"Forecasting is the process of making predictions of the future based on past and present data and most commonly by analysis of trends. A commonplace example might be estimation of some variable of interest at some specified future date."
– Wikipedia (https://en.wikipedia.org/wiki/Forecasting)

Why forecasting?

Many things effective altruism is interested in take place in the future:

- Results of studies
- New technologies (clean meat, artificial intelligence, genetic engineering)
- Global risks (from biotechnology, artificial intelligence)

Knowing about the extent & frequency of these events is useful

Why quantitative?

- Big difference between 1% and 0.00001% (especially with existenial risks!)
- Can be useful in expected value calculations
- This is effective altruism

Central concepts

Probabilistic beliefs

It is possible & useful to assign probabilities to some beliefs, as opposed to believing that X definitely will/won't happen.

Calibration

Example:

- I make 10 forecasts about the occurrence of radioactive rain in the next days
- For each day, I assign 60% probability to "There will be radioactive rain"
- I'm calibrated if there is radioactive rain on 6 of these days

Underconfidence

- Not believing your beliefs enough
- There is radioactive rain on 8 (instead of 6)
- I'm underconfident
- People usually aren't underconfident (in forecasting)

Overconfidence

- Believing your beliefs too much
- There is radioactive rain on 3 of the next 10 days (instead of 6)
- I'm overconfident
- Nearly everyone is overconfident

You're calibrated if n% of your n% forecasts come true.

Resolution

Willingness to make "daring" predictions (near 0% or 100%).
Predicting always 50% will be calibrated, but with low resolution.

Brier score

- Score to determine the accuracy of a set of forecasts
- 0 is perfect, 0.25 is completely random, 1 is also perfect (but reversed)
- Good forecasters achieve scores from 0.1 to 0.2

$$BS \equiv \frac{1}{N} \sum_{t=0}^{N} (f_t - o_t)^2$$

Useful techniques in forecasting

Intuition/Practice

Yes, your intuition knows a lot about the world, and its forecasting abilities can be developed by practice.

Just make up some numbers!

Base Rates

The base rate of an event is the incidence of this kind of event happening in the past.

Example: There was radioactive rain on 20% of the days in the last year. Then 20% seems like a good first estimate for radioactive rain tomorrow.

Wisdown of the Crowds/Dialectical Bootstrapping

Wisdown of the crowds: Take the estimates of multiple people, use the mean. Dialectical bootstrapping: Make multiple different own estimates, use the mean.

Extremising

When the estimates of different people point in the same direction, become more confident.

Example: 7 people independently agree that the probability of radioactive rain tomorrow is 65%. They all have different information, so we can become more confident (e.g. 85%).

