

Recent advances in **Logics of Lying**

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Outline

Self-fulfilling prophecies

Science in pictures

Self-consistent theories

Self-confirming theories

LoL

D. Pavlovic

Self-prophecies

Science

Self-science

Self-confirming

Outline

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A desert place. Thunder and lightning.

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A desert place. Thunder and lightning.



Enter three Witches

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The Tragedy of Macbeth

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Three Witches' prophecy

First Witch: All hail, Macbeth! Hail to thee, Thane of Glamis!

Second Witch: All hail, Macbeth, hail to thee, Thane of Cawdor!

Third Witch: All hail, Macbeth, thou shalt be King hereafter!

The Tragedy of Macbeth

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Self-prophecies

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Self-fulfilling prophecy

1. Macbeth is just a little spooked that the witches know that he is Thane of Glamis.

The Tragedy of Macbeth

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1. Macbeth is just a little spooked that the witches know that he is Thane of Glamis.
2. Macbeth returns home. The King is visiting. He promotes Macbeth into Thane of Cawdor.

The Tragedy of Macbeth

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Self-fulfilling prophecy

1. Macbeth is just a little spooked that the witches know that he is Thane of Glamis.
2. Macbeth returns home. The King is visiting. He promotes Macbeth into Thane of Cawdor.
3. Panicking about the prophecy, Macbeth kills the King — and realizes the prophecy.

How does future forecasting work?

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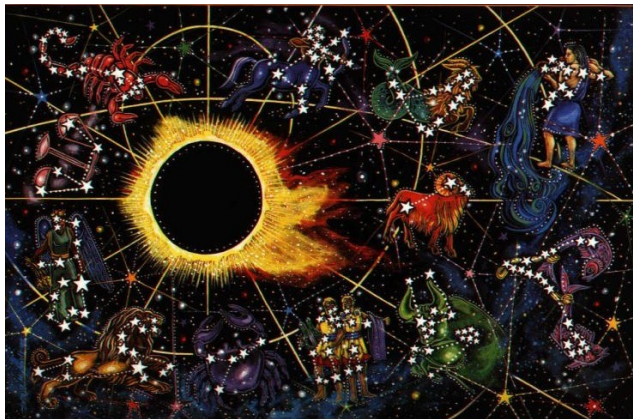
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How do the stars determine my future from a distance of
30,000 light years?

Is lying sometimes a rational strategy?

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Is lying effective? If not, why do we lie?

Why do we advertise?

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The image shows a screenshot of the NuBrilliance website. The header features the NuBrilliance logo and the tagline "Professional-Style Microdermabrasion At Home!". Below the header is a navigation bar with links: HOME, TESTIMONIALS, INSTRUCTIONAL VIDEO, FAQ'S, REFILLS, and ORDER NOW!. A Facebook widget shows "NuBrilliance on Facebook" with a "Like" button and a count of 1,054. The main content area features a large image of a woman's face on the left. To the right, the text reads "Professional-Style Microdermabrasion AT HOME! DOCTOR APPROVED! FREE SHIPPING". Below this, it says "30-Day Trial" and "FOR ONLY \$14.95*". A list of skin concerns is provided: "Minimize The Appearance Of: Fine lines and wrinkles, Age spots, Uneven skin texture, Enlarged pores". There are also images of the product and its components. A "FREE BONUS!" section lists "3-Step Prep & Recovery" products: Preparation Cleanser, Collagen Regenerator, and Moisturizing Day Cream. At the bottom, there are two side-by-side images of skin before and after treatment, with arrows indicating the improvement. The text below these images states: "Built-in vacuum stimulates the production of collagen for smoother, more youthful looking skin. The Diamond Tip gently exfoliates the outermost layer of skin using real, laser-cut diamonds, which promote the growth of healthy cells."

If the market is efficient, and computes the right prices,
why is it rational to invest in advertising?

Logics of Practical Reason

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Self-prophecies

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- ▶ **Order:** "Honesty is the best policy."
 - ▶ Obey the laws, or you will get caught.

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 - ▶ Obey the laws, or you will get caught.

- ▶ **Truth:** "Test your theories. Reject when false."
 - ▶ Obey the laws of nature, or you will crash.

- ▶ **Order:** "Honesty is the best policy."
 - ▶ Obey the laws, or you will get caught.
- ▶ **Truth:** "Test your theories. Reject when false."
 - ▶ Obey the laws of nature, or you will crash.
- ▶ **Lying:** "Say what is needed to get what you need."
 - ▶ There are no laws. Postpone crashing.

