

**Anticipating educational futures  
 through data: an ethnography of an  
 English secondary school**

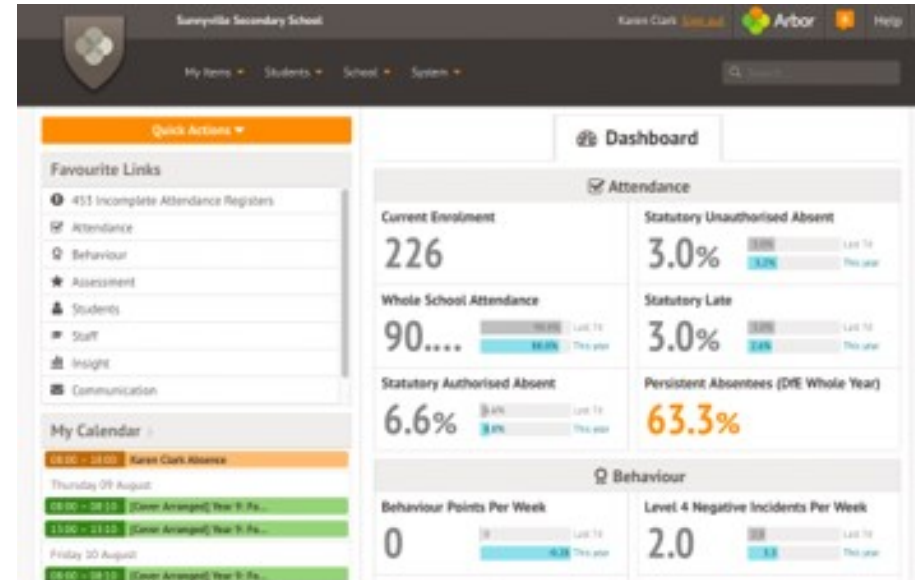
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*Department of Educational Research Seminar Series, University of Lancaster,*  
*29 May 2019*

# Performing education data futures

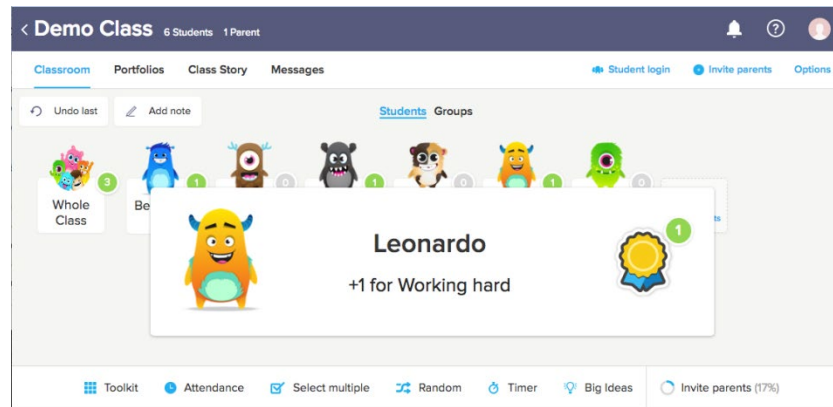
- A critical account of how numbers were 'made', what they 'did' and how they were made to matter
- How do data practices define and reconfigure the possibilities for thinking and doing education?
- An 'up close' ethnographic study tracing the 'social life of data' in an English secondary school
- Focusing on how data performed multiple, and conflicting, educational futures

