

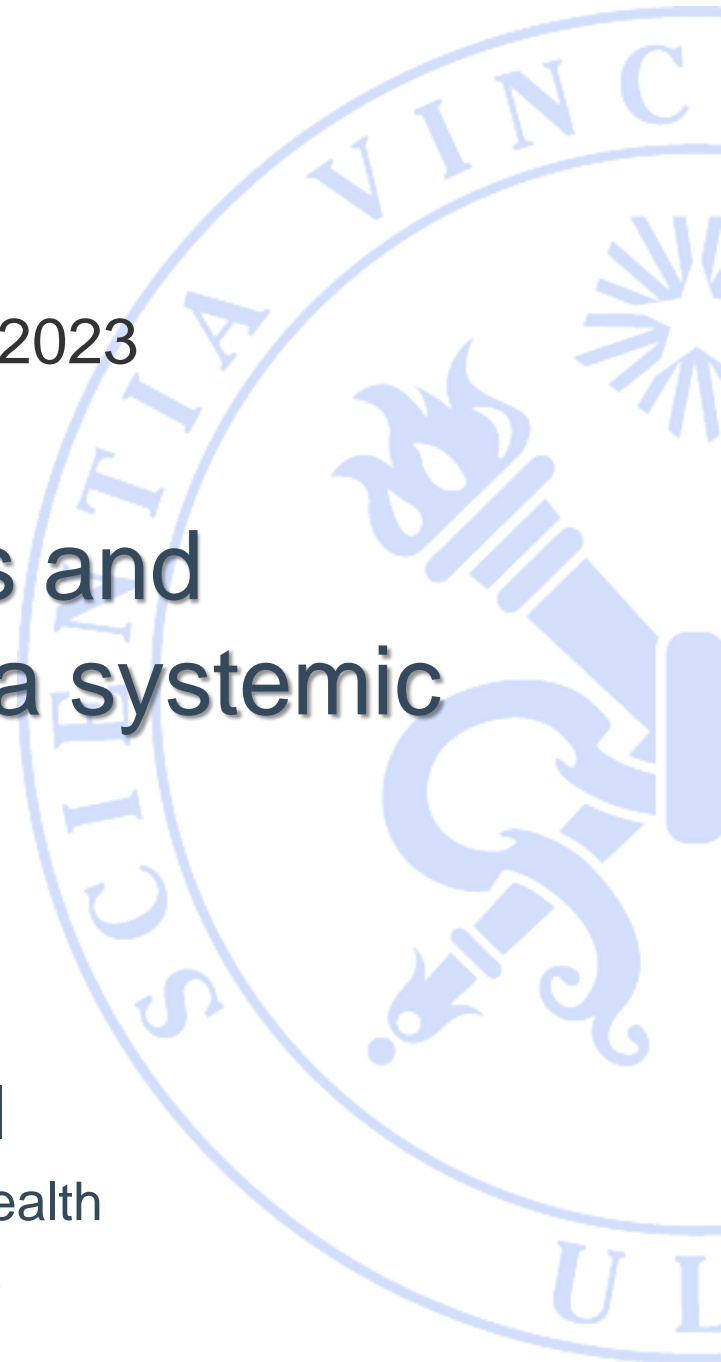
Be-cause Health General Assembly 2023

Pandemic Preparedness and Response: the need for a systemic approach

Elisabeth Paul

ULB School of Public Health

26 September 2023



Paradigmatic questions

- What causes pandemics?
- Shall we respond to a health emergency in a “vertical” (specific) or “horizontal” (holistic) manner?
- What is the difference between PPR and HSS?
- What are the critical aspects of the health system (broadly speaking) that need to be strengthened for PPR?
- What are the contextual factors that need to be taken into account to design PPR?

WHO & WB shared vision

- A global PPR architecture consists of 5 interlinked sub-systems that must be deployed at national, regional and global level:
 - Surveillance, collaborative intelligence, and early warning
 - Prioritized research and equitable access to countermeasures and essential supplies
 - Public health and social measures and engaged, resilient communities
 - Lifesaving, safe and scalable health interventions, and resilient health systems
 - PPR strategy, coordination, and emergency operations

[G20-Gaps-in-PPR-Financing-Mechanisms-WHO-and-WB-pdf.pdf](#)
(worldbank.org) (2022)

“When My Information Changes, I Alter My Conclusions.” What Can We Learn From the Failures to Adaptively Respond to the SARS-CoV-2 Pandemic and the Under Preparedness of Health Systems to Manage COVID-19?

Elisabeth Paul^{1*}, Garrett W. Brown², Andreas Kalk³, Wim Van Damme⁴, Valéry Ridde⁵, Joachim Sturmberg⁶

SARS-CoV-2 Is Necessary but Not Sufficient to Cause COVID-19

The SARS-CoV-2 pandemic results in a patterned outcome of COVID-19 disease: only a small number develop serious disease associated with high mortality, primarily the elderly and those affected by multimorbidity.^{6,7,28,29} Beyond comorbidities, like for all health problems, social determinants are emerging as an important contributor in the severity of COVID-19.²⁸ This means that the relationship between the exposure to the virus (SARS-CoV-2) and the development of the disease (COVID-19) – and ultimately its outcomes – is not ‘binary,’ but is considerably influenced by additional factors.

