Oxford Philosophical Society Members' Weekend 2016

Presentation by Mike Donnan

Grue

or

The New Riddle of Induction

Deductive Porridge Argument

1. If my breakfast cereal tomorrow is porridge, then it will nourish me.

2. My breakfast cereal tomorrow is porridge.

3. Therefore, my breakfast cereal tomorrow will nourish me.

Inductive Porridge Argument

1. Every portion of porridge eaten for breakfast to date has been nourishing.

2. Therefore, every portion of porridge eaten for breakfast is nourishing; or at least the next portion of porridge eaten for breakfast will be nourishing.

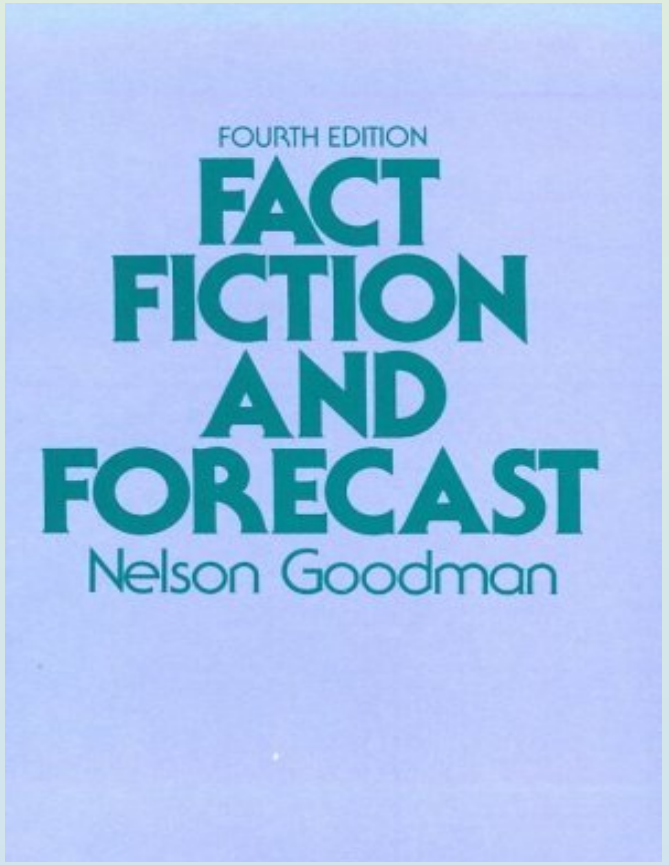
Inductive Planetary Orbit Argument

1. Every orbit of a planet around its star so far observed has been elliptical with the star at one focus.
2. Therefore, every orbit of a planet around its star is elliptical with the star at one focus; or at least the next orbit of a planet around its star to be observed will be elliptical with the star at one focus.

Simple Inductive Rule

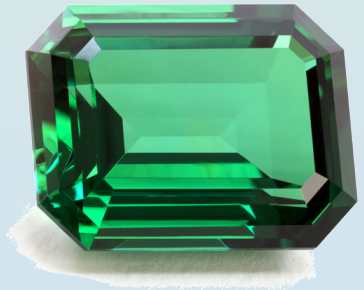
1. Every F that has been examined has been G.
2. Therefore, every F (whether examined or unexamined) is G; or at least the next F to be examined will be G.

Nelson Goodman (1906 – 1998)



Simple Inductive Rule applied to emeralds using “green”

1. Every emerald that has been examined has been green.
2. Therefore, every emerald is green; or at least the next emerald to be examined will be green.



