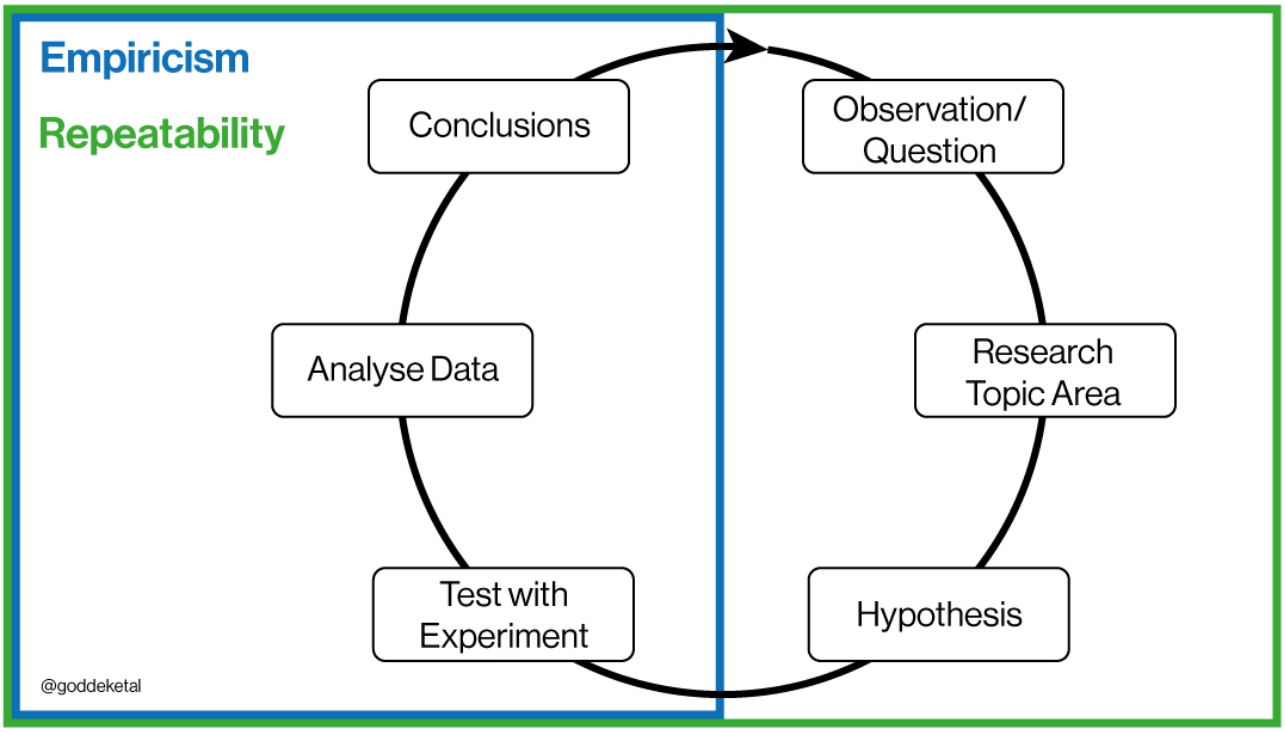
Twitter Thread by Dr. Simon ■

Dr. Simon ■
@goddeketal

1/: Scientific integrity is a valuable commodity. What happens when external funders take influence on both scientific™ findings and media coverage can be seen in the current global crisis. It is time to return to the fundamental principles of science: ■■A thread■■