# Intensifying educational data practices

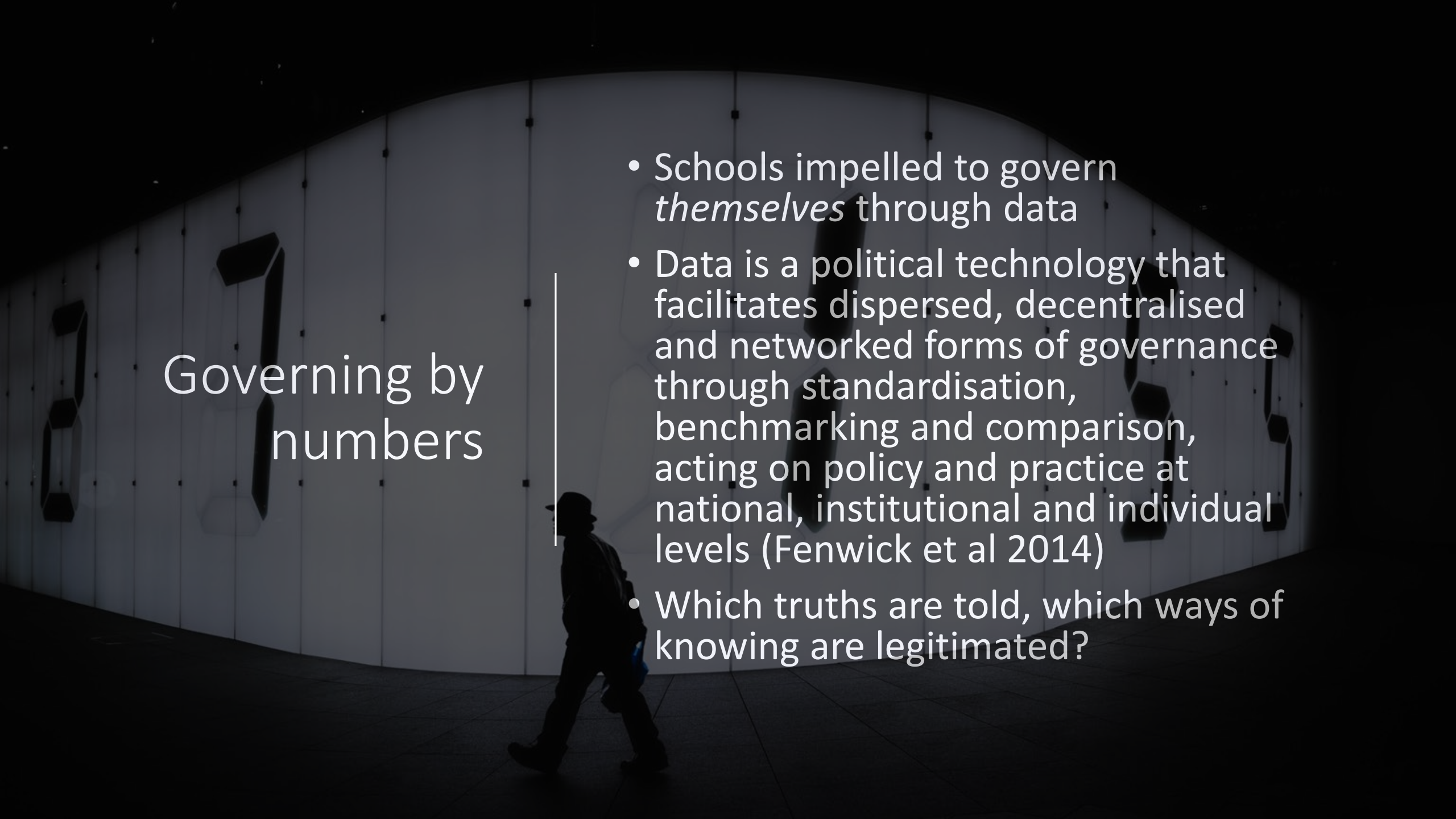


**School league tables**

| School                       | 2015 | 2014 | 2013 | 2012 | 2011 |
|------------------------------|------|------|------|------|------|
| Bath and North East Somerset | 1    | 1    | 1    | 1    | 1    |
| Barnstaple                   | 2    | 2    | 2    | 2    | 2    |
| Barnstaple                   | 3    | 3    | 3    | 3    | 3    |
| Barnstaple                   | 4    | 4    | 4    | 4    | 4    |
| Barnstaple                   | 5    | 5    | 5    | 5    | 5    |
| Barnstaple                   | 6    | 6    | 6    | 6    | 6    |
| Barnstaple                   | 7    | 7    | 7    | 7    | 7    |
| Barnstaple                   | 8    | 8    | 8    | 8    | 8    |
| Barnstaple                   | 9    | 9    | 9    | 9    | 9    |
| Barnstaple                   | 10   | 10   | 10   | 10   | 10   |
| Barnstaple                   | 11   | 11   | 11   | 11   | 11   |
| Barnstaple                   | 12   | 12   | 12   | 12   | 12   |
| Barnstaple                   | 13   | 13   | 13   | 13   | 13   |
| Barnstaple                   | 14   | 14   | 14   | 14   | 14   |
| Barnstaple                   | 15   | 15   | 15   | 15   | 15   |
| Barnstaple                   | 16   | 16   | 16   | 16   | 16   |
| Barnstaple                   | 17   | 17   | 17   | 17   | 17   |
| Barnstaple                   | 18   | 18   | 18   | 18   | 18   |
| Barnstaple                   | 19   | 19   | 19   | 19   | 19   |
| Barnstaple                   | 20   | 20   | 20   | 20   | 20   |
| Barnstaple                   | 21   | 21   | 21   | 21   | 21   |
| Barnstaple                   | 22   | 22   | 22   | 22   | 22   |
| Barnstaple                   | 23   | 23   | 23   | 23   | 23   |
| Barnstaple                   | 24   | 24   | 24   | 24   | 24   |
| Barnstaple                   | 25   | 25   | 25   | 25   | 25   |
| Barnstaple                   | 26   | 26   | 26   | 26   | 26   |
| Barnstaple                   | 27   | 27   | 27   | 27   | 27   |
| Barnstaple                   | 28   | 28   | 28   | 28   | 28   |
| Barnstaple                   | 29   | 29   | 29   | 29   | 29   |
| Barnstaple                   | 30   | 30   | 30   | 30   | 30   |





A person is walking in a dark, curved hallway. The walls are white and feature large, stylized numbers. The person is silhouetted against the light from the wall. The overall atmosphere is mysterious and modern.

