



# THE FUNDAMENTAL PROPERTY OF CAUSAL MAPS IS TRANSITIVITY

How does causal inference work in a causal *network*?

When is a pathway not just a link?

The logic around how links might combine into pathways and what that means for evaluation, that's the most exciting part. e.g. how might this intervention influence an outcome which might be multiple steps downstream of it?

From

```
a --> b
```

and

```
b --> c
```

what can we conclude about

```
a --> c. ?
```

For example, if the relation `-->` means "causes", when and under what circumstances can we conclude that a causes c?

Once we know the inference rules for a network, in particular the transitivity rule, we can infer all kinds of useful things about it.

There is a whole library of thinking about causal reasoning within a statistical or probabilistic network.

There is less written about qualitative causality within a qualitative causal network.

But our problem is harder again: to reason with what we call a causal map, where the links are about **beliefs about** or **evidence for** a causal connection.

We can reason about causal maps using a logic of evidence