

# COSMIC BAZAAR



OPEN SOURCE

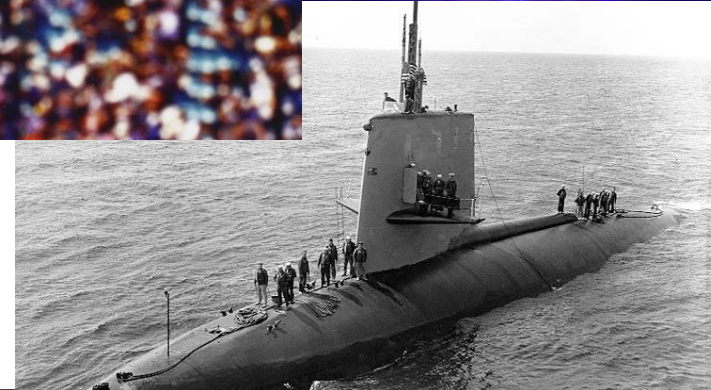
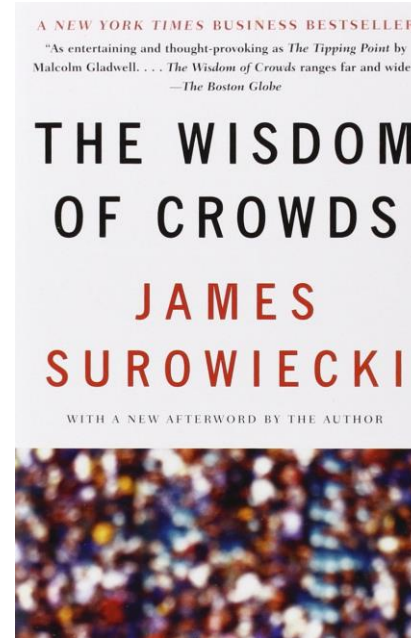
Piloting a crowd forecasting tournament with  
analysts from across the UK Government

## SLS Lunch & Learn

11 April 2022

# The “wisdom of crowds”

- The Wisdom of Crowds phenomena was recently popularised by journalist James Surowiecki and his 2004 book
- ‘When our imperfect judgements are aggregated in the right way, our collective intelligence is excellent’ (Surowiecki, 2004, pp. XIV)
- In 1968, the USS Scorpion was sunk but found through crowdsourcing methods
  - ‘U.S. Navy Strategists Have a Long History of Finding the Lost’, *NY Times*
- Who Wants to be a Millionaire? Ask the audience – they’re right 95% of the time



# Learning from the U.S. and others

From 2011-2015, the U.S. Intelligence Community ran the largest ever crowd forecasting experiment, asking people to forecast political events around the world.<sup>1</sup>

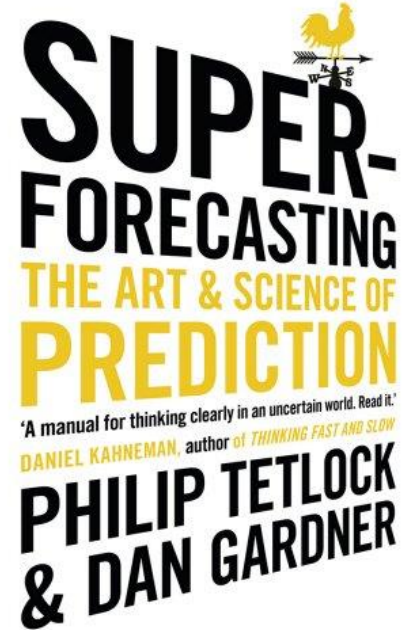
## ACE Program Research Results

Aggregate probabilistic forecasts of a crowd could **outperform intelligence analysts with access to classified information.**

With **training, practice, and collaboration**, people can become more accurate forecasters over time.

New **mathematical aggregation methods** can increase consensus forecast accuracy by as much as 30% by taking in to account past-performance and other factors about individual forecasters.

Could we apply this to the UK?



<sup>1</sup> This research effort was the ACE Program run by IARPA <https://www.iarpa.gov/index.php/research-programs/ace>

# Details of crowd forecasting?

Falsifiable, time defined (usually between 3 - 18 months) questions are asked to a crowd.

Individuals assign numeric probabilities to their forecasts across answers (binary, multiple choice, ordinal).

Individual numeric probabilistic forecasts are then aggregated to form the crowd consensus.

Forecasters also submit rationales to accompany their forecasts.

