Completely Neutral Evidential Support
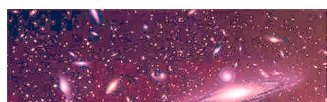
3

Unconnected Parallel Universes: Completely Neutral Support
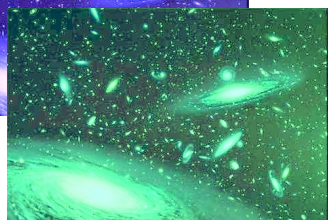
h = ? c = ?
G = ? …

h = ? c = ?
G = ? …

h = ? c = ?
G = ? …

Same laws, but constants undetermined.
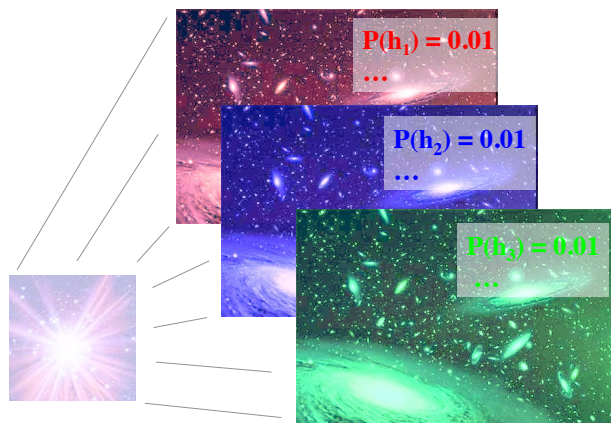
Background evidence is neutral on whether h lies in some tiny interval or outside it.

h
0   1   2   3   4   5

4

1

Parallel Universes Born in a Singularity: Disfavoring Evidence

$P(h_1) = 0.01$
…

$P(h_2) = 0.01$
…

$P(h_3) = 0.01$
…

Stochastic law assigns probabilities to values of constants.

Background evidence strongly disfavors h lying in some tiny interval; and strongly favors h outside it.

very
probable

very
improbable

very
probable

h

0   1   2   3   4   5   5
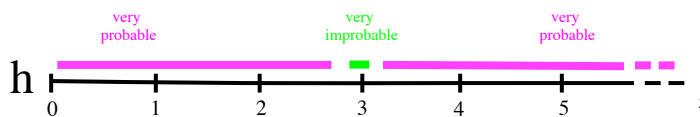
How to
Represent
Completely
Neutral Evidential
Support

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Probabilities from 1 to 0 span support to disfavor

$$P(H|B) + P(not\text{-}H|B) = 1$$

P(H|B)

P(not-H|B)

P(not-H|B)

P(H|B)

Large. Strong favoring. → Small. Strong disfavoring.

Small. Strong disfavoring. → Large. Strong favoring.

No neutral probability value available for neutral support.   7

Underlying Conjecture of Bayesianism…

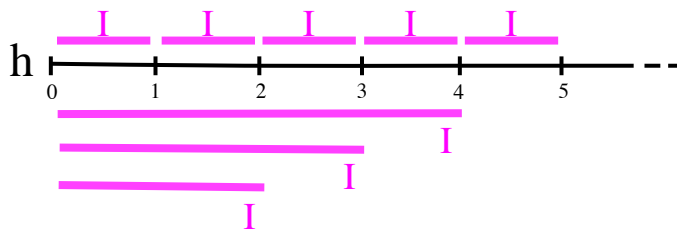Logic of physical chances → Logic of *all* evidence

…Fails

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Completely Neutral Support

[A|B] = support
A accrues from B

$$\left[\begin{array}{c} \text{any contingent} \\ \text{proposition} \end{array} \middle| B \right] = I$$

"indifference"
"ignorance"

Argued in some detail in
John D. Norton, "Ignorance and Indifference." *Philosophy of Science*, **75** (2008), pp. 45-68.
"Disbelief as the Dual of Belief." *International Studies in the Philosophy of Science*, **21**(2007), pp. 231-252.
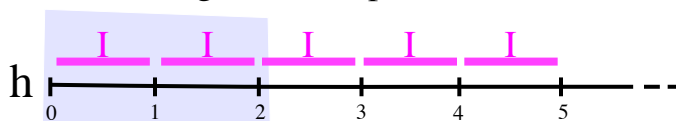
9