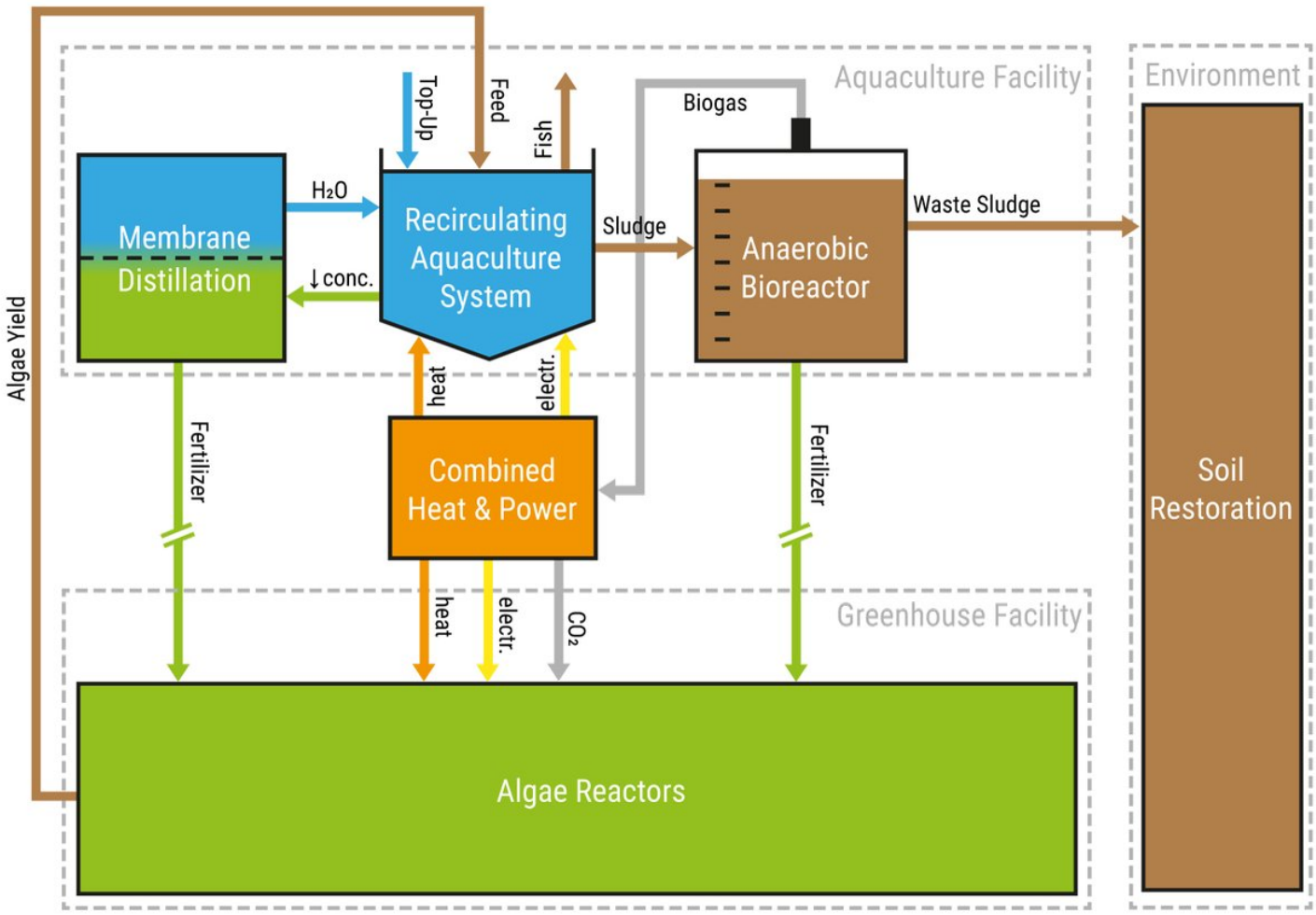


2/: In this thread, I will roughly explain why #empiricism and #repeatability are important factors for science and why model approaches should be interpreted with caution (and that is what I am saying as a modeller).

3/: I am aware that the principle of science is far more profound than explained in this thread, but this thread is written for laymen on @twitter and not for the lecture room. Also, within the scientific community, there is no clear consensus about this topic either.

4/: In recent years, I have been working on complex food production systems that increase food production and show high nutrient and water use efficiencies. I have thus been involved in plant growth experiments and holistic system modelling