Forecasters can then update their forecast at any time as new information becomes available.

Individual questions and forecasters can then be scored based on accuracy of their forecast.

**Will the minimum recorded Arctic Sea Ice Extent in 2021 be lower than the recorded minimum in 2012?**

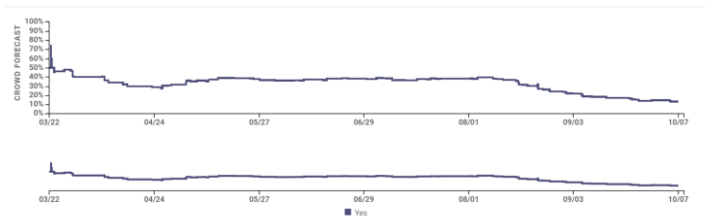
Final Crowd Forecast

12%

Chance

Correct Answer

No



# Why have we launched Cosmic Bazaar?



Compare the accuracy and quality of crowdsourced forecasts with current intelligence assessments.



Identify biases and blind-spots on emerging issues not included in current intelligence priorities.



Enable analysts to improve their individual forecasting skills

## COMPETE

COSMIC BAZAAR is a forecasting tournament for analysts and anyone else wanting to play. Participants answer questions forecasting the outcomes of current affairs while competing as individuals and teams to make the most accurate predictions.

## OPEN SOURCE

COSMIC BAZAAR is an **open source** initiative and participants exploit **publicly available information only**.

Apr 20

Launched

1,995

Forecasters

22,836

Forecasts

142

Questions

48

Departments

BIASES

Analytical teams attest to COSMIC BAZAAR helping them “think differently” about assessment questions, “challenging their biases”, and introducing new ways of thinking. We have catalysed a conversation on how best to use open source.

COLLABORATE

Collaborating with analytical teams across government has helped teams get to the core of their question, identify blindspots in thinking, and identifying absolute event signposts on trends.

OBJECTIVES

COSMIC BAZAAR has acted as an effective conduit to deliver training, seminars and thematic events to an engaged group of analysts and exposed wider civil servants to an assessment profession. Analysts are also able to use COSMIC BAZAAR as a corporate objective, supporting a xWH initiative.

INTEGRATION

Working with assessment teams to directly support analytical products - adding confidence to judgements, introducing new methods, adding fresh perspectives, finding the right question

# QUESTION EXAMPLE

Often where we add most value is in the rationales provided alongside the forecasts. They identify new sources, challenge biases, and validate assumptions.

STARTED Mar 22, 2021 12:30PM • CLOSING Aug 22, 2021 12:00AM (in a month)

## Will a publicly attended Reading Festival take place over August Bank Holiday weekend 2021?

Show background information

Current Crowd Forecast

Your Last Forecast

86%

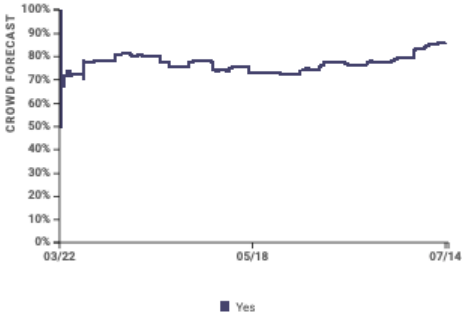
Chance

-0.06% in last 24 hours

100%

Chance

MAKE ANOTHER FORECAST



No. of Forecasts

48

No. of Forecasts You've Made

4

Forecast Count

120

Forecasts in the last 24 hours

3



JHR1 made a comment:

@JWilliam Your forecast got me thinking & searching again and based on this 24 Feb Guardian article, I'm not sure the organisers of Reading + Leeds have insurance yet! [relevant bit copied below] (1).

"Festival Republic [organisers of R+L] director Melvin Benn told the Guardian that the event, which was cancelled last year and is due to happen in August, did not yet have insurance as it was currently impossible to buy, but he was hopeful that the government would include an insurance package "in some form or another" in the budget next week."

On a related note, at the DCMS committee today the minister confirmed that they aren't considering a government-backed insurance scheme at the moment (2). Whilst I suspect that insurance policies will be available later in the year (so long as we continue to follow the roadmap) I still think insurance remains a notable hurdle the festival needs to clear in order to go ahead.