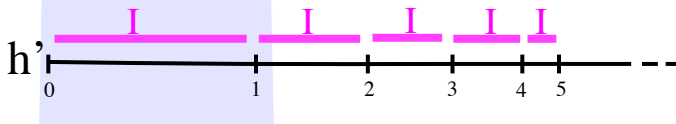Justification…

I. Invariance under Redescription

using the Principle of Indifference

Equal support
for h in equal
h-intervals.

rescale h
to h' = f(h)

Equal support
for h' in equal
h'-intervals.

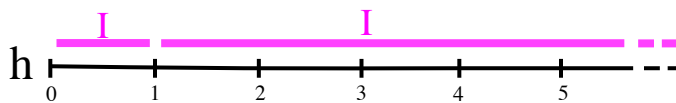[h in [0,1] *OR* h in [1,2] | B] = [h in [0,1] | B] = [h in [1,2] | B]

The principle of indifference does not lead to paradoxes.
Paradoxes come from the assumption that evidential support must always be probabilistic.
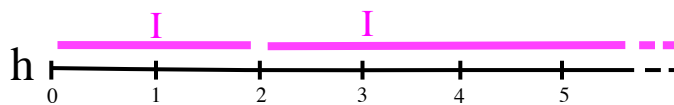
10

Justification…

II. Invariance under Negation

Equal (neutral) support for h in [0,1] and outside [0,1].

h

0   1   2   3   4   5

Equal (neutral) support for h in [0,2] and outside [0,2].

h

0   1   2   3   4   5

[h in [0,1] *OR* h in [1,2] | B] = [h in [0,1] | B]

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Neutrality and
Probabilistic
Independence

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Probabilistic vs. Neutrality of independence (total) support

For a partition of all outcomes
$A_1, A_2, \ldots$

$P(A_i|E\&B) = P(A_i|B)$ all i

For incremental measures of support*

$$\text{inc } (A_i, E, B) = 0$$

$[A_i|B] = I$ all contingent A_i

Tertiary function

Binary function

Presupposes background probability measure.

Presupposes NO background probability measure.

* e.g. $d(A_i, E, B) = P(A_i|E\&B) - P(A_i|B)$
$s(A_i, E, B) = P(A_i|E\&B) - P(A_i|\text{not-}E\&B)$
$r(A_i, E, B) = \log[P(A_i|E\&B)/P(A_i|B)]$
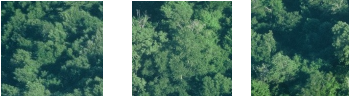etc.

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Inductive Disjunctive Fallacy

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Completely neutral support conflated with **Strongly disfavoring support**

Neutral support		Disfavoring
I	a_1	prob = 0.01
I	a_1 or a_2	prob = 0.02
I	a_1 or a_2 or a_3	prob = 0.03
…	…	…
I	a_1 or a_2 or … or a_{99}	prob = 0.99

Disjunction of very many neutrally supported outcomes is NOT a strongly supported outcome.

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van Inwagen, "Why is There Anything At All?"

Proc. Arist. Soc., Supp., **70** (1996). pp.. 95-120.

One way not to be.

Infinitely many ways to be.

• • •

Probability zero. "As improbable as anything can be."

Probability one. As probable as anything can be.

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Our Large Civilization

Ken Olum, "Conflict between Anthropic Reasoning and Observations,"
Analysis, **64** (2004). pp. 1-8.

Fewer ways we can be in small civilizations.

"Anthropic reasoning predicts we are typical…"

Vastly more ways we can be in large civilizations.

• • •

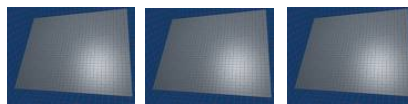"… [it] predicts with great confidence that we belong to a large civilization."

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Our Infinite Space

Informal test of commitment to anthropic reasoning.

Fewer ways we can be observers in a finite space.

Infinitely more ways we can be observers in an infinite space.

• • •

Hence our space is infinitely more likely to be geometrically infinite.

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