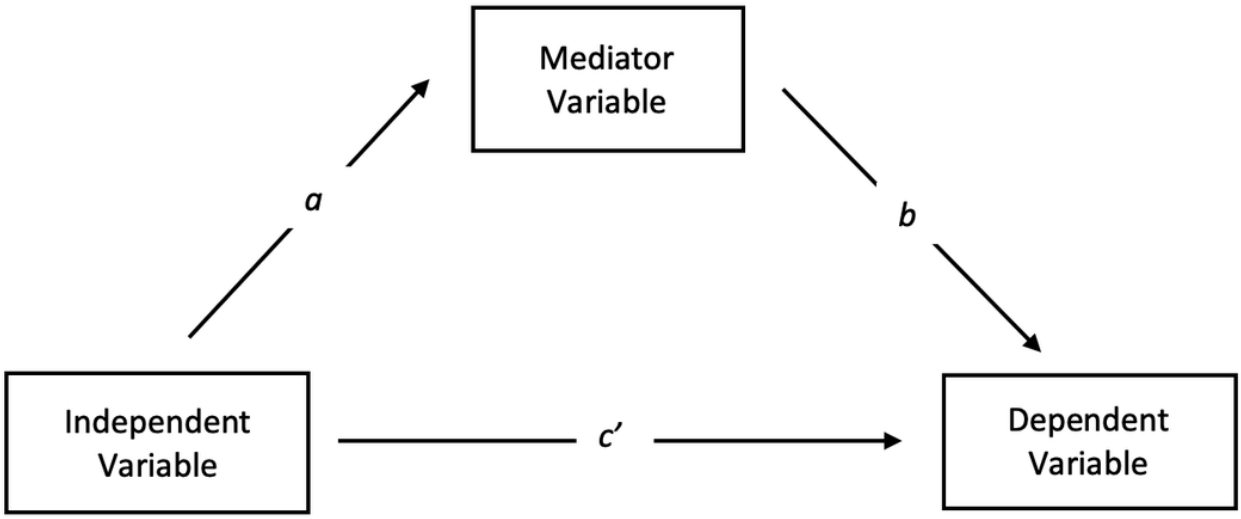
activities (@MATLAB, @AnyLogicCo).



5/: The plant growth experiments included environmental factors, #metagenomics (i.e. microbial genome sequencing), flow regulations etc. and the modelling covered the prediction on non-existing systems based on experimental and literature data.

6/: The IMHO most important principle of science is #empiricism. Empirical evidence is information that verifies the truth (which accurately corresponds to reality) or falsity (inaccuracy) of a claim. However, experiments and observations usually do not represent the "truth".

7/: There can be many intervening factors that have an impact on the observations. The less the conditions are controlled, the higher the deviations. So in order to “find the truth”, one wants to conduct an experiment in an environment with as few as possible inference factors.



8/: I will explain this through the example of my plant growth experiments. One can conduct the experiment in a greenhouse; solar radiation, humidity, temperature etc., are no stable factors. However, in a “climate chamber”, all of these factors can be standardized.

9/: This allows us to compare experiments with one another much easier. But there are also other factors that are not easy to control. These are (often) the genetic diversity of plant species, microbiological characteristics of the process water etc.

10/: This brings us to the point to talk about #repeatability. First of all, it’s essential that an experiment should contain several replications (or, if not possible repetitions) and control groups to ensure a high statistical relevance with respect to the made observations.

11/: However, the results are fundamentally dependent on the many factors, which have a decisive influence on the experiment’s outcome. I will give you two examples to explain what I mean: (a) my experiences with plant growth experiments; (b) vitamin D #COVID trials.

12/: In one experiment, we observed that lettuce grew much faster (40%) when being grown in aquaculture-derived water that contained many bacteria (i.e. which was not sterile such as it is the case for hydroponics systems).
https://t.co/WBMyfb5v8k

13/: I repeated this experiment in different locations repeatedly, and the results seem to differ (still, we always see a growth advantage). This has to do with environmental conditions, different microbial strains in the process water, different seed material/quality etc.

14/: So what’s the truth? I don’t know. Why don’t I know? Because it depends. What does it depend on? Well, many factors.

And plant growth experiment cannot be considered complex compared to the field of epidemiology or alike, where it’s even harder to control conditions.