Outline

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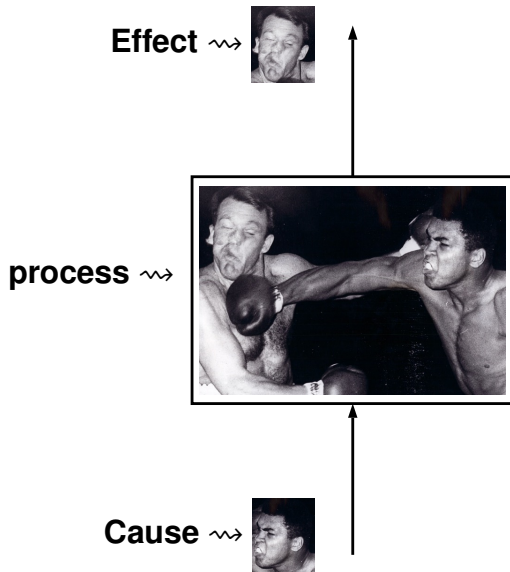
Self-prophecies

Science

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Self-confirming

Process



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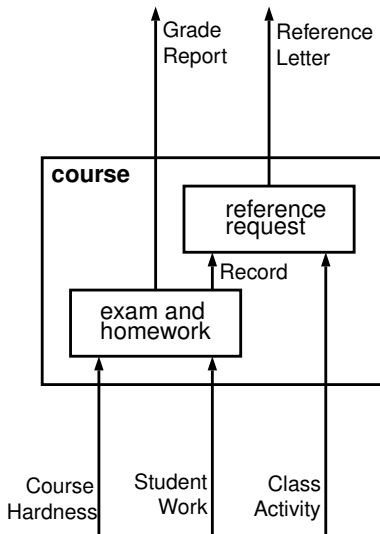
Self-prophecies

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Process



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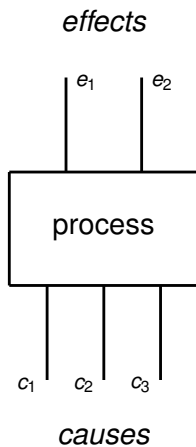
Self-prophecies

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Explaining processes



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Explaining processes

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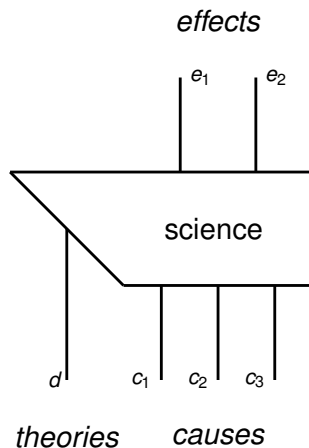
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Self-prophecies

Science

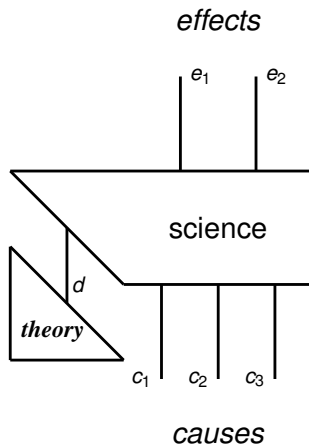
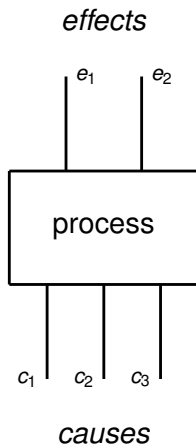
Self-science