## Governing by numbers

- Schools impelled to govern *themselves* through data
- Data is a political technology that facilitates dispersed, decentralised and networked forms of governance through standardisation, benchmarking and comparison, acting on policy and practice at national, institutional and individual levels (Fenwick et al 2014)
- Which truths are told, which ways of knowing are legitimated?

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# THE BEAUTIFUL RISK OF EDUCATION



GERT J.J. BIESTA  
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## Determined by data?

- What counts is what can be counted?
- Education cannot be predictable
- Radically open to **new beginners** (subjectivities) and **new beginnings** (knowledges)
- Radical openness to unpredictability and risk is the condition of possibility for education

# Following the data: a sociomaterial approach

- Data **practices** as material-discursive
- A **data *apparatus* (Barad 2007):**
  - the conditions that make observation or knowledge possible
  - a dynamic and emergent process – not a stable infrastructure
- How does the data apparatus *perform* education?





# Ridgewood School

- English suburban secondary school
- The school was an “articulated moment in networks of relations and understandings (Massey 1993)
- An entry point into multiple networks:
  - Technological and data infrastructures
  - Dynamic inter/national accountability systems
  - Policy making
  - Media and technology discourses



# Following the data ...

- Three periods of data collection over one school year
- Following the data as it was created, circulated, processed, visualised and articulated
- Data office was an entry point to the school
  - Followed data back to classrooms
  - Observations and fieldnotes, photographs, audio recordings, interviews, document collection (including computer screens)

1) 2013 Key Stage 2 to Key Stage 4 transition matrices for all pupils in 2013

Format Painter | Font | Alignment | Merge & Center | General | Conditional Formatting | Styles

4b

Attainment at End of KS2

|    | W | U | G | F | E | D | C | B | A |
|----|---|---|---|---|---|---|---|---|---|
| 1  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3c | 4 | X | X | X | X | X | X | X | X |
| 3b | 0 | X | X | X | X | X | X | X | X |
| 3a | 6 | X | X | X | X | X | X | X | X |
| 4c | 6 | X | X | X | X | X | X | X | X |
| 4b | 6 | X | X | X | X | X | X | X | X |
| 4a | 8 | X | X | X | X | X | X | X | X |
| 5c | X | X | X | X | X | X | X | X | X |
| 5b | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5a | X | 0 | 0 | 0 | 0 | X | X | X | X |

Attainment at End of KS4

|    | W     | U     | G     | F     | E      | D      | C      | B      | A      |
|----|-------|-------|-------|-------|--------|--------|--------|--------|--------|
| 1  | 7     | 8     | 9     | 5     | X      | 5      | X      | X      | 0      |
| 2  | 2,736 | 3,742 | 2,213 | 1,043 | 68     | 95     | 46     | 4      | 0      |
| 3c | 1,304 | 3,423 | 3,053 | 1,607 | 1,019  | 730    | 91     | 23     | 17     |
| 3b | 1,164 | 3,902 | 5,434 | 4,181 | 2,914  | 2,280  | 224    | 38     | 146    |
| 3a | 976   | 3,340 | 6,981 | 7,956 | 7,785  | 7,695  | 779    | 546    | 480    |
| 4c | 903   | 2,081 | 5,696 | 8,901 | 15,141 | 24,618 | 3,114  | 480    | 2,440  |
| 4b | 642   | 889   | 2,964 | 6,951 | 17,526 | 54,686 | 12,737 | 2,440  | 10,590 |
| 4a | 356   | 268   | 788   | 2,281 | 8,942  | 69,833 | 34,267 | 28,080 | 23,530 |
| 5c | 154   | 35    | 94    | 313   | 1,806  | 27,361 | 41,415 | 28,080 | 23,530 |
| 5b | 50    | X     | X     | 20    | 111    | 3,679  | 13,588 | 23,530 | 23,530 |
| 5a | X     | 0     | 0     | 0     | 0      | X      | 35     | 287    | 1,200  |