15/: I was able to make similar observations regarding vitamin D studies. Many studies have been conducted in this field, and they are everything but uniform, also due to different hypotheses. An overview of conducted vitamin D studies can be found here: https://t.co/zhzTWwF9br

16/: In general, we can see that vitamin D has a high impact on the severity of the course of COVID, the death rate etc. And yet, meta-analyses generally compare apples and oranges (which is often unavoidable, so there is nobody to blame). https://t.co/YgJJNwMfzE

> The number of publications about the impact of #vitaminD on the #COVID19 pandemic is exploding. In the first 2 weeks of January alone, @Scopus recorded 29 new scientific papers addressing this topic. I'll provide you with an overview of the most cited papers. #UnbiasedScience \u2b07\ufe0f pic.twitter.com/UFxOItMxtm
>
> — Dr. Simon \u30c4 (@goddeketal) January 14, 2021

17/: The approach of every study differs in the following approaches: (1) amount IU of vitamin D administered; (2) time of administration; (3) physical characteristics of the patients; (4) selection of individuals; (5) dietary co-factors; etc. just to name some.

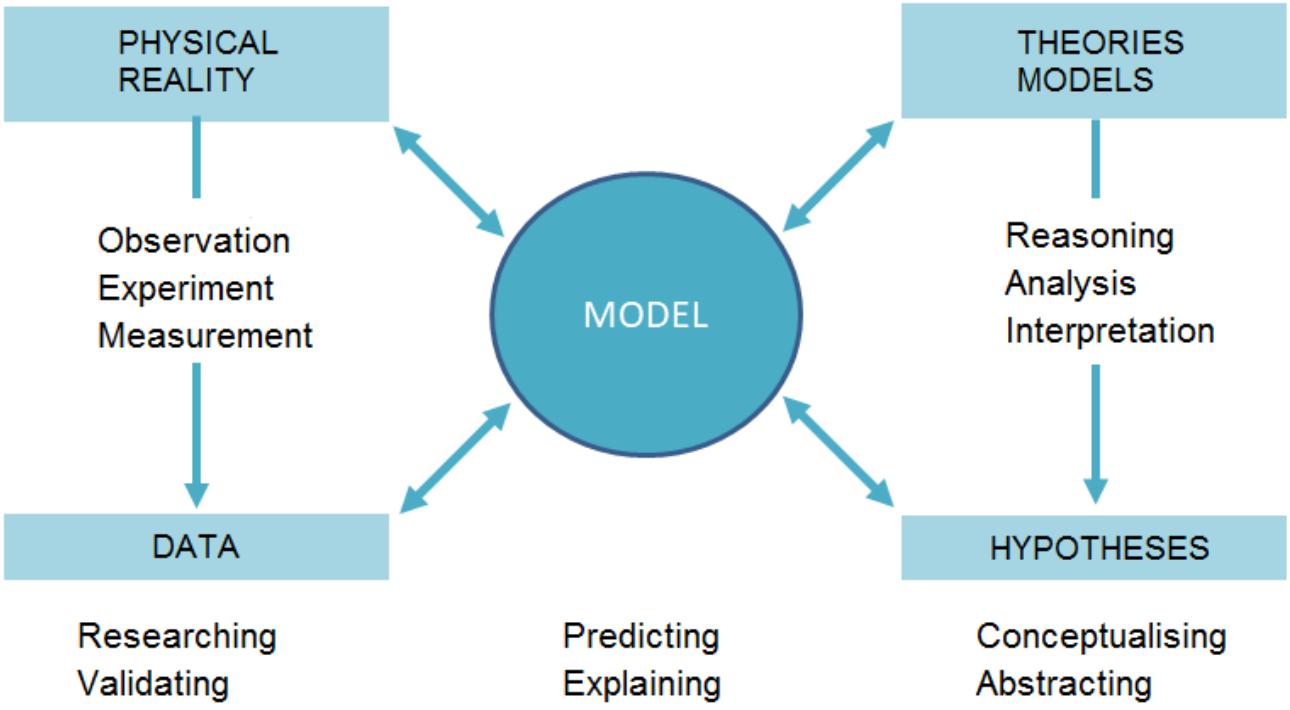
18/: There are, for example, studies out there that claim that vitamin D doesn't have an impact on COVID. Those studies, however, assume that a sufficient vitamin D blood serum level lays around 20 ng/mL, which is a completely faulty assumption. Still made it through peer review.