Extrapolation

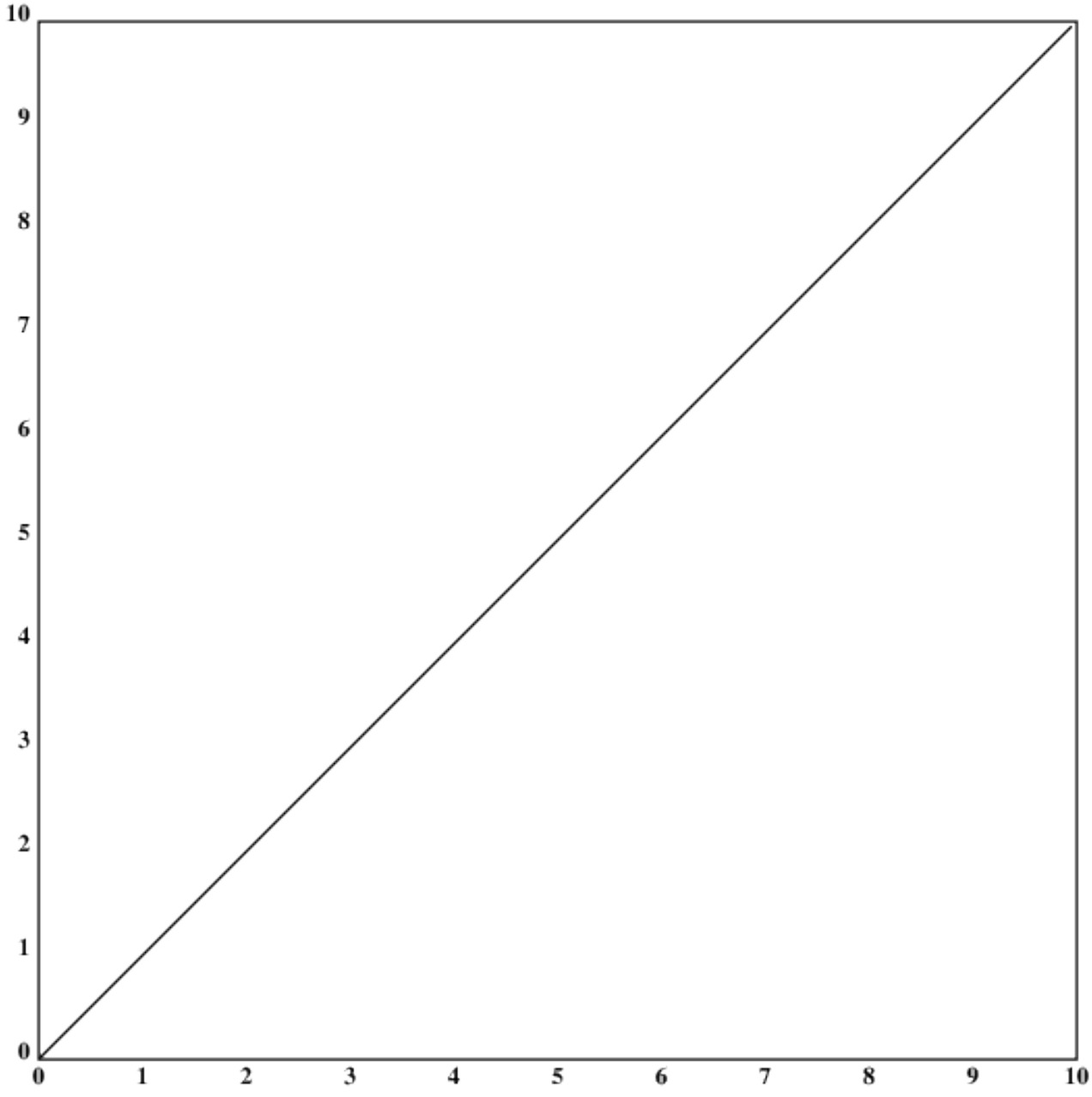
If something has shown a growth pattern in the past, that growth pattern might continue

