Causation

20 November, 2006

Causes

Smoking causes cancer.

The extinction of the dinosaurs was caused by a meteor hitting the Earth.

The rising price of oil may cause inflation.

This medicine will probably cause side effects.

Who caused all this trouble?

Importance of causation

explanation

free choice, moral responsibility

Importance of causation

explanation
The plane crash was caused by bad weather.

free choice, moral responsibility
Whoever caused the damage should pay for it.

Russell

“On the notion of a cause”

Russell

“In the following paper I wish, first, to maintain that the word ‘cause’ is so inextricably bound up with misleading associations as to make its complete extrusion from the philosophical vocabulary desirable..." (171)

Russell

“The law of causality, I believe, like much that passes muster among philosophers, is a relic of a bygone age, surviving, like the monarchy, only because it is erroneously supposed to do no harm." (171)

More Russell in a moment.

First an experiment and a puzzle.

An experiment

More intelligent = More resistant to cold

An experiment

More intelligent = More resistant to cold

More intelligent = Can keep arm in ice water longer

An experiment

Here is a bucket of ice water.

What do you do?

Cause/Evidence

Keeping arm in water a long time causes you to be very intelligent.

Keeping arm in water a long time is evidence that you are very intelligent.

Decision

Knowing about causes is important in making good decisions.

Newcomb’s problem

Box A contains $1,000

Box B contains either $1,000,000 or $0

Newcomb's problem

Box A contains $1,000

Box B contains either $1,000,000 or $0

You see what is in Box A.
You do not see what is in Box B.

Newcomb's problem

Box A contains $1,000

Box B contains either $1,000,000 or $0

You see what is in Box A.
You do not see what is in Box B.

You choose:
Box B alone, or
both Box A and B.

Newcomb's problem

Box A contains $1,000

Box B contains either $1,000,000 or $0

You see what is in Box A.
You do not see what is in Box B.

You choose:
Box B alone, or
both Box A and B.

You keep the contents (if any) of the boxes you choose.

Box B

Box B's contents depends on the Predictor

$1,000,000 if the Predictor predicted choice B

$0 if the Predictor predicted choice A and B

(The Predictor has been right up to now.)

Newcomb's problem

Box A contains $1,000

Box B contains either $1,000,000 or $0

You see what is in Box A.
You do not see what is in Box B.

You choose:
Box B alone, or
both Box A and B.

What do you choose?

Box B

Box A and Box B

Choose one box!

The Predictor has excellent track record.

Choose one box!

The Predictor has excellent track record.

If you choose B, Predictor predicted so.

If you choose A and B, Predictor predicted so.

Choose one box!

The Predictor has excellent track record.

If you choose B, Predictor predicted so.

If you choose A and B, Predictor predicted so.

If you choose B, you will get $1,000,000.

If you choose A and B, you will get $1,000.

Choose one box!

The Predictor has excellent track record.

If you choose B, Predictor predicted so.

If you choose A and B, Predictor predicted so.

If you choose B, you will get $1,000,000.

If you choose A and B, you will get $1,000.

So, choose B and get rich.

Choose two boxes!

The million is already there or not.

Nothing you do will change that.

Choose two boxes!

The million is already there or not.

Nothing you do will change that.

If the million is in B, better to choose A and B.

If the million is not in B, better to choose A and B.

Choose two boxes!

The million is already there or not.

Nothing you do will change that.

If the million is in B, better to choose A and B.

If the million is not in B, better to choose A and B.

Either way, better to choose A and B.

Choose two boxes!

The million is already there or not.

Nothing you do will change that.

If the million is in B, better to choose A and B.

If the million is not in B, better to choose A and B.

Either way, better to choose A and B.

So choose both A and B!

	Predicted B	Predicted A and B
Choose B	$1,000,000$	0
Choose A and B	$1,001,000$	$1,000$

	Predicted B	Predicted A and B
Choose B	$1,000,000$	0
Choose A and B	$1,001,000$	$1,000$

Causal decision theory: Choose A and B

Evidential decision theory: Choose B

	Predicted B	Predicted A and B
Choose B	$1,000,000$	0
Choose A and B	$1,001,000$	$1,000$

Causal decision theory: Choose A and B

Evidential decision theory: Choose B

Knowledge of causes is important?

Russell

“In the following paper I wish, first, to maintain that the word ‘cause’ is so inextricably bound up with misleading associations as to make its complete extrusion from the philosophical vocabulary desirable..." (171)

Russell

What is the dilemma on p 175?