Attainment at End of KS4

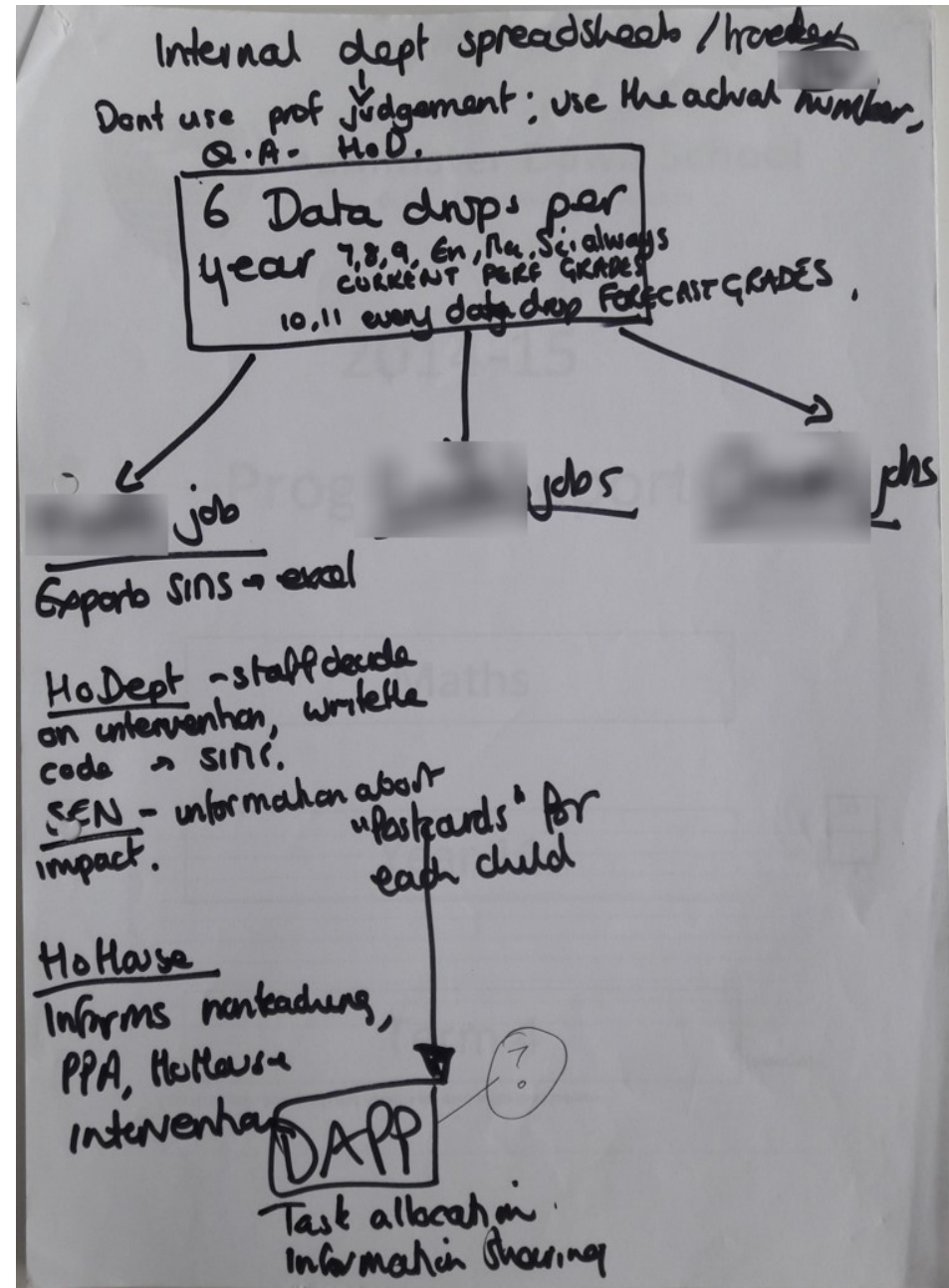
|    | W  | U  | G   | F   | E   | D   | C   | B   | A   |
|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| 1  | 0  | 0  | 0   | 0   | 0   | 0   | X   | X   | 0   |
| 2  | 4  | 5  | 5   | 6   | 6   | 8   | X   | X   | 0   |
| 3c | 34 | 58 | 131 | 199 | 164 | 100 | 100 | 100 | 100 |

Info | KS2-4 TMs Lookup | All TMs - Percentages | All TMs - Pupil Numbers | Sheet1