(1) - <https://www.theguardian.com/culture/2021/feb/24/reading-and-leeds-festival-set-to-go-ahead-this-year-in-boost-for-live-music>

(2) - <https://news.sky.com/story/festival-insurance-scheme-could-end-up-pulling-the-rug-from-big-events-minister-says-12255307>

UPVOTED (2)

REPLY

EDIT

DELETE

FLAG

LINK

FEATURE

Mar 24, 2021 04:06PM



Scymnodon made a forecast:

CHANCE

90%

ANSWER

Yes

Looks like Download managed to go ahead [1]. Providing case numbers can stay low enough - it looks like the same could be true for Reading and Leeds - it will certainly be used as evidence to support this festival going ahead. It will be interesting to see the fallout from Download though and if cases numbers or outbreaks occurred because of the event. Early suggestions indicate it may have been low but next few days will be interesting given lag. Even if one person is hospitalised - there could be heavy media coverage. The organiser has said "100 per cent evidence" that large-scale music events can take place safely amid the pandemic. [2]

Given the rising cases in young individuals [3] and that being the main demographic attracted to Reading Festival - this could be a blocker for it going ahead and prevents me going into an Almost Certain forecast.

[1] <https://www.bbc.co.uk/news/newsbeat-57528662>

[2] <https://inews.co.uk/news/uk/download-pilot-festival-boss-success-covid-free-event-shows-large-numbers-can-gather-safely-1062425>

[3] <https://www.independent.co.uk/news/uk/home-news/covid-cases-england-young-people-b1867611.html>

0 Upvotes

REPLY

EDIT

DELETE

LINK

FEATURE

Jun 22, 2021 11:53AM

OFFICIAL

# In the media

Science &  
technology

Apr 16th 2021 edition >

Predicting an uncertain world

How spooks are turning to  
superforecasting in the Cosmic Bazaar

The gamification of intelligence may provide answers to pressing global  
questions



CSIS

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INTERNATIONAL STUDIES

COSMIC BAZAAR  OPEN SOURCE

*“Every morning for the past year, a group of British civil servants, diplomats, police officers and spies have woken up, logged onto a slick website and offered their best guess as to whether China will invade Taiwan by a particular date. Or whether Arctic sea ice will retrench by a certain amount. Or how far Covid-19 infection rates will fall. **These imponderables are part of Cosmic Bazaar, a forecasting tournament created by the British government to improve its intelligence analysis.**” - [Economist](#), 2021*

*“Though COSMIC BAZAAR is still experimental, **the available information suggests it could represent a promising role model.** A key question is whether the program has enough momentum to continue over time. If the program ends before advancing past experimentation, despite early promise, it would be additional evidence of the critical need to embed forecasting programs quickly within the national security bureaucracy in a way that gives civil servants a stake in their success” - [Perry World House](#), 2021*

*The IC should reinvigorate efforts to incorporate a broader range of perspectives into forecasting and warning efforts [...] More recently, IARPA explored innovative approaches to forecasting and warning. **However, the concept is most mature within the United Kingdom through its platform Cosmic Bazaar, which integrates forecasting predictions from a wide range of government and trusted non-government experts.***  
[CSIS](#) 2021

# What can COSMIC BAZAAR do for you?

*“The collateral benefits to crowd forecasting are sometimes more valuable than the forecasts themselves”*



# COSMIC BAZAAR benefits

Provide a meaningful **corporate and L&D objective** for workforce

Provide **accessible training** for workforce: Lunch and learns; Good Judgement Training licenses; xHMG events

The **COSMIC BAZAAR creche**: practice analytical writing, OSINT, forecasting in safe, collaborative environment

Identify **disparate talent** across HMG with opportunities to surge onto assessment products and future career opportunities

Workshops to help teams **come up with the right questions**: near term indicators or trips wires on larger scenarios

**Connect** with teams and individuals across the national security community

Ask high **priority questions to a diverse crowd**: gain new insights, discover new open sources, challenge biases and confidence

Asking forecasting  
questions about  
the future to help  
the decision maker  
of today

# So you want to be a forecaster?

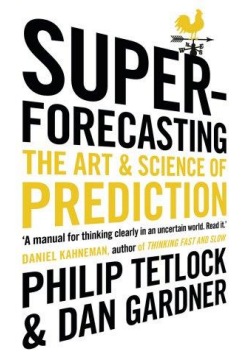
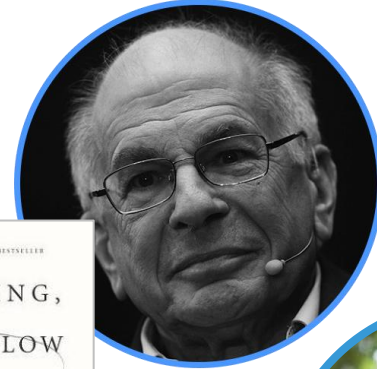
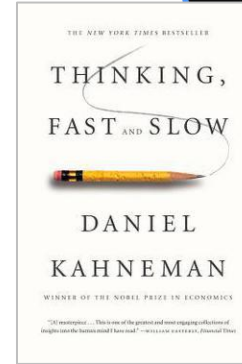
Here are four simple tips to help improve your forecasting and analytical abilities