19/: Such drawn conclusions can cause confusions, and it’s the scientific community’s job to analyse, verify, and discuss findings. Such open discussions (which should include transparent peer-review processes) would help us to reduce biases. https://t.co/c1ONzsVMWC

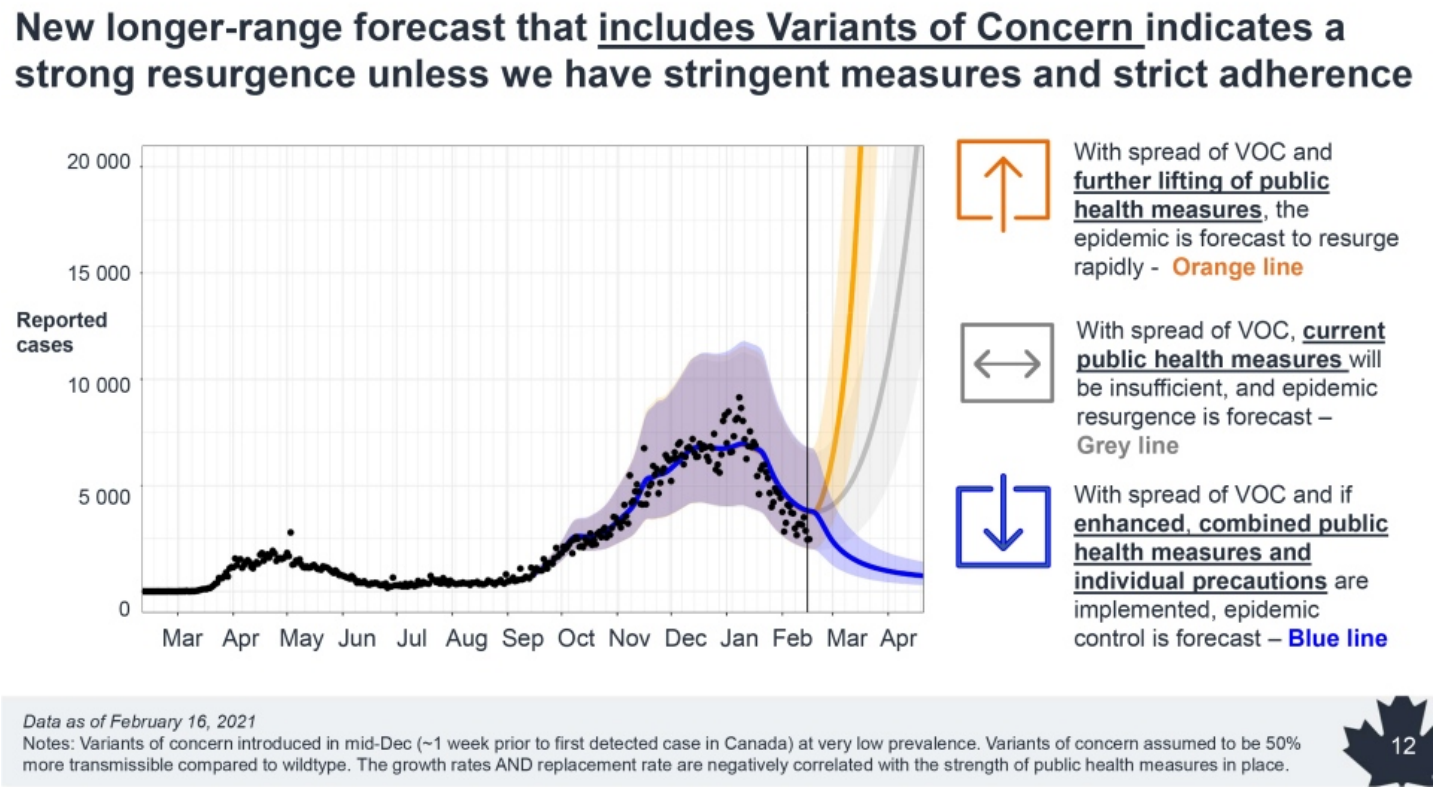
> 1/ I am UNDER FIRE since I have written a post on the flawed peer-review process of @c_drosten's PCR paper. I will discuss some accusations in this thread and explain why the pure peer-review process window was even shorter than 2 days.
>
> Yesterday's tweet: https://t.co/4cQF7ZdRGy pic.twitter.com/mjhAYvLKin
>
> — Dr. Simon \u30c4 (@goddeketal) January 5, 2021

20/: After having given you a brief insight into #empiricism and #repeatability, I want to talk about the field of modelling. During this 'pandemic', the outcome of models, again and again, justify political restrictions. But how does modelling work?

