The Denial of Complexity in Developing the UK Response to COVID-19

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Questions (and simplified answers) for the presentation.

- Has the UK policy response been led by the science? (Yes)
- Have all sciences been represented? (Epidemiologists and modellers overrepresented; social science and policy analysis overlooked)
- What is the main barrier to researching the effectiveness of coronavirus response? (Complexity, complexity, complexity.)
- Have the epidemiological projections been accurate? (Yes and No)
- What is the consequence for policy making? (Muddling through)
- Might other evaluation methodologies have been applied? (Yes … more ex-ante evaluation, concept mapping, organisational learning, community research, etc.)

Science at the helm

THE UK HIERARCHY OF COVID RESEARCH EXPERTISE:

KEY:

1:The Scientific Advisory Group for Emergencies (SAGE) recommend interventions

2: Epidemiological Monitoring: Charting the daily shifts in prevalence, deaths, the R number etc.

3: Mathematical Modelling: Building projections of the potential outcomes of policy alternatives

0: Seven SAGE sub-committees on modelling, serology, clinical information, environment, children, hospital infection and *behaviours*.

N.B.

The social science role is limited to the Sub-Group on Behaviours (SPI-B) whose task is to advise on the *messaging* of government guidance.

FORMAL REMIT: 'SPI-B provides advice aimed at anticipating and helping people adhere to interventions that are recommended by medical or epidemiological experts'.

The consequence is the launch of dozens and dozens of interventions (in schools, shops, hospitality, care homes, leisure facilities, travel, etc.) left largely to their own devices in implementing them, with no particular expertise in programme evaluation.

Hence. The voice of social science and policy analysis in the *formal* UK COVID-19 response …

Squeak
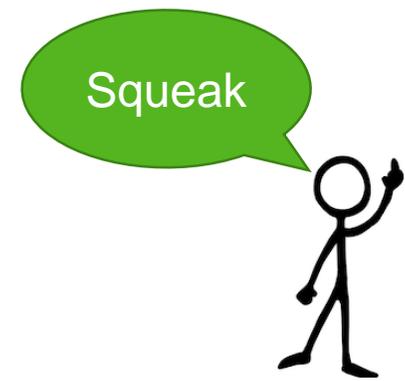
Elements of complexity, the Covid response …

- Covers everything from micro-biology to macro-economics and all individual and institutional layers in between.
- Consists of scores of separate interventions which interact and thus change and compete with one another.
- Requires as much if not more attention to 'exit' as it does to 'entry'.
- Involves long implementation chains, which adapt and renegotiate the interventions on their way to the public.
- Is deeply contextual, the same measures generating different outcomes in different communities.
- Is continually buffeted by political dogfights, with almost daily changes in strategy and in action plans.
- Consists of a complex, adaptive, self-transformative system, thrust into a complex, adaptive, self-transformative system.
- Uses social interventions to break biological chains of transmission that are substantially asymptomatic and liable to mutate.

Causal Attribution in Simple and Complex Systems

- Do clean water supplies reduce diarrhoeal deaths?

- *Has the interlocking, mutually dependent and sometimes competing stockpile of adaptive, self-transforming, interventions, each one with complex and sometimes contested guidance on its remit, as implemented and switched on and off by a changing array of central, local, private agencies, as shaped by competing political demands and factions, as digested by a diverse population containing people who variously support, comply, prevaricate, resist, grow weary, change their minds, and seek exceptions, succeeded in controlling the virus?*

Fluctuating intervention powers → Policy imprecision

- Each potential measure self-transforms. The totality of measures self-transforms.

- It is impossible to predict the precise impact of any package of interventions.

- Policy makers and their advisors thus 'muddle through'. They ratchet up the intensity of interventions when there is a rapid upsurge of transmission and loosen some of the restrictions when transmission rates decline.