hp



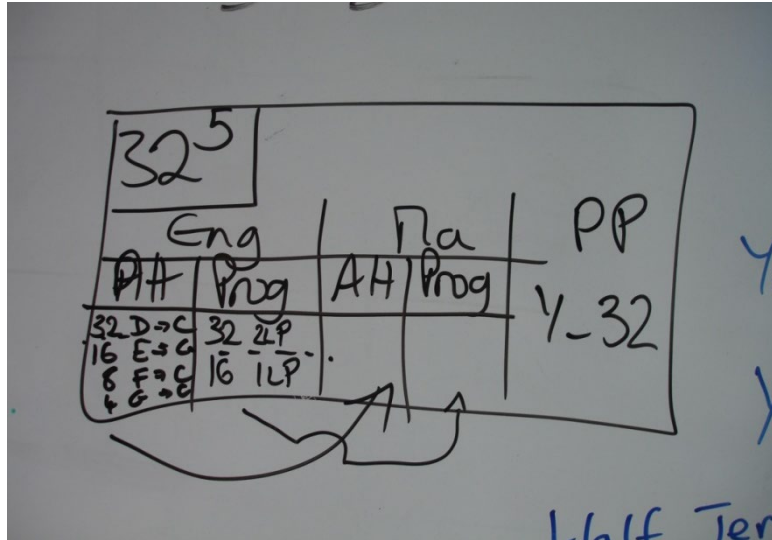
# Six 'data drops' a year



# The 'pupil postcard wall'

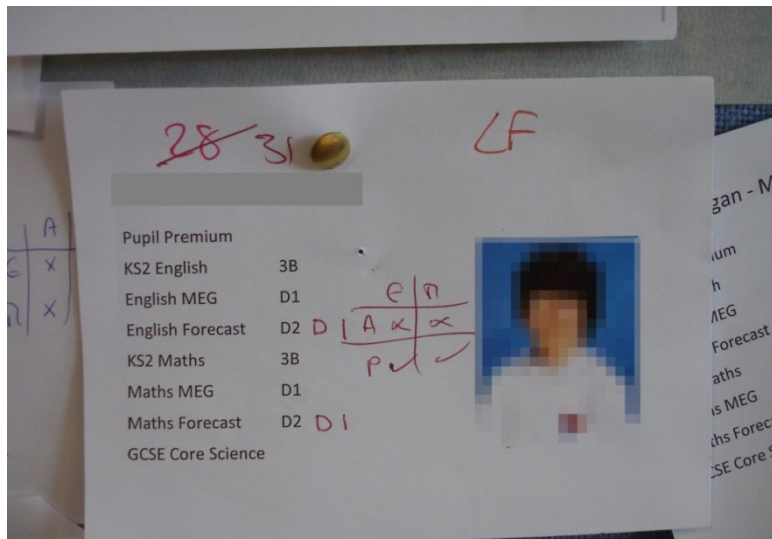
- Articulated multiple sources of data to anticipate and intervene in pupils' educational futures
  - Identified pupils at risk of missing targets for progress and attainment
  - Prioritised pupils to receive score-boosting interventions
- Contained distinct educational data futures





# Calculating priority – the pupil postcard wall

- Brought together current performance data, targets and forecasts
- Triage process – prioritising pupils closest to thresholds
- “it’s all about intervening with the right children”





# Anticipating divergent futures

Pupil performance and progress approached as a matter of tracking, predicting and intervening through data

Postcard wall data practices articulated and brought into relation *two* different data futures:

- Targets (MEGs) – a normative future, what *should* happen
- Teacher forecasts – a predictive future, what *will* happen

# Target futures: Minimum Expected Grades

- A pupil's Minimum Expected Grade for GCSE calculated as three National Curriculum Levels' progress from Key Stage 2 test performance
  - e.g. Level 4 KS2 > Grade C GCSE
  - School accountable for the percentage of pupils achieving MEG
  - MEGs apply to all subjects; KS2 tests English and maths only
  - No statistical, empirical or theoretical basis for the assumption that children 'should' make three levels' progress
- NB: Accountability measured changed since 2015 (now measured through Progress8 and Attainment8)



# MEGs extended throughout the data apparatus

## Producing pupil progress

- Pupils stuck a MEG 'success criteria' sticker in books for every English lesson
- SIMS colour coded pupils to show if pupil 'on track' to reach their MEG - teachers must be able to "explain the red"

## School accountability

- Head of Department reports produced lists of pupils not 'on track'
- Progress summary reports as an "early warning system" [...] "because *that's* the thing that we get hammered for"