Self-confirming



Explaining processes

Abstraction



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Self-prophecies

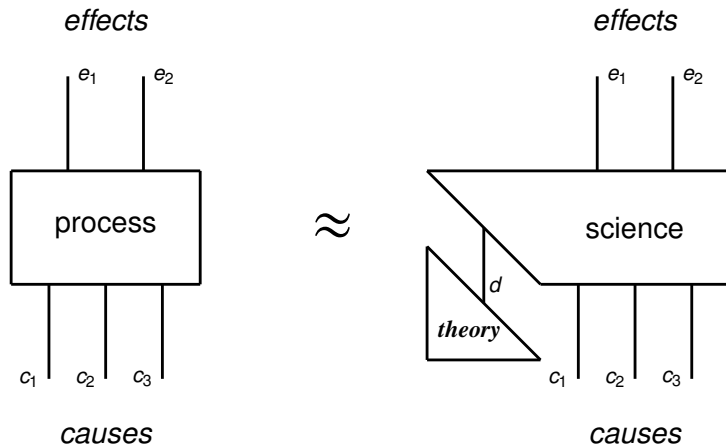
Science

Self-science

Self-confirming

Explaining processes

Abstraction and application



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Self-prophecies

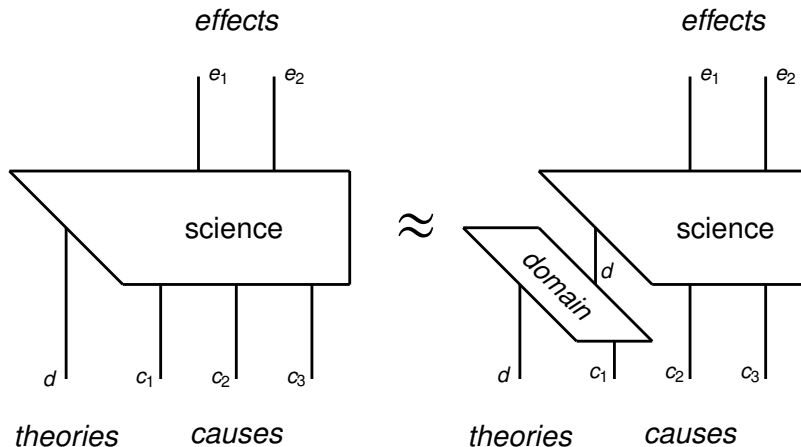
Science

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Explaining processes

Partial explanations



Science in 3 axioms

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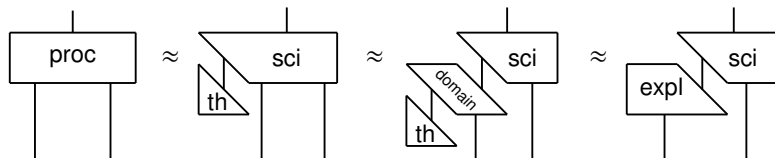
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Science

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Explanations may impact processes

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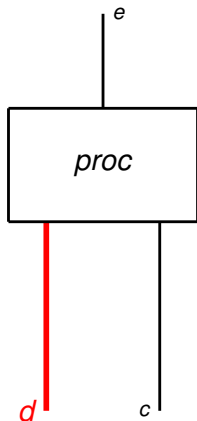
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Science

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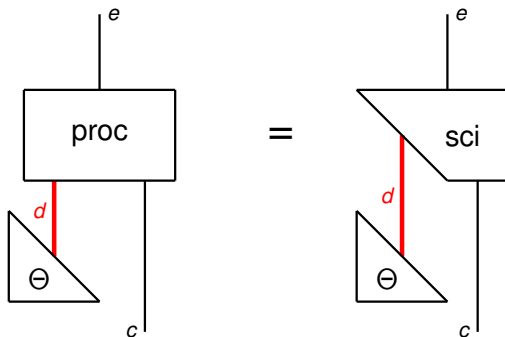
Self-confirming



... but they can be made **self-consistent**

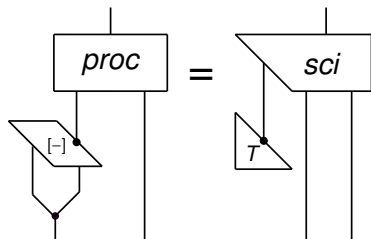
Theorem 1

If a process can be explained, then it can be explained by a theory that takes into account its own impact.



Self-consistent theories

Proof



Self-consistent theories

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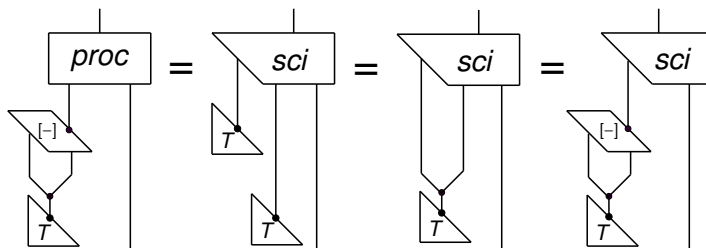
Self-prophecies

Science

Self-science

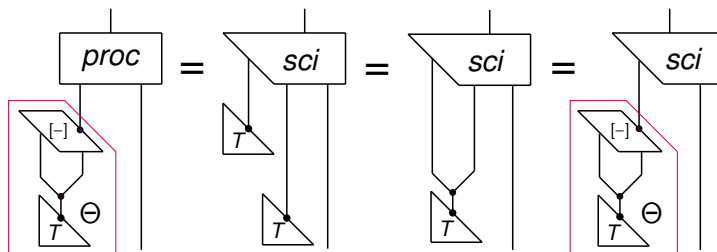
Self-confirming

Proof (continued)



Self-consistent theories

Proof (continued)



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Hypothesis testing

- ▶ A hypothesis is a theory that predicts state changes.