At best this is 'informed guesswork', and the outcome (almost everywhere) is a SERIES of partially successful 'lockdowns' and partially successful 'unlockings'.
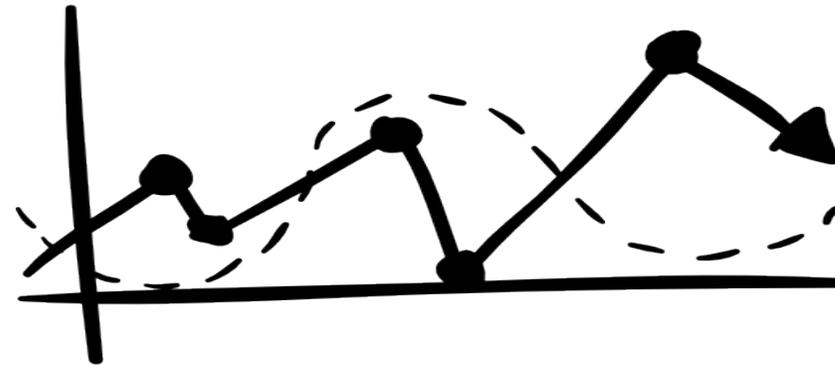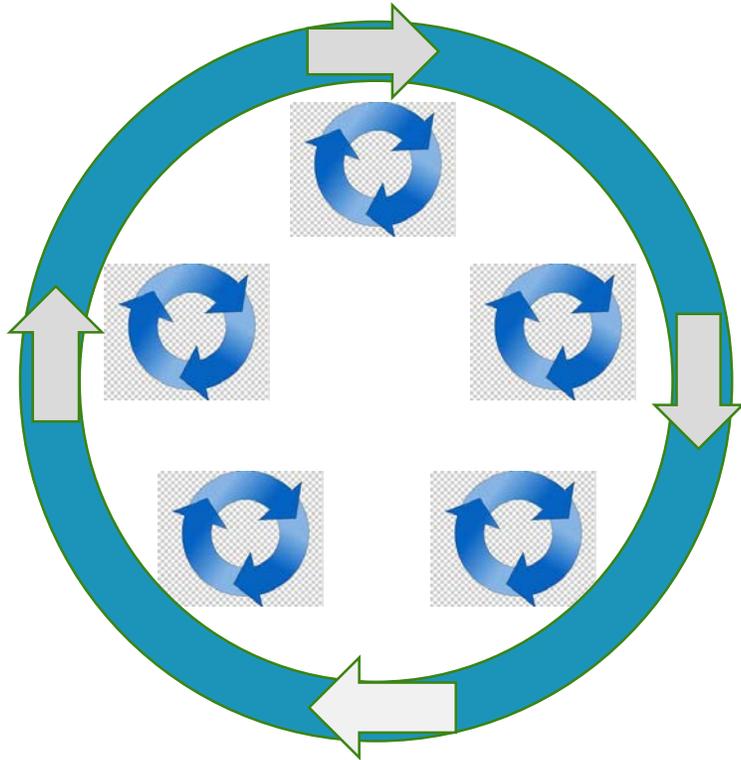
Complementary Complexity Considerations

- Research done outside the SAGE umbrella.

- This forsakes the attempt to overmaster the virus.

- 'Bottom-up' replaces 'top-down'

- Rather than seeking the optimal *permutation* of interventions to overcome the virus, the idea is to concentrate on the *implementation* of some key, chosen interventions.

1. Organisational learning

- Hundreds of variations of this
- In the UK known as 'NHS Improvement'
- Inner circles represent local learning in '*plan > execute > evaluate > change'* mode
- Outer circle represent national efforts to collect together and learn from the individual case studies

Models predicted grave shortages of ICU beds and ventilators. Brand new mega-facilities built. New ventilators designed …

… and not needed.

ICU surge planning:

- Triage policy to stratify patients at different risk levels and to create different patient pathways.

- Reutilise other ward space and create 'hot and cold' areas/corridors. Use private hospitals for routine work.

- Suspend much administrative and appraisal work

- Doubled and triple the number of doctors on rotas

- Learn new techniques of intubation etc.