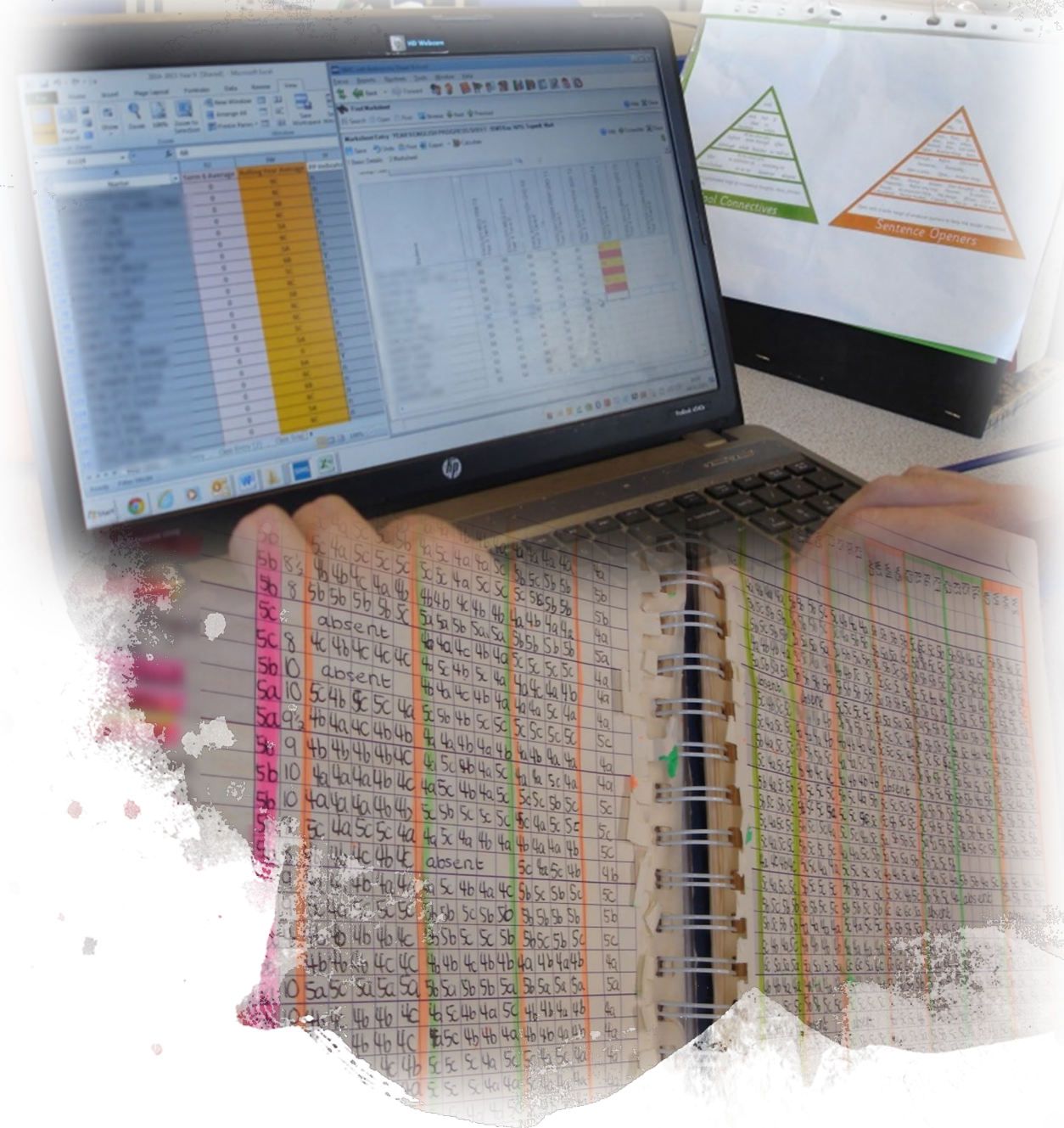


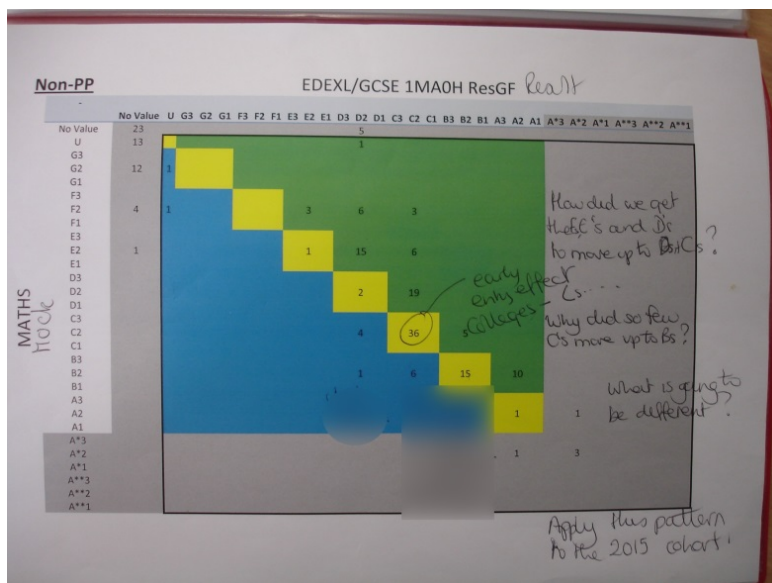
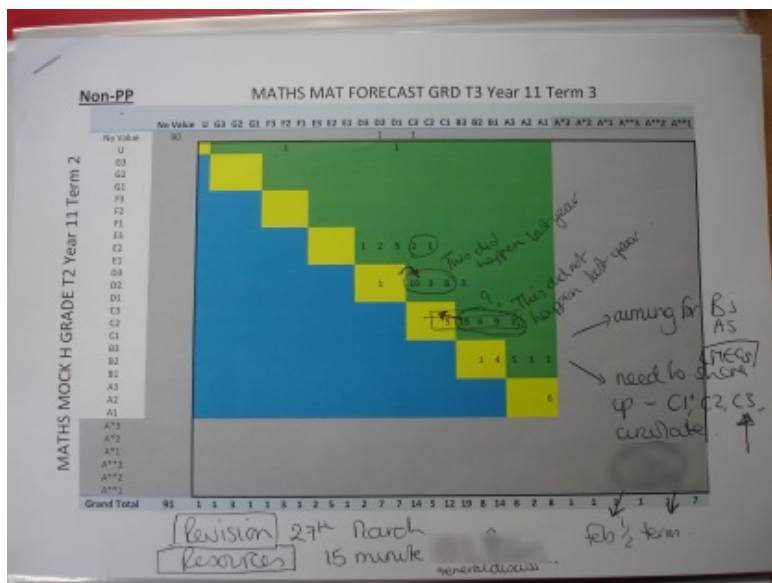
## MEG futures

