The Grue Paradox

Seminar 4: Philosophy of the Sciences

Wednesday, 28 September 2011

Required readings

Peter Godfrey Smith. *Theory and Reality.* Sections 3.4

Frank Jackson ‘Grue’ (on course website)

Tutorials

Next Tutorials will be next week on Friday 4 November

Class 1: 1 PM - 2 PM seminar room 305

Class 2: 4 PM – 5 PM seminar room 305

Required reading:

- Peter Godfrey Smith. *Theory and Reality.* Sections 3.4
- Frank Jackson 'Grue'

Required reading and seminar handouts must be brought along to tutorials

The final two days of tutorials will be on Friday 18 November and Friday 2 December.

Topics left in course

- The grue paradox (This week)
- What is probability? (Next week)
- Explanations (2 weeks)
- Scientific realism (2 weeks)

Projection

(Proj) $[Aa_i.Ba_i]_n.Aa_{n+1}$ is a good reason for believing Ba_{n+1}

where '$[Aa_i.Ba_i]_n$' is short for '$Aa_1.Ba_1$…. $Aa_n.Ba_n$' and n is sufficiently large.

Grue

Def: x is grue iff either

a) x is green and examined, or else
b) x is blue and not examined

Goodman's grue paradox

Suppose

i) we have examined the emeralds $a_1,\ldots, a_n$, and found them to all be green (and hence also grue) and

ii) a_{n+1} is an emerald that has not been examined

It follows from (Proj) that we have good reason to think that a_{n+1} is grue (and hence blue)!

Non-projectibility responses

There is something wrong with ‘grue’.

(Proj) needs to be restricted so that A and B cannot be “bad” predicates like ‘grue’.

Projectible predicates

Def: A and B are projectible iff (Proj) is true when used with A and B

Example: ‘green’ is projectible, ‘grue’ is not projectible

Challenge: Which predicates are non-projectible, and why?

Account 1: The time account

The non-projectible predicates of those whose definitions refer to a time.

Problem 1: `was born in 1980’ should be projectible.

Problem 2: ‘is identical to e_1,…, or e_n’, where ‘e_1’,…, or ‘e_n’ are names of the unexamined emeralds, should not be projectible.

Account 2: Goodman’s account

Def: A predicate P is well-entrenched iff it expresses a property that has often been used by people in the past make predictions

Goodman’s account: P is projectible iff P is well-entrenched

Problems with Goodman’s account

Prob 1: Had human beings used ‘grue’ in the past and make predictions, such predictions about unexamined emeralds would still be bad

Prob 2: Scientists can come up with new projectible predicates that don’t express properties that have been used to make predictions in the past

Natural Kinds

Def (on one understanding): A natural kind is a property that makes for a genuine respect of resemblance among its instances

Examples of natural kinds: being a cube, being gold

Examples of non-natural science: being either a cube or a left ear, being grue

Account 3: Quine’s account

P is projectible iff P expresses a natural kind

Challenge: How can we know which properties are natural kinds?

Quine on the raven paradox

Quine also appeals to natural kinds to respond to the raven paradox.

According to his response, (ITC) needs to be replaced by:

(ITCN) For any predicates F and G **that express natural kinds**, and any name a,

i) Fa.Ga confirms $\forall x(Fx \supset Gx)$ (All Fs are Gs); and

ii) Fa.~Ga disconfirms $\forall x(Fx \supset Gx)$.

Quine on the raven paradox (cont)

Since ‘non-black’ and ‘non-raven’ do not express natural kinds according to Quine,

non-black non-ravens do not confirm all non-black things are non-ravens, and hence does not confirm all ravens are black.

Jackson's response to the grue paradox

All predicates are projectible ((Proj) is true for all predicates A and B)

In particular, $[Ea_i.G^*a_i]_n.Ea_{n+1}$ is a good reason for believing G^*a_{n+1}, where E symbolises 'is an emeral' and G* symbolises 'is grue'

Jackson's response to the grue paradox (cont)

It's just that $[Ea_i.G^*a_i]_n.Ea_{n+1}.K$ is not a good reason to believe G^*a_{n+1}, where K is our background knowledge.

Hence G^*a_{n+1} is not supported by our total evidence.

Why is this?

The relevant part of K is:

$[Ha_i]_n.\sim Ha_{n+1}.[\sim Ha_i \,\Box\!\rightarrow \sim G^*a_i]_n$

where ‘A □→ B’ means ‘Had A been the case, B would have been the case’, and H symbolises ‘is examined’.

General claim

Jackson claims that whenever we have background knowledge

$K = [Ha_i]_n.{\sim}Ha_{n+1}.[{\sim}Ha_i \;\Box\!\!\rightarrow {\sim}Ba_i]_n$

$[Aa_i.Ba_i]_n.Aa_{n+1}.K$ is not a good reason to believe Ba_{n+1}.

Example

Suppose I know that:

i) All diamonds $a_1,\ldots, a_n$, I have observed have glinted (in the light)

ii) All the diamonds $a_1,\ldots, a_n$, I have observed have been polished, and this is why they have glinted (If they were polished they wouldn't glinted.)

Two cases

Case 1: I also know that a_{n+1} is a diamond. Then my evidence gives me good reason to believe that a_{n+1} glints.

Case 2: : I also know that a_{n+1} is an unpolished diamond. Then my evidence does not give me good reason to believe that a_{n+1} glints.

Why? Because each observed Diamond wouldn't have glinted if it wasn't polished.

Formal description

$[Da_i.Ga_i]_n.Da_{n+1}$ confirms Ga_{n+1}

But $[Da_i.Ga_i]_n.Da_{n+1}.[Pa_i]_n.{\sim}Pa_{n+1}.[{\sim}Pa_i \,\Box\!\!\rightarrow {\sim}Ga_i]_n$ does not confirm Ga_{n+1}

Some questions to think about

- Does $[Da_i.Ga_i]_n.Da_{n+1}.[Pa_i]_n.{\sim}Pa_{n+1}$ confirm Ga_{n+1}?
- What is Jackson's view about this?
- Can non-projectibility accounts deal with both case 1 and case 2?
- Does Jackson's account have any problems?