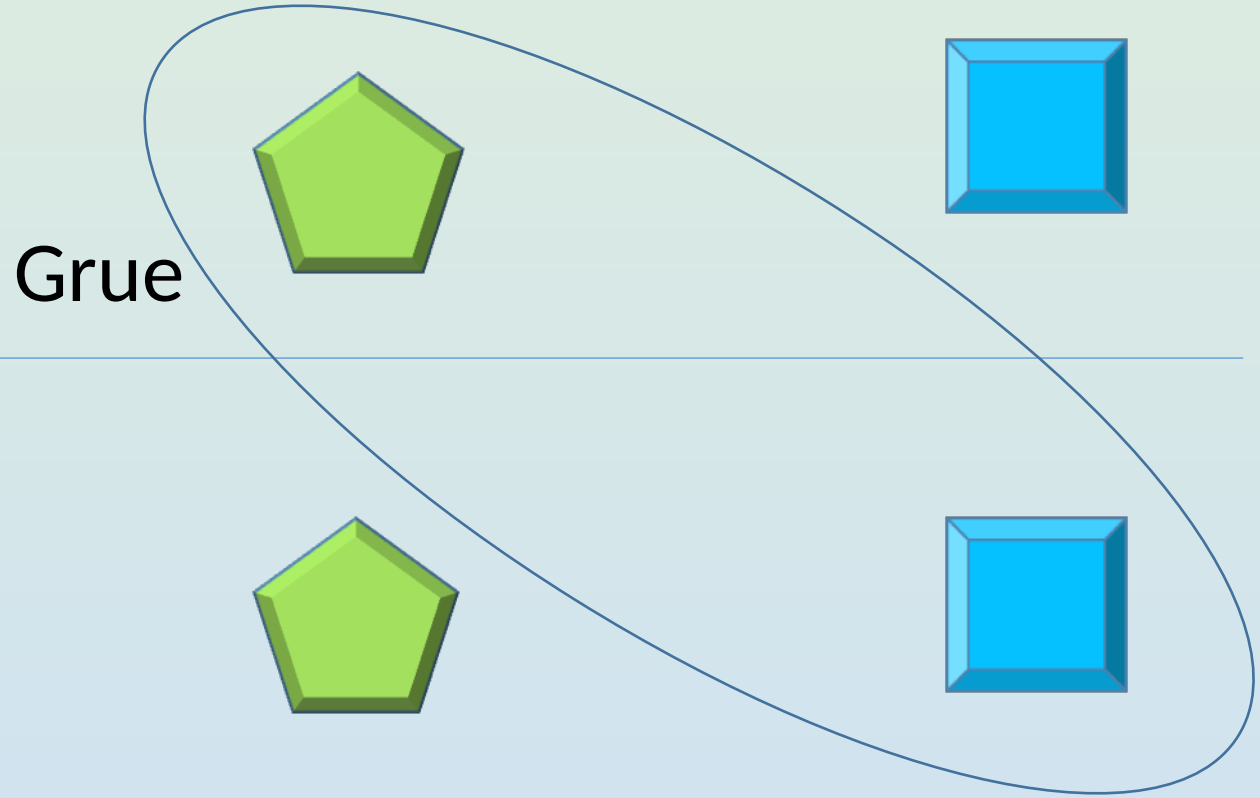
Revised definitions of “grue” and “bleen”

- An object is **grue** if and only if it is first examined before time T and is green; or is first examined at or after time T and is blue.

- An object is **bleen** if and only if it is first examined before time T and is blue; or is first examined at or after time T and is green.