- MEGs enacted an idea of educational futures as steady, linear and predictable.
- Teachers questioned validity of MEGs ...
  - reliability of KS2 tests
  - children's non-linear learning
- ... but were required to act *as if* they were reasonable
- Enacted the future envisioned by MEG data

# Predictive data futures - teacher forecasts

- Data office: Forecasts should be based on assessed performance data (e.g. mock exams)
- Teacher practice varied ... including the possible *effect* of the forecast of pupils' motivation to revise





# Policing predictions

- Checking the 'accuracy' of forecasts through transition matrices:
  - Mocks against Forecast (checking whether teachers were basing forecasts on mocks as best available data)
  - Mocks against Results for previous year (showing the conversion pattern forecasts were expected to follow)
- Statistically questionable approach (comparing cohorts, not showing relationship between teacher forecast and final grades)
- Data mobilised in attempt to bring certainty to pupils' future performance



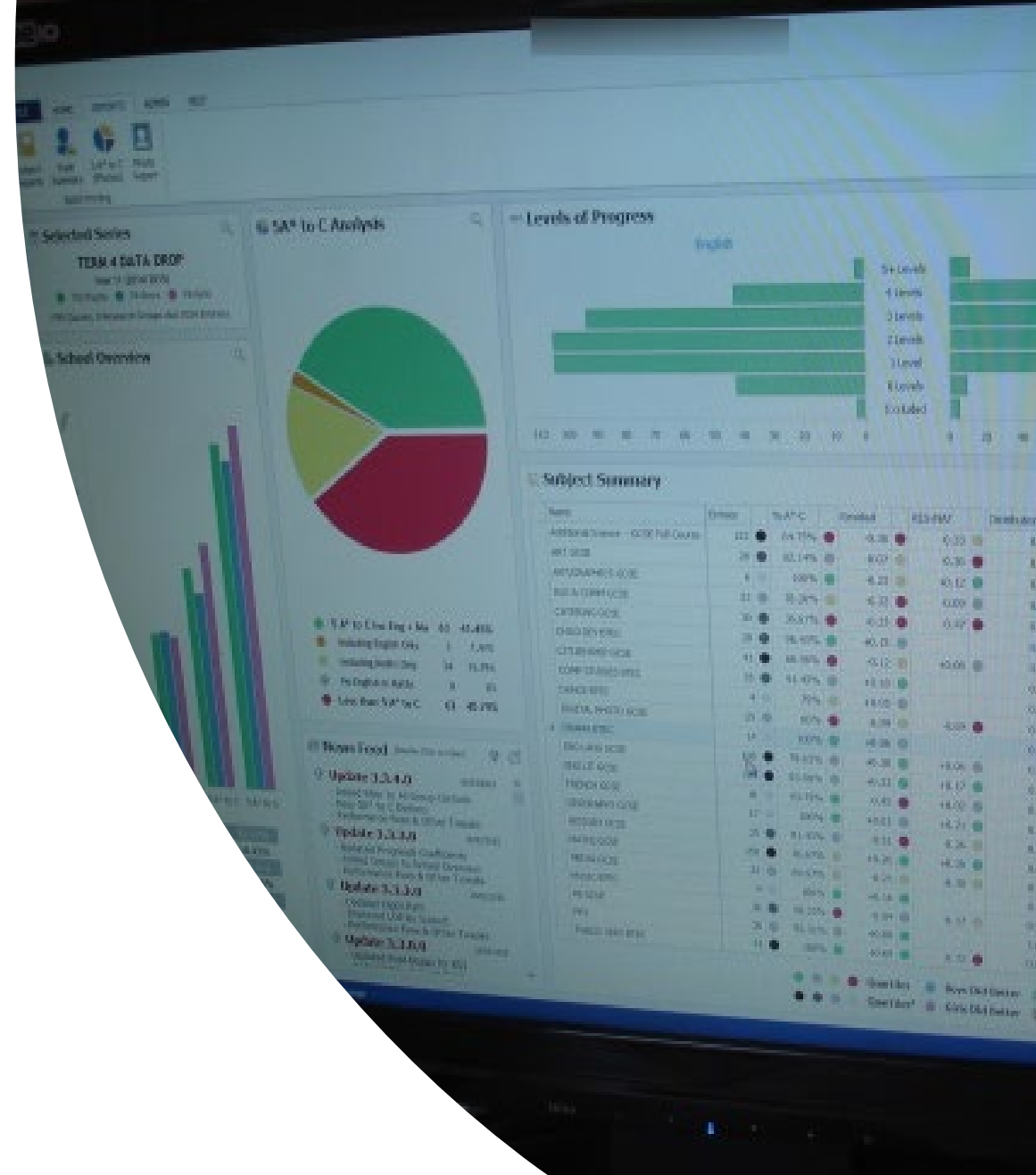
## Divergent data futures in tension

- Difference between target and forecast determined pupils' priority for intervention – but had other consequences too:
- Teachers caught between accountability to incompatible futures
  - To PREDICT the future – accurately forecast pupils' future grades
  - To CHANGE the future – intervene to ensure pupils meet targets
- 'Closing the gap' between two data futures meant some pupils' access to wider curriculum was restricted for interventions

# Probabilistic data futures

Identifying patterns in larger data sets, e.g.

