotes something's degree of importance, with the aim of determining what action of life is best to do or live (deontology), or to describe the significance of different actions (axiology). My interpretation: values indicate what is good, useful, important, beautiful, desirable etc. They are generally vague and general rather than specific choices. Values are implicit in normative statements (oughts). Reversely, values underlie normative statements.

Values can be made explicit. 1. People may say what their values are (if asked). 2. You can also try to reconstruct the value(s) that underlie a particular normative statement. The first method uncovers the *conscious* values that the person *wants* to share. Method (2) is a more indirect determination and prone to subjective judgment.

Bart Verheggen also introduced the concept of unconscious value. This might be a useful concept, but it is not clear to me how it could be operationalized. What really matters is the fact that reasoning (and behaviour) is a complex process determined by many factors (see the remark on motivated reasoning at the end of §3.)

- Values can be seen as providing guidance for action. Cognitive science and (social) psychology study to what extent this actually happens. The relation is often found to be relatively weak.
- There are many different values, e.g. personal (google on {list, values}) and social, epistemic and non-epistemic.
- The relative weight one gives to values can be ranked with the help of a Likert-scale.
- Complex relationships between different values can be addressed with the help of a values tree. A value tree identifies and organises the values of an individual or group with respect to possible decision options. It structures values, criteria, and corresponding attributes in a hierarchy, with general values and concerns at the top, and specific attributes at the bottom.
http://www.belspo.be/belspo/ssd/science/reports/sepia_finrep_final.ml.pdf
<http://www.iiia.csic.es/files/pdfs/NormClassification.pdf>

Sometimes values can be ‘justified’, for example, on the basis of their usefulness in the past. In most cases emotions, personal beliefs and personal experiences play an important role.

5. **Can one distinguish facts and values?**

Facts and values are expressed in different ways. Compare:

- Fact: The sun heats the earth
- Value: Caring about our environment

It is easier to compare factual and normative statements

- The sun heats the earth
- One should (ought to) care for the environment

Usually a distinction can be made. (Factual statements are statements about the world as we see it; normative statements are statements about the world as we would like to see it.)

6. **Why would one want to distinguish between facts and values?**

Values have a personal emotional color. Facts much less so. Therefore it should be easier to agree on facts. [But (uncertain) epistemic uncertainty and expert judgment make facts ‘less objectively true’ then some would want.] Values play an essential role in democratic decision making.

7. **Are facts and values independent of each other?**

No. “Even though one can make the conceptual distinction, and one cannot derive an is from only oughts nor an ought from only is’s, they are entangled because there are usually is and ought statements underlying each instance of both.” (Heather Douglas)

It is obvious that facts are underlying values. Care for the environment is related to the fact that we depend on our environment.

A central issue in the present discussion is the question which values legitimately underlie the establishment of scientific facts.

Note: because facts underlie values and values underlie oughts one has (Bob Brand)

is -> value system -> ought

8. What *facts* are relevant in the climate debate?

Facts about the physical climate system, such as summarized in IPCC wg1. Facts about the larger earth system, including the biosphere (wg2) and the socio-economic system (wg3). Smeets emphasized the following facts

- the risks of global warming
- the COP21 and other agreements, the Urgenda verdict
- the fact that decision making (even deciding on choosing or not choosing) involves values

9. What *values* are relevant in the climate debate?

I find it useful to distinguish - in addition to personal values - values *governing policy* options (including social values) and *values governing scientific reasoning*.

10. Values governing policy options

Overarching for many is the wellbeing of humans and their habitat. There are many secondary values, such as intergenerational justice, but also fostering respect for science, and respect for democracy. This could perhaps be made more transparent and explicit with the help of a values tree. Bij de politieke besluitvorming zijn ook staatsrechtelijke en juridische waarden in het spel.

11. Values in scientific reasoning

Traditionally one makes a distinction between epistemic values and non-epistemic values.

Epistemic values¹

To me epistemic values are first of all the values that underlie epistemic reasoning, i.e. values that are implicit in our basic epistemic rule. ('Scientific reasoning is reasoning about what to make of evidence, properly constrained by respect for the evidence.').

Again there is no agreement on what these epistemic values are, but Thomas Kuhn argued that the following values are important:

- Accurate – a theory should be empirically adequate with experimentation and observation
- Consistent – a theory should be internally consistent, but also externally consistent with other theories
- Broad Scope – a theory's consequences should extend beyond that which it was initially designed to explain

¹: 'Epistemic value' is also used, in different meanings, e.g. to indicate how useful a theory or cognitive process is for the development of our understanding.]

- Simple – the simplest explanation should be preferred, principally similar to Occam’s razor
- Fruitful – a theory should disclose new phenomena or new relationships among phenomena

In scientific practice other values play a role. For example, in order to minimize scientific fraud transparency and reproducibility are seen as important.

Personal psychological values are also relevant. Bertrand Russell e.g. mentions ‘the desire to understand’. There seems to be quite some literature on the role of personal values. I believe that curiosity, doubt (in the sense of sincere scepticism), eagerness to understand, integrity, willingness to consider alternative explanations, willingness to change one’s mind are all relevant.

It seems to me that epistemic values are broadly supported because they have been successful in the past.

Non-epistemic values

It is obvious that non-epistemic values, both social and personal, play a role in scientific practice. However there is a general feeling that these non-epistemic values should not play a role in epistemic reasoning.

Bertrand Russell formulated it as follows: Many questions, formerly obscured by the fog of metaphysics, can be answered with precision, and by *objective methods* which introduce nothing of the philosopher’s temperament except the desire to understand.

Heather Douglas wrote: Scientific reasoning for me is reasoning about what to make of evidence, properly constrained by respect for the evidence. *You should not engage in values acting in the place of (or in the same mode as) evidence.*

Steel (2010, p.17) as quoted by Ludwig argued that only epistemic values are legitimate in theory choice because they promote the attainment of truth.

Gregor Betz also argued that the justification of scientific findings should not be based on non-epistemic (e.g. moral or political) values.

Heather and others on the other hand insist that values do and must play a role in science.

So this raises the following questions:

- What can one say about the role of non-epistemic values in climate science?
- How does this impact on the public debate and how can one distinguish between scepticism and ‘pseudoscepticism’?