- Minimise risk of infection - segregate teams
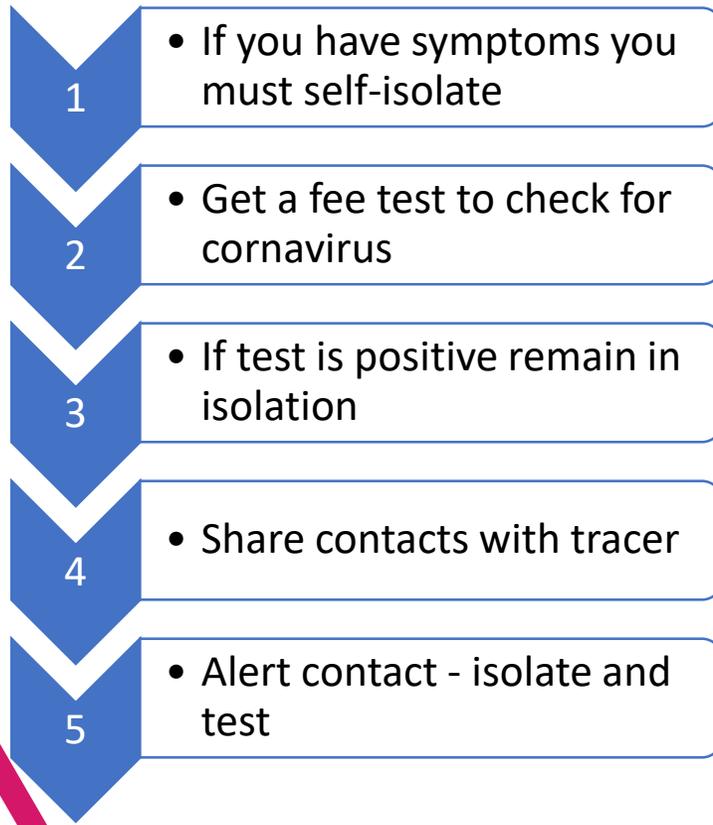
- Train on both the donning and doffing of PPE.

BUT problems remain and unintended consequence arise

- Lengthy training time for additional critical care nurses.

- Improved treatment leads to longer ICU stays

2. Ex-ante evaluation of delivery models

- More use could have been made of concept mapping (a.k.a. 'logic modelling', 'theories-of-change')

- In interventions with lengthy implementation chains the steps in the pathway are first mapped in great detail. Consideration is then given to the blockages, challenges, unintended consequences that might befall each stage.

- These concerns are gathered from previous experience and earlier inquiries into similar programmes.

- 'Implementation science' then grows as a repository of knowledge on the potential flows and blockages within families of interventions.

The delivery model - under the microscope

1. If you have symptoms you must self-isolate
2. Get a fee test to check for cornavirus
3. If test is positive remain in isolation
4. Share contacts with tracer
5. Alert contact - isolate and test

Who's involved in test and trace?

Apply for a test

Home kit

Collected/delivered by **Amazon/Royal Mail**

Supplied and Analysis by **Randox**

Facilities set up by **Deloitte**

Testers provided by **Sodexo, Boots, Ministry of Defence**

Managed by **G4S, Sodexo, ministry of defence**

Test kit registration and appointments setup by **Deloitte**

Attend testing centre

Passes data to NHS

Completed tests delivered to lighthouse labs by **DHL, Kuenhe & Nagel**

Test go to labs

Positive result

Contact tracing

Contact tracers employed and call centres run by **Serco** and **Sitel**

Complex cases traced by **local councils** and **Public Health England** and **NHS**

Run by **PerkinElmer AstraZeneca, GSK, Uni Cambridge, Uni Glasgow, UK Bio Centre, Randox Medicines Discovery Catapult, NHS trusts***

*see lighthouselabs.org.uk for details

BBC

3. Community resilience research.

- Rather than the default assumption that national or tiered regional interventions contain the solution, another body of research is needed on the *micro-circuits of disease* at the community level.

- E.G. Black and Minority Ethic (or BAME) Communities have particularly high rates of prevalence, hospitalisation, mortality.

- The policy solution resides in neighbourhood self-help networks, voluntary and charitable organisations, and city-level housing, care and health services.

- The research requirement is locally-organised, community resilience research.

Community Resilience in British Asian Communities

- 'Soft intelligence' identifies why many communities have fared badly under the virus
- Collapse of the local 'cash-in-hand' economy, significant exposure to 'fake news' media, cultural confusions with providers, stigma involved in using city-wide services, inter-generational conflict in households, social distancing problems with large families in small houses, curtailment of funeral and mourning services, etc.

- Detailed knowledge of the problem then arms the solution: advice in the right language, tailored messaging, information about rights, on-line community drop-ins, one-to-one mentoring in getting assistance etc.
- BUT. In a manner that is entirely typical of these underfunded, small-scale studies, the research reports are largely descriptive and depend for evidence on the testimony of staff and participants. Unsurprisingly, they read as 'good news' stories

MEANWHILE …