Put as an equation, instead of a causal linear relationship [SARS-CoV-2 => COVID-19], COVID-19 more realistically

is modelled as a nonlinear relationship [(SARS-CoV-2 * X- * Y- * Z-Factors) => COVID-19]. A different way to put this is through Rothman’s lens of *sufficient causes* – while SARS-CoV-2 is necessary, on its own it is not sufficient to cause COVID-19.



COVID-19: time for paradigm shift in the nexus between local, national and global health

 Elisabeth Paul^{1, 2}, Garrett W Brown³,  Valery Ridde⁴

Correspondence to Dr Elisabeth Paul; Elisabeth.Paul@qulb.ac.be

Key messages

- The COVID-19 pandemic has triggered unprecedented measures worldwide, which have often been adopted in an 'emergency' mode and are largely reactionary
- Alternatively, COVID-19 needs to be appraised as part of a much bigger health picture, adopting a "systems approach" that enables interactions with other acknowledged and preventable health conditions, which often receive disproportionately low attention
- To do so requires a paradigm shift in global health governance, from a specific reactionary paradigm to a systemic, coordinated and preventive paradigm
- It is necessary to adopt a holistic approach to health reflecting both a security approach and a health development approach, tackling upstream causes and determinants, aimed at helping populations reduce their individual risk factors and augment their natural immunity
- Such preventive health policies must be tailored to local specificities and local environments, and health systems must be strengthened at the local level so as to be able to respond to population needs and expectations
- The current crisis calls for a paradigm shift in public and global health policies; and in the in the nexus between local, national and global health policies and systems



SYSTEMS THINKING



Alliance for
Health Policy and
Systems Research

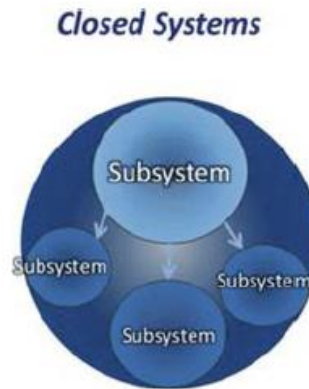
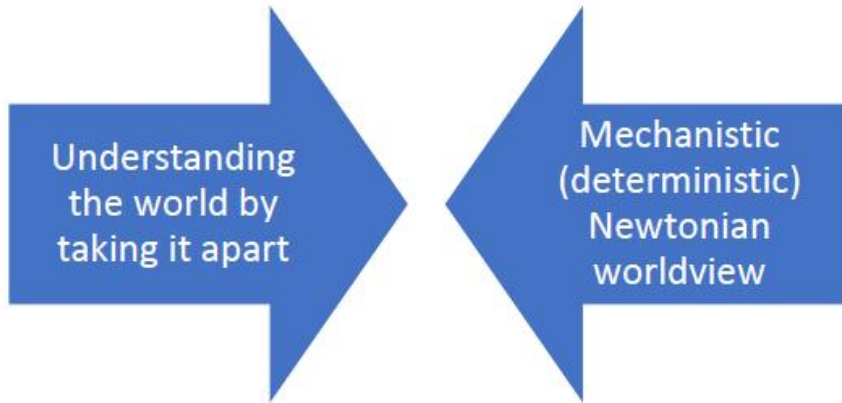
for Health Systems
Strengthening



World Health
Organization

- Every intervention, from the simplest to the most complex, has an effect on the overall system, and the overall system has an effect on every intervention
- Systems thinking works to reveal the underlying characteristics and relationships of systems
- [S]ystems [are] constantly changing, with components that are tightly connected and highly sensitive to change elsewhere in the system. They are non-linear, unpredictable and resistant to change, with seemingly obvious solutions sometimes worsening a problem. Systems are dynamic architectures of interactions and synergies.

A Changing 'Weltanschauungen' (worldview)



Understanding the world as a whole, where the whole cannot be divided into independent parts

J. Sturmberg (2022) Our Systems are not Built to Anticipate and Manage Crises – What Could Complexity Sciences Contribute? 6th International Conference for Systems and Complexity Sciences for Health, Phoenix, AZ, 16-Nov-2022



Understanding Systems

**A System is a WHOLE that cannot be divided into independent parts
and
A system's PROPERTIES are not present in its parts**

- ... is a WHOLE that contains two or more parts each of which can affect the properties or behaviours of the whole
- NONE of them has an INDEPENDENT EFFECT on the whole, how any part affects the whole depends on what other parts are doing
- The parts are ALL INTERCONNECTED. Between any two parts of a system there is a direct and indirect path

Ackoff RL, Gharajedaghi J. Reflections on Systems and Their Models. Systems Research. 1996;13(1):13-23.

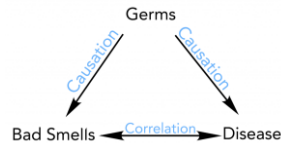
[https://dx.doi.org/10.1002/\(SICI\)1099-1735\(199603\)13:1<13::AID-SRES66>3.0.CO;2-O](https://dx.doi.org/10.1002/(SICI)1099-1735(199603)13:1<13::AID-SRES66>3.0.CO;2-O)

J. Sturmberg (2023) Newton is Dead, Long Live Humboldt! Why it's time to change the research paradigm. Conference CR3/ESP/