# Forecasting Tips

## 1. Start with a base rate

- Always start evaluating a forecast by asking whether any historic data can inform your judgment.
- Try to find base rates: prior probabilities of a similar event.
- For example, let's say you are asked to forecast: What is the **likelihood your bike will be stolen?**
- Start by looking up the rate at which bikes are stolen in your neighbourhood. The base rate is the foundation on which you'll develop your all-things-considered forecast.<sup>3</sup>



<sup>3</sup> Kahneman, Daniel. (2011). Daniel Kahneman: Beware the inside view, McKinsey Quarterly.

# Forecasting Tips

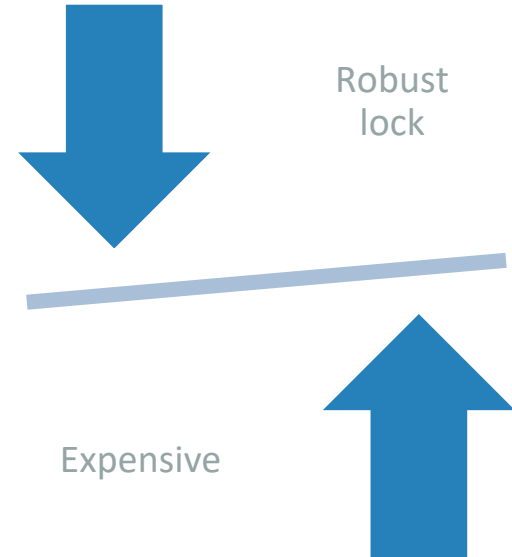
## 2. Add case-specific information to the base rate

Continuing with the bike question: Imagine you learn that 10% of bikes in your neighbourhood are stolen annually. That's your baseline forecast.

10% chance your bike will be stolen

The next question is what information specific to your bike should adjust that baseline forecast up or down. For example, if your bike is expensive, adjust upward. If you use a particularly robust lock, adjust downward.

How much you should adjust from the baseline depends on the relative quantity and quality of the two types of evidence.



# Forecasting Tips

## 2. Add case-specific information to the base rate

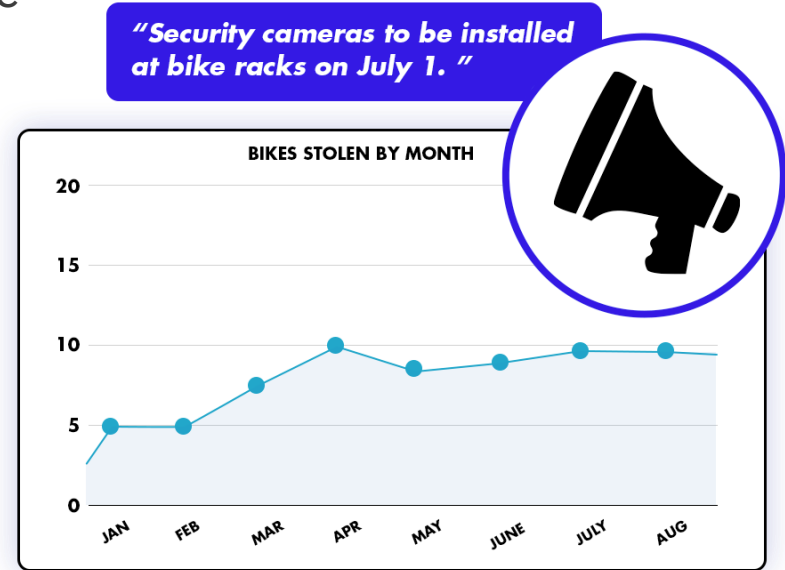
Use a similar process when forecasting a trend.

How many bikes will be stolen from the train station in September?

Based on historical data, the monthly average is 9-10 (baseline).

But the other day you saw an announcement about security cameras being installed, which sounds like a pretty good deterrent (case-specific information).