With statistical software, fitting/regression & extrapolation can be done

Usually used as a starting point

Different kinds of processes

Linear Constant growth Example: Cumulative work done by a single person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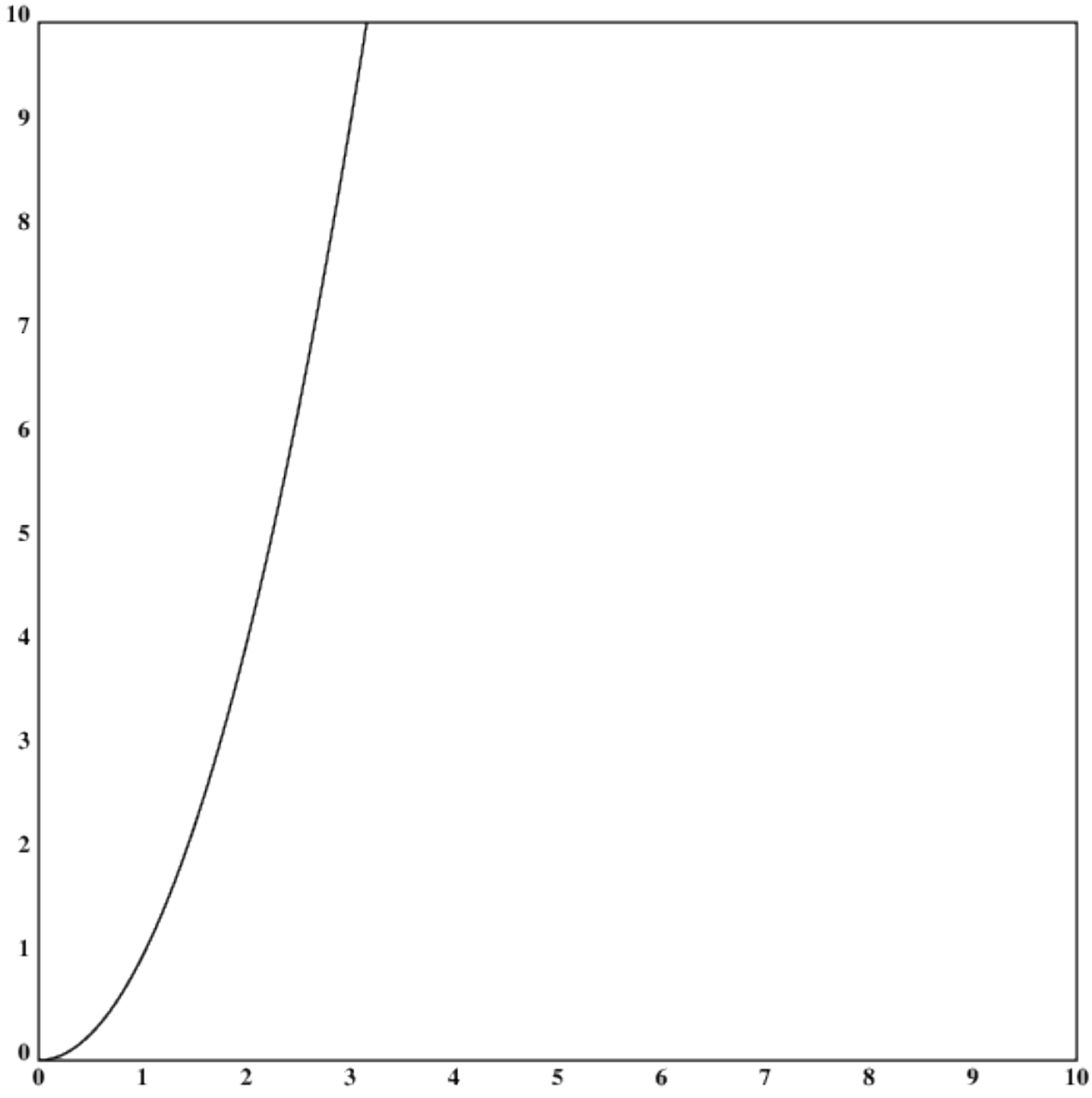
Polynomial (often quadratic) Acceleration Example: Stopping distance of a car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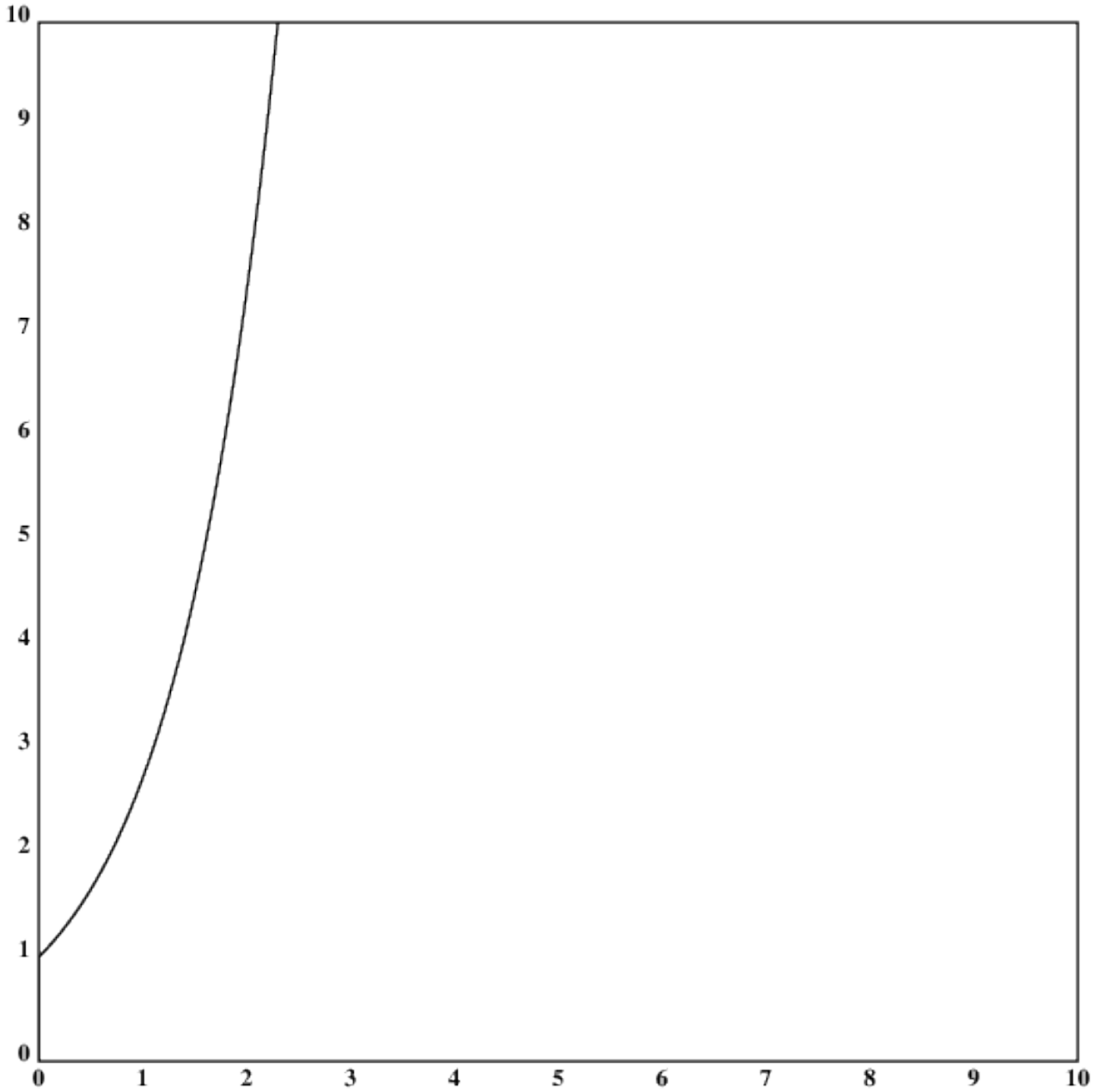
