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We can thank Judea Pearl for promoting the insight that if you want to thrive in this world, you have to understand causality natively. We humans make causal connections from an early age. We wouldn't survive long if we didn't.

ChatGPT has been a hit recently for several reasons, but one of them is (like other recent, related models like davinci) it is much better than previous models at understanding causal connections within text.

Our understanding of the world is drenched with causal understanding: information and hypotheses about how things work (mostly accurate enough, sometimes not). It's really hard for us to *not* think causally: the concept of correlation is much harder to understand than the concept of causation.

`openai.Image.create(prompt="painting in the style of Vermeer of a baby doing a physics experiment with pulleys and springs")`



So, all the stuff we write on the internet (which is what ChatGPT sucks in to understand the world) is similarly drenched with causal claims. And ChatGPT is now really good at understanding this information.



That means you can ask it to extract the causal links within documents and interviews – a process we call "causal QDA". It's pretty good at it. This ability is going to make causal mapping much easier and cheaper and therefore of renewed interest for evaluators, amongst others.

At Causal Map we're hard at work harnessing this ability to help automate, or semi-automate, the process of extracting causal maps from medium and large quantities of text data in a useful way. Watch this space!

So, ChatGPT is good at extracting causal information, but does it also have explicit knowledge about causation (meta-cognition) and can it explain it? Here's a chat I had this morning.



why do people not believe that the cock crowing caused the sun to rise, even though the cock crows before the sun rises?



People do not believe that the cock crowing caused the sun to rise because the relationship between the two events is not causative, but rather temporal. The sun rising and the cock crowing are simply correlated, but the rising of the sun is a result of the Earth's rotation and its position relative to the sun, not the crowing of the cock. The sun would still rise even if there were no crowing roosters.



but how do people know that it is not a causal relationship? why don't they think it is a causal relationship?



People know that the relationship between the cock crowing and the sun rising is not causal because it has been scientifically established through various means of observation and study. The Sun's rising is a result of the Earth's rotation and its position relative to the sun, which have been verified through astronomical observations and measurements. In addition, the relationship between the cock crowing and the sun rising can be explained through simple observation and testing. For example, if the cock is silenced or the sun rises at a different time due to time zones or seasonal changes, the sun still rises regardless of whether or not the cock crows. This evidence clearly shows that the relationship is not causal, but merely a coincidence.



But it isn't a coincidence that the cock crows around or before the time of sunrise, is it?



No, it's not a coincidence. The crowing of roosters is a natural biological response to changing light levels, especially as the sun rises. Roosters have a built-in circadian rhythm that causes them to crow in response to the increasing light levels in the morning. This is why roosters tend to crow before sunrise and not at other times during the day. However, while the crowing of the rooster is timed with the rising of the sun, it is still not a cause-and-effect relationship. The crowing of the rooster is simply a response to the changing light levels, while the rising of the sun is a result of the Earth's rotation and its position relative to the sun.



Yes but the changing light levels are themselves caused by the earth's rotation around the sun, so ...?



Yes, the changing light levels are caused by the Earth's rotation around the sun. The Earth rotates on its axis as it orbits the sun, causing different parts of the Earth to face the sun at different times and producing the cycle of day and night. The rooster's crowing is a response to this changing light, and it is timed with the sunrise because that is when the light levels increase the most. However, while the crowing of the rooster is related to the changing light levels, which in turn are caused by the Earth's rotation around the sun, the rooster's crowing is still not causing the sun to rise. The sun rises as a result of the Earth's rotation and its position relative to the sun, regardless of whether or not the rooster is crowing.



could you draw a causal diagram to explain the causal relationship between the earth's rotation around the sun, the cock crowing, and the sun rising? I'd like Mermaid syntax please.



Sure! Here is a causal diagram to explain the relationship between the Earth's rotation around the sun, the cock crowing, and the sun rising using Mermaid syntax:

lua

Copy code

```
graph LR
  Sun[Sun] --> Earth_rotation[Earth's rotation around Sun]
  Earth_rotation --> Light_levels[Changing light levels on Earth]
  Light_levels --> Cock_crowing[Cock crowing]
  Earth_rotation --> Sun_rising[Sun rising]
```

This diagram shows that the sun rising is a result of the Earth's rotation around the sun, which in turn causes the changing light levels on the Earth. The cock crowing is a response to the changing light levels, but it does not cause the sun to rise. The sun rises as a result of the Earth's rotation around the sun, regardless of whether or not the cock is crowing.

ChatGPT can't actually draw yet but it knows a range of syntaxes for drawing graphs. So when you paste the code into Mermaid Live, it looks like this. Not bad for a robot. (Not sure you could say the sun causes the earth's rotation, though.)