Visual representation of grue objects

- First examined before time T

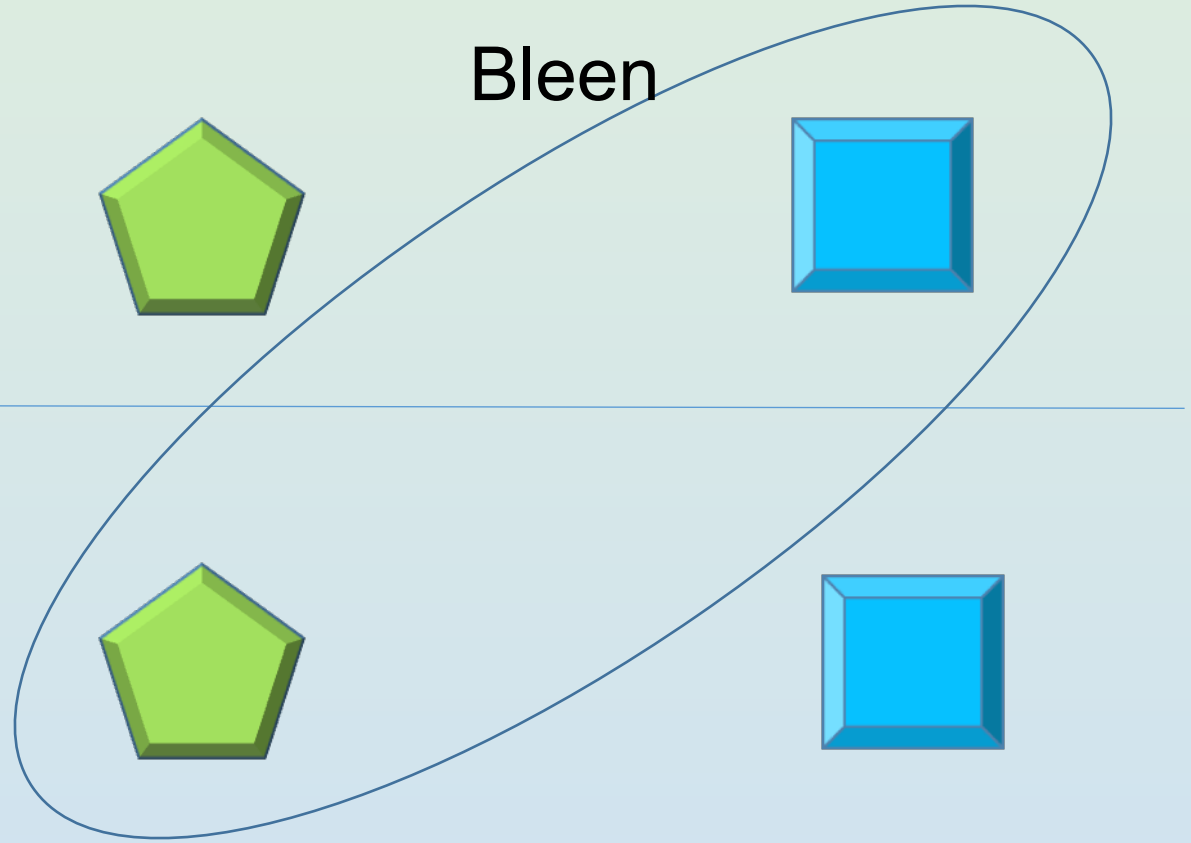


- First examined at or after time T

[adapted from Bradley, D. (2015)]

Visual representation of bleen objects

- First examined before time T

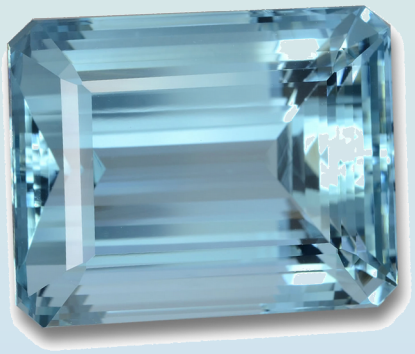


- First examined at or after time T

[adapted from Bradley, D. (2015)]