Exponential Growth that feeds on itself Example: Moore's Law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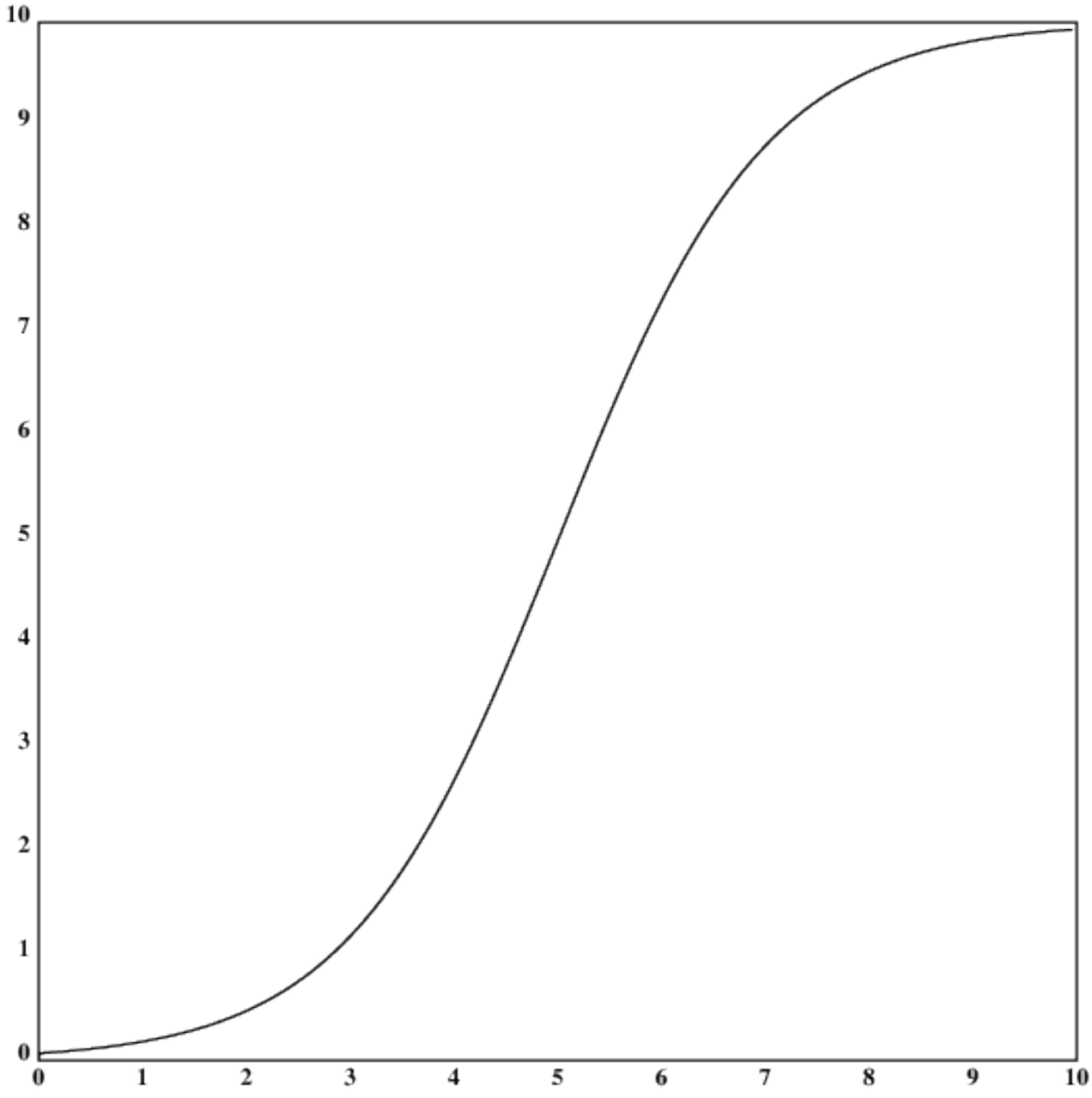
Sigmoid Growth that feeds on itself, but is stopped by something
Example: Spreading of a virus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Forecasting Session: Make forecasts now, get the results in one month

What Is To Be Done?

- Talk to me about this, I love this stuff
- Join an online forecasting tournament/website if you enjoyed this:
  - Metaculus (https://www.metaculus.com/questions/) (recommended)
  - Good Judgement Project (https://www.gjopen.com/)
  - PredictionBook (https://predictionbook.com/)
- Some Information:
  - Ten commandments for Superforecasters (https://fs.blog/2015/12/ten-commandments-for-superforecasters/)