You adjust your forecast downward to 5-6.



# Forecasting Tips

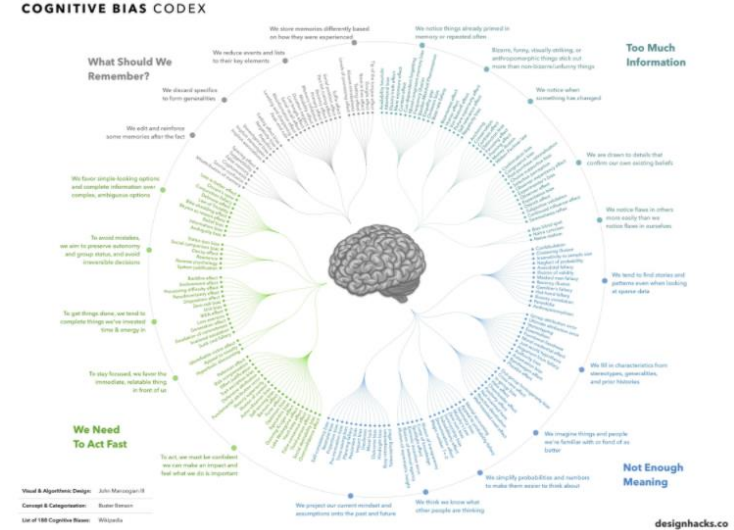
## 3. Check your biases

Then, look out for your bias. We all have biases that get in the way of making an objective, rational, forecast.

- Do you have some sort of personal attachment to the outcome that may cloud your judgement?
- Are you assuming you know more about the topic than you actually do? Are there factors you may not be appreciating?
- Are you being overly reliant on the initial set of data you've seen, or an editorial you've read?

Our example:

Have you had your bike stolen before? Do you know someone else who has? Do you have an inaccurate perception of crime?



# Forecasting Tips

## 4. Explain your thought process

You'll be asked to provide a rationale when submitting your forecast.

Record the how and why you arrived at your estimate -- explain the process we just walked through.

Sharing a descriptive rationale will help when you're revisiting your forecast, so you can remember what you were thinking at the time.

Articulating your thinking also gives others an opportunity to both learn from and question your assumptions, ultimately increasing the chances of the crowd arriving at more accurate results.

**New Prediction**

What will the UK cinemas total weekend box office gross figures be for the weekend of 24 July 2020 - 26 July 2020 according to the British Film Institute?

 **Old\_Mother\_Shipton** made a forecast:

| CHANCE | ANSWER                             |
|--------|------------------------------------|
| 0%     | Cinemas not open                   |
| 90%    | Less than £1m                      |
| 10%    | Greater than £1m but less than £2m |
| 0%     | Greater than £2m but less than £3m |
| 0%     | Greater than £3m but less than £4m |
| 0%     | Greater than £4m                   |

As others have highlighted, the lack of widespread openings will inevitably affect numbers. Last weekend's figures showed that uptake on the first weekend of reopening was underwhelming - well below the £1m mark. There may be an uptick during the weekend of the 24th-26th, due to the inclement weather that is predicted; however, even under such conditions, the surge in streaming subscriptions during lockdown, coupled with a dearth of tent-pole releases, will result in many potential film-goers plumping for a sixth viewing of Tiger King instead.

<https://www.bfi.org.uk/sites/bfi.org.uk/files/downloads/bfi-weekend-box-office-report-2020-07-03-05.xls>  
<https://www.bbc.co.uk/weather/outlook>  
<https://www.bbc.co.uk/news/technology-52824494>

# The art of the question

Crowd forecasting requires asking the right questions

Consider the following forecast question:

*“Will the US ‘ban’ of Huawei to work with American companies be suspended by December 18, 2020?”*



## Consider the following forecast question:

“Will the US ‘ban’ of Huawei to work with American companies be suspended by December 18, 2020?”

- What constitutes “suspending” the ban?
- Does a partial lift count?
- What about exceptions granted by the U.S. Government?
- What constitutes an “American” company?
- What if the Government makes an announcement the ban is being suspended, but it’s not actually being lifted until after December 18?

## Reworked question:

“Will the U.S. Government announce a suspension or change to the ban on Huawei to work with American-based companies on or before December 18, 2020?”

For every forecast question, we consider all of these elements:

- |                      |                       |
|----------------------|-----------------------|
| • Question           | • Background          |
| • Possible answer(s) | • Resolution criteria |
| • Definitions        | • Sources             |