- Software analysed predicted pattern of performance, split by demographics and compared to national averages
- Transition matrices showing patterns of progress applied to new cohorts
- In-house analysis of national data showed that pupils with lower attainment statistically less likely to make three levels' progress



# Probabilistic futures – more open?

- Probabilistic futures included some uncertainty and variation
  - Predictions at the level of cohorts, not individuals
  - Probability allows variance, not a defined target or forecast





# Further tensions – translating patterns to individuals

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- Targets: Cohort analysis showed less than half of pupils make 'expected progress' but basis of targets for every individual
- Forecasts: Data manager gave 'random' forecasts to individuals to match a probable pattern across the group
- Other teachers worked 'forwards' from individuals – resulting in patterns that did not match probability predictions
- Translation to individuals removed variation and uncertainty

# Anticipatory data futures

- Three data futures – monitoring, predicting and intervening in pupils' education in slightly different ways
- “The present is governed, at almost every scale, as if the future is what matters most” (Adams et al p.248)
- Data futures act on the present, shaping what is knowable and possible (Beer 2015)
- What matters most is optimising pupils' data futures towards known or knowable futures

Other  
elements  
become  
invisible or  
unknowable

- Pupils' *present* needs, interests and wider engagements
- Teachers' professional knowledge and relational understandings of pupils
- Achievement in subjects other than English and maths, particularly arts and sports
- Additional support for pupils unlikely to cross accountability thresholds

# Closing opportunities for critical and open futures?

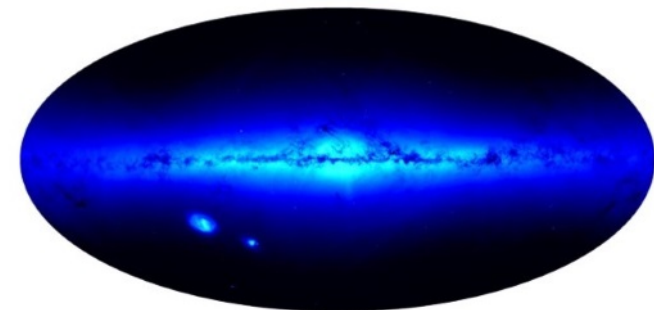
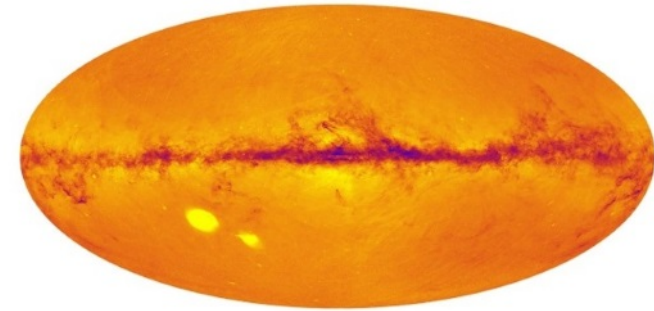
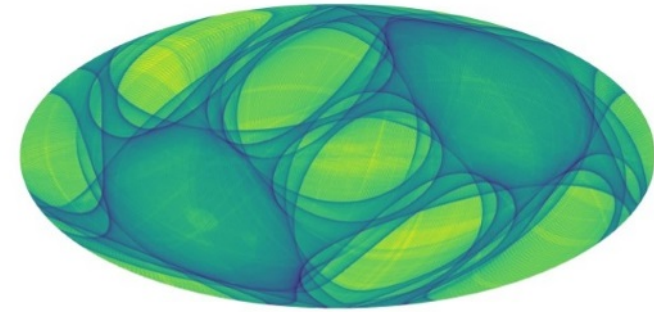
- Critical questioning of futures presented as 'inevitable'
- Critical engagement with the futures we might *wish* to bring about
- Engaging with the future as a source of new ways of being, living and knowing (Biesta 2013; Amsler & Facer 2016)



# Doing data differently?

- Possibilities for resistance?
- Future data as a source of new possibilities?
- Playful explorations of dynamic data to open up new questions and connections
- Expanding the role of openness, uncertainty and indeterminacy within data
- Emergent processes of re-categorising; re-combining; visualising
- Participatory approaches involving teachers and pupils

[‘Gaia Sky’ – Winner, Beauty of Data 2018](#). Data visualisation showing spatial averages of quantities observed from more than a billion stars in our galaxy.; each of the 3 million pixels in these images aggregates observations from, on average, several hundred stars. Mark Taylor, Research Fellow, University of Bristol.



# Thank you

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# References

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