21/: The objective of a prediction model is to predict the future on the basis of available or predicted data. Often, complex situations have to be simplified for a model to work.



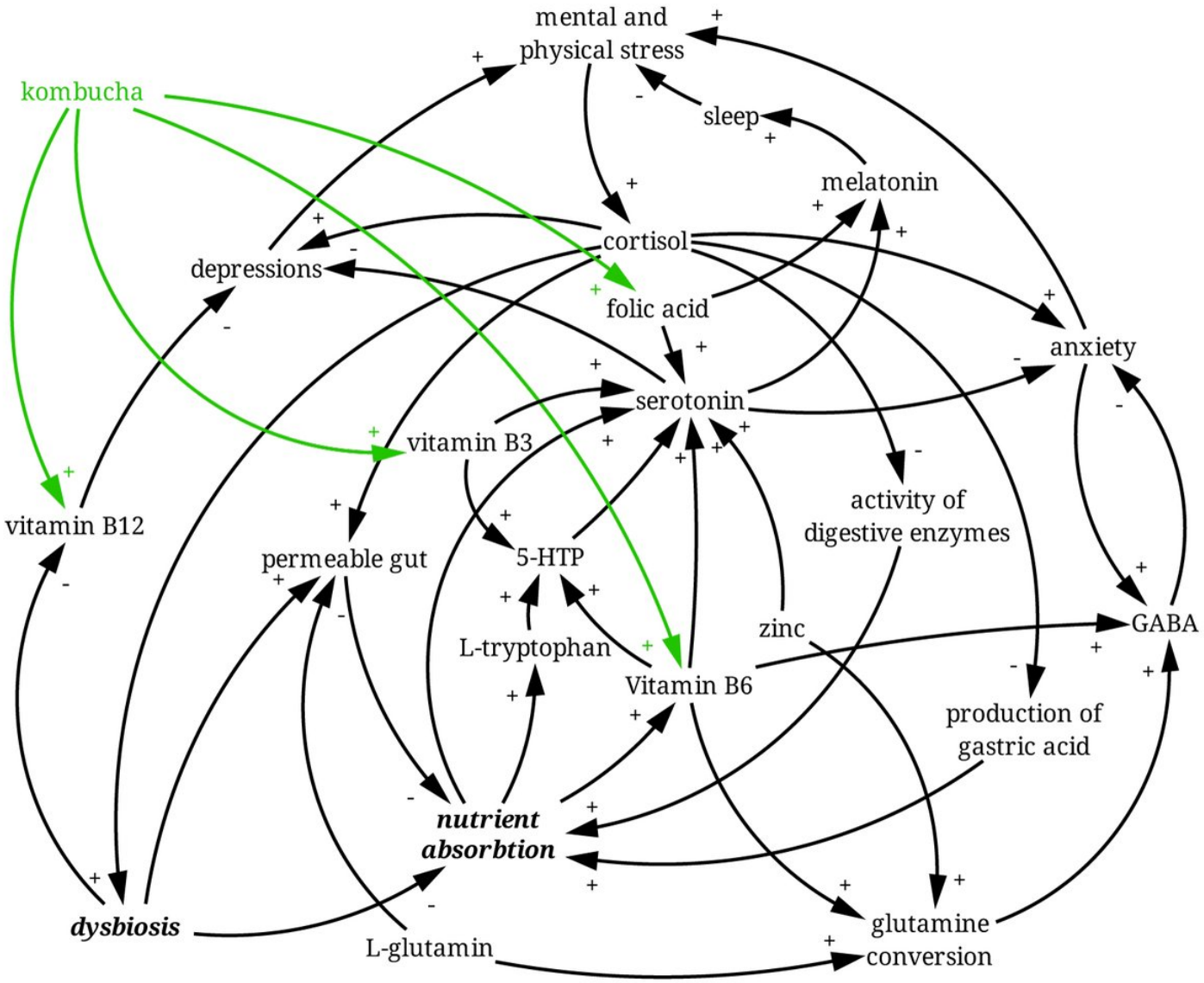
22/: In the last couple of months, we came across many modelled predictions: almost all of them were completely wrong (remark: don't let physicists work in the field of epidemiology). Issues such as #seasonality have been purposely neglected, which is a methodological failure.