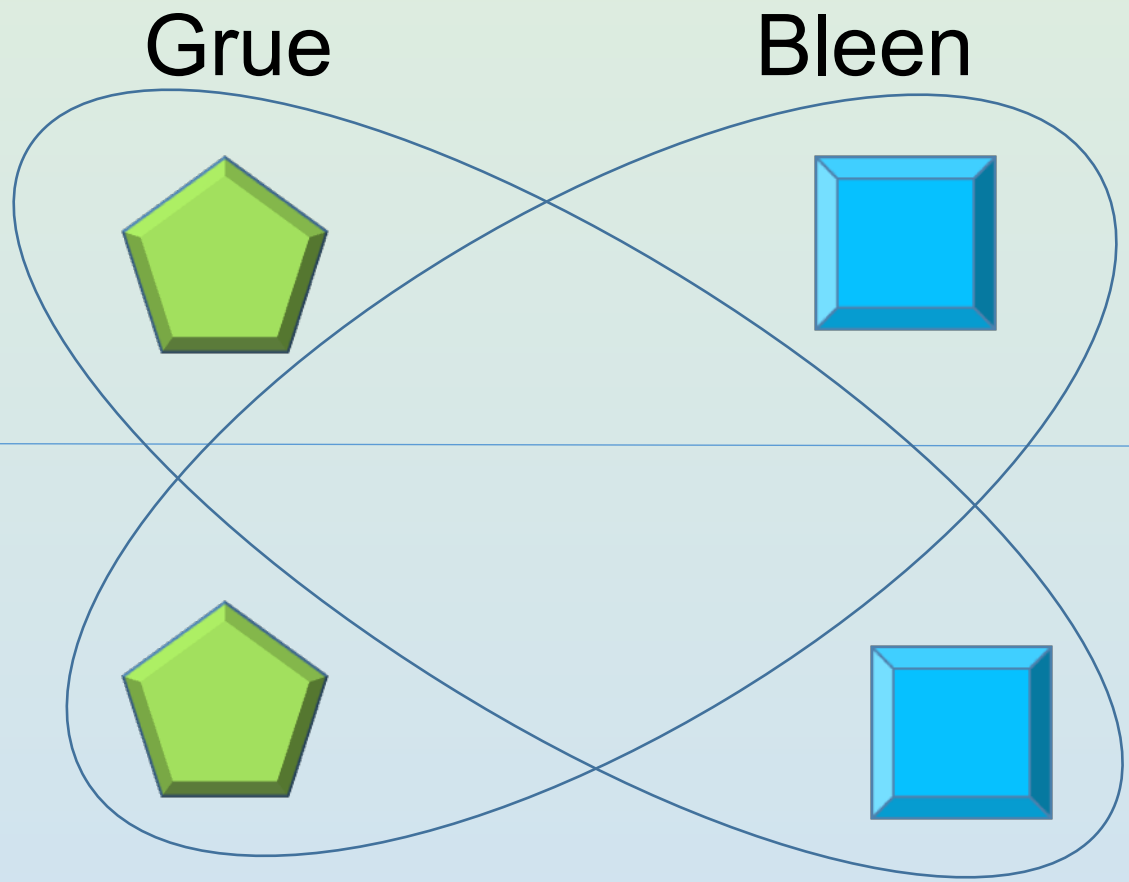
Simple Inductive Rule applied to emeralds using “grue”

1. Every emerald that has been examined has been grue.
2. Therefore, every emerald is grue; or at least the next emerald to be examined will be grue.



Relating “green/blue” to “grue/bleen”

- First examined before time T



- First examined at or after time T

[adapted from Bradley, D. (2015)]

Defining “green/blue” with “grue/bleen”

- An object is **green** if and only if it is first examined before time T and is grue, or is first examined at or after time T and is bleen.

- An object is **blue** if and only if it is first examined before time T and is bleen, or is first examined at or after time T and is grue.

All that glints is not diamond

1. Every diamond that I have examined has glinted in sunlight.
2. Therefore, every diamond glints in sunlight; or at least the next diamond that I examine will glint in sunlight.

Frank Jackson's working definition of "grue" (1975 paper)

x is grue if and only if (*x* is examined and is green)
or
(*x* is not examined and is blue)

Simple Inductive Rule (with Jacksonian counterfactual condition)

1. Every F that has been examined has been G.

1A. If those Fs had not been examined they would still have been G.

2. Therefore, every F (whether examined or unexamined) is G.

Holds when F = emerald and G = green.

Fails when F = emerald and G = grue.

[see Godfrey-Smith, P. (2003)]

Definition of “emerose”

x is an emerose iff (*x* is examined and is an emerald)

or

(*x* is unexamined and is a rose).

Emerose Simple Inductive Rule (with Jacksonian counterfactual condition)

1. Every emerose that has been examined has been green.

1A. If those emeroses had not been examined they would still have been green.

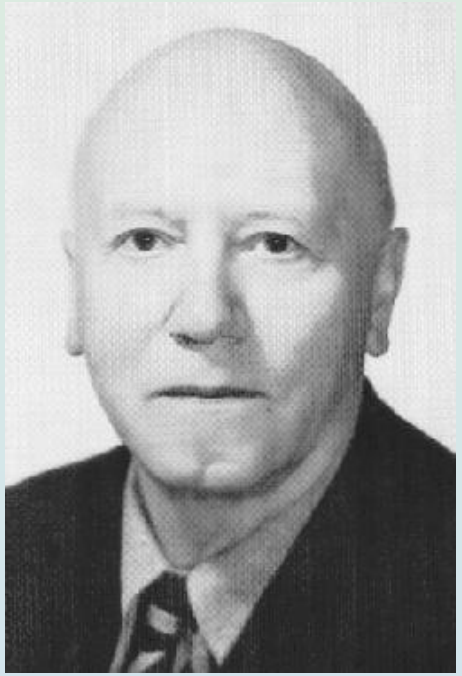
2.Therefore, every emerose (whether examined or unexamined) is green.