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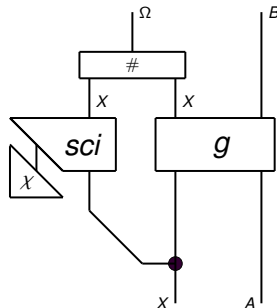
Science

Self-science

Self-confirming

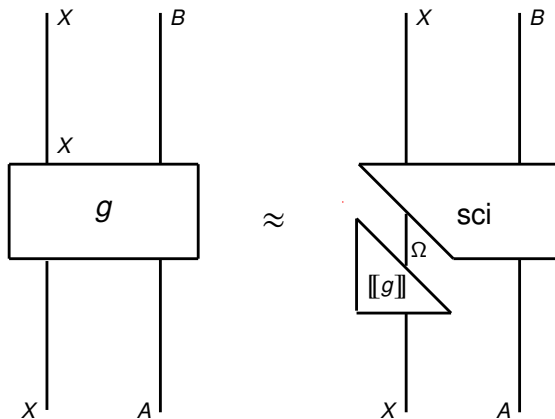
Hypothesis testing

- ▶ A hypothesis is a theory that predicts state changes.
- ▶ Testing compares the predictions and the outcomes.



Testable theories

A theory is testable if it models observable state changes.



Self-confirming theories (fiction)

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Self-prophecies

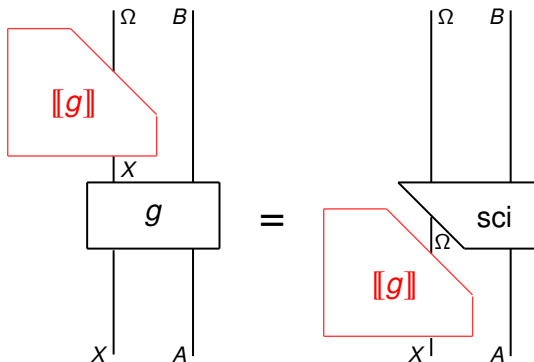
Science

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Self-confirming

Theorem 2

If a process can be explained by a testable theory, then it can be explained by a testable but unfalsifiable theory.



Self-confirming theories (fiction)

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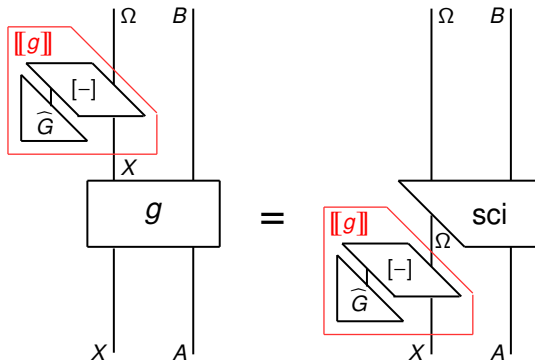
Self-prophecies

Science

Self-science

Self-confirming

Proof



False self-confirming theories (**lies**)

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Self-prophecies

Science

Self-science

Self-confirming

Theorem 3

If a process can be explained by a testable theory, then it can be explained by a testable theory that is unfalsifiable and false.

False self-confirming theories (lies)

Proof

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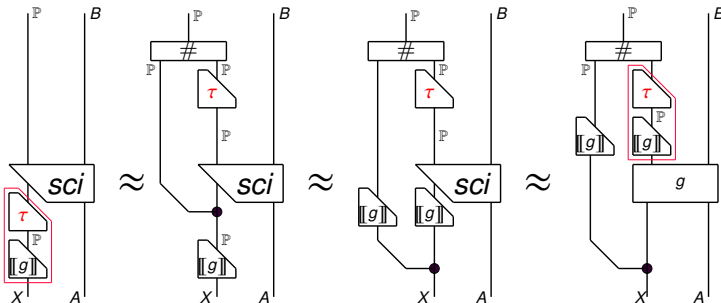
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Some processes

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Science

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Self-confirming



...are OK to fictionalize



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Science

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... some are not

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Self-confirming



Study the logic of the difference