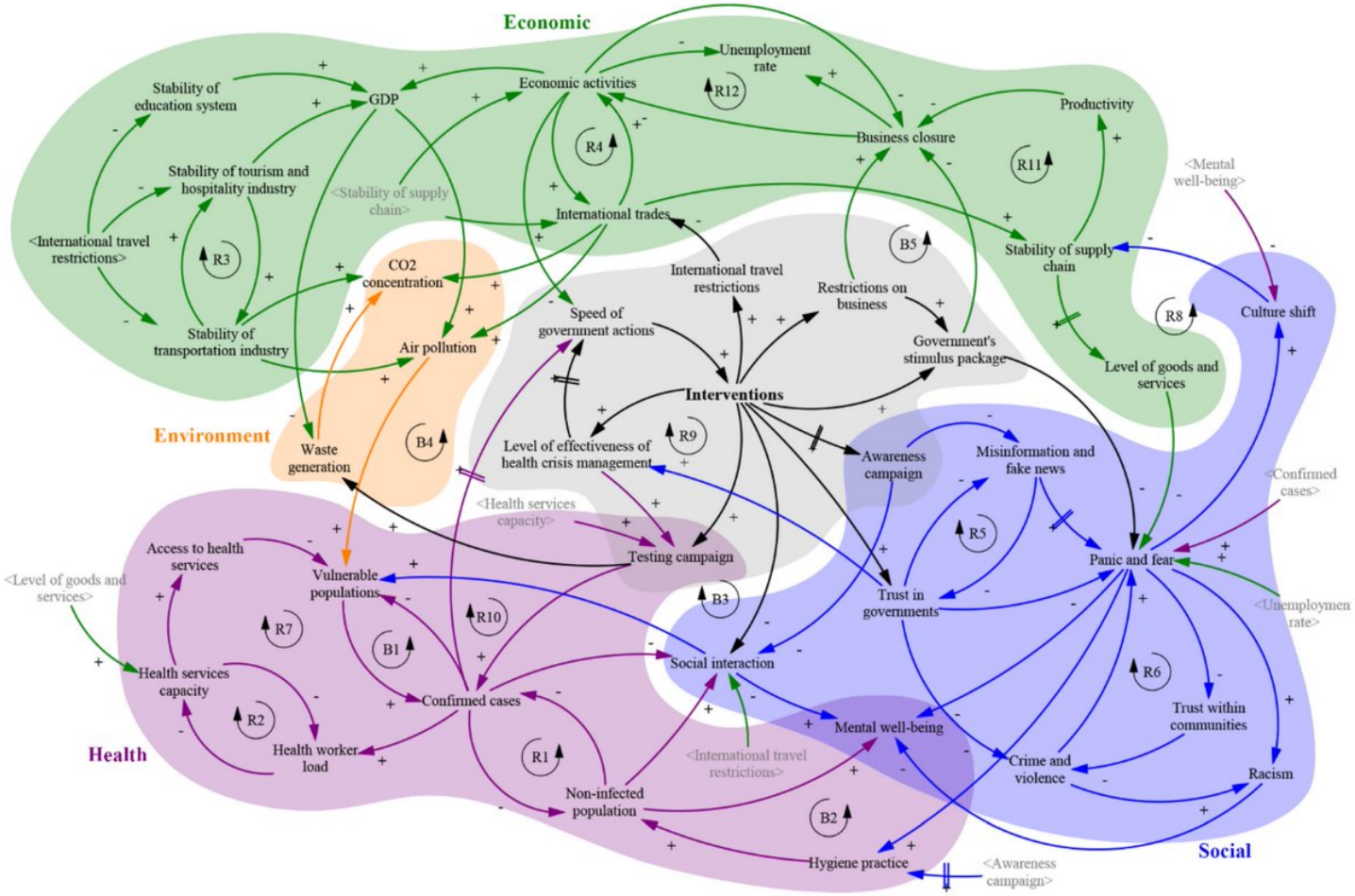
23/: Comparing the model prediction with the actual observations is called "model validation". Every serious scientist should validate their models and publicly discuss why the model failed or was able to predict the future. This is somehow not the case anymore.