[see Godfrey-Smith, P. (2003)]

Jackson's working definition of "grue" in truth-table form ('inclusive or'/ V)

X is examined and is green	X is not examined and is blue	X is grue (col.1) V (col. 2)
True	True	True
True	False	True
False	True	True
False	False	False

Quotation from C. D. Broad (1887- 1971) on the occasion of Francis Bacon's tercentenary



May we venture to hope that when Bacon's next centenary is celebrated the great work which he set going will be completed; and that Inductive Reasoning, which has long been the glory of Science, will have ceased to be the scandal of Philosophy?

An interesting case from the history of chemistry (1)

- FACT. All samples of xenon gas tested before 23 March 1962 failed to undergo a chemical reaction.

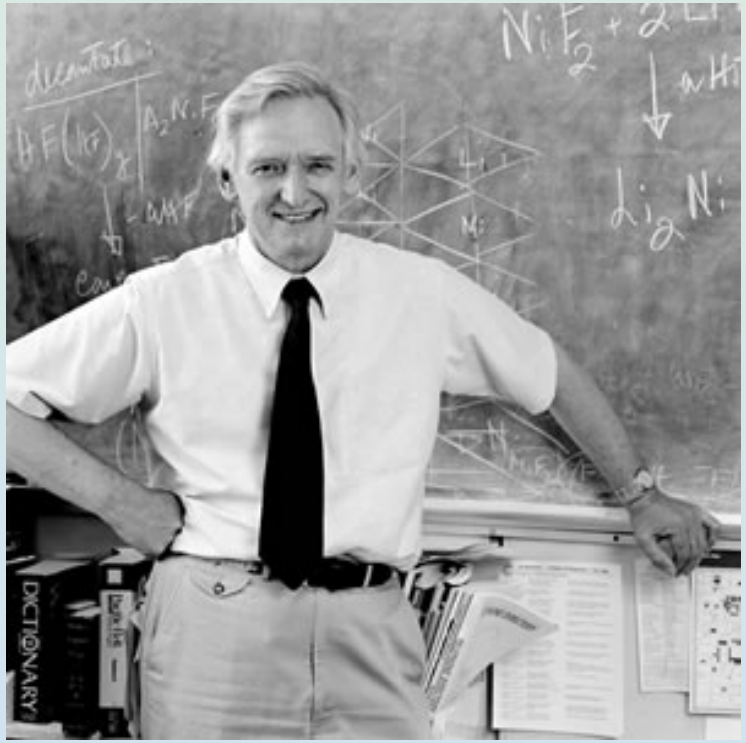
- PREDICTION. The first sample of xenon gas to be tested on or after 23 March 1962 will fail to undergo a chemical reaction.

An interesting case from the history of chemistry (2)

- DEFINITION. A sample of substance X is **inertactive** iff it is tested before 23 March 1962 and fails to undergo a chemical reaction, or is tested on or after 23 March 1962 and is found to undergo a chemical reaction.
- All xenon gas samples tested before 23 March 1962 were also inertactive.
- ALTERNATIVE PREDICTION. A sample of xenon gas that is tested on or after 23 March 1962 will be found to undergo a chemical reaction.

An interesting case from the history of chemistry (3)

Neil Bartlett (1932-2008)



First reaction of xenon gas

$$Xe + PtF_6 \rightarrow Xe[PtF_6]$$

Carried out at about 7pm on 23 March 1962

Don’t try this at home!

Goodman's original definitions of "grue" and "bleen"

- The predicate "grue" applies to all things examined before [a certain time] ***t*** just in case they are green but to other things just in case they are blue.

- The predicate "bleen" applies to all things examined before [a certain time] ***t*** just in case they are blue but to other things just in case they are green.