24/: It would be exciting to get to know why @ViolaPriesemann, @EricTopiol, @CorneliusRoemer, @neil_ferguson, or @VSPTUBerlin (who are traffic planners lol) do not validate their COVID-models but instead keep on publishing doomsday scenarios with their faulty work.

25/: It is also useful to illustrate complex relationships in so-called causal-loop diagrams prior to blindly modelling a situation. That is at least what I do (see graphic for Kombucha).



26/: A holistic causal loop diagram demonstrating the complexity of the pandemic environmental–health–socio–economic system can be found in this publication: https://t.co/CpCL4wMq2b. This could for example be a solid basis for a holistic model (consisting of several submodels).



27/: Every serious scientist should keep on questioning the “reality” and his/her own work. I can only recommend the mentioned “scientists” and many other modellers to read the following article. https://t.co/UBoPEliLiL

28/: I also have another shout-out to the media: why do you keep on giving scientists a platform that have been wrong several times.

29/: … are openly lying... https://t.co/nPKyuGTr63

> 5/: The same @c_drosten was contradictory throughout the whole pandemic with respect to masks, mutations, etc. pic.twitter.com/qeezcW779v
>
> — Dr. Simon \u30c4 (@goddeketal) February 25, 2021

30/: … committed scientific fraud… (hello @Eurosurveillanc & @StephenABustin) https://t.co/1m7rpVqYFQ

> What is it called when you contradict yourself multiple times under oath?
>
> What is it called when you do it for 220,000 Pounds?
>
> What is it called when you flip flop like this and it shuts down the world?
>
> Still think Anon Peer Review is a good idea? pic.twitter.com/gDH4XEZiH1

— Kevin McKernan \U0001f642 (@Kevin_McKernan) February 10, 2021

31/: … let their bachelor students do the modelling job…
https://t.co/5hLDktlvf8

32/: … lack of a scientific degrees…
https://t.co/pMIGbbKrLU

> 14/: Instead, biased people without any academic background such as @CorneliusRoemer are invited to talk to newspapers, podcasts etc., even though they are part of a think-tank and only model doomsday scenarios without any substance. #fearmongers pic.twitter.com/au29KzovkC
>
> — Dr. Simon \u30c4 (@goddeketal) February 25, 2021

33/: … make false statements… (plus get funded by #Soros, @wef and @WHO; i.e. conflict of interests)
https://t.co/nElSOLHMUd

34/: … defame genuine colleagues…
https://t.co/h78oX9Ah3a

> Last week, @c_drosten made a remarkable statement by calling scientists who were part of the Great Barrington Declaration 'pseudo-experts'. A little later in that @ndr-podcast episode, he was then complaining about ad-hominem attacks. What #hypocrisy! pic.twitter.com/WaQvaXTjm5
>
> — Dr. Simon \u30c4 (@goddeketal) April 6, 2021

35/: … have conflicts of interests… (best wishes to the @gatesfoundation). etc.
https://t.co/2AzbGs4KDT

> The John Snow Memorandum = Nerd Sweater Mafia
>
> These authors are infamous for attacking the Great Barrington Declaration as being some @AIER libertarian think tank.
>
> Let\u2019s stoop to their level and see how they take a dose of their same immature associative fallacy medicine. pic.twitter.com/2M0Sa3KwbL
>
> — Kevin McKernan \U0001f642 (@Kevin_McKernan) March 4, 2021

36: Also, the #TeamScience that the media talks about is much bigger than assumed. Critical voices are disregarded or discredited. Instead, those who are in line with the agenda (no matter how unscientific their approach is) are presented as “THE SCIENCE™” we should listen to.

37/: Last but not least, John Ioannidis wrote one of the most important publications of the last decades about this topic: “Why Most Published Research Findings Are False”. Give it a go because he is part of the real #TeamScience.

https://t.co/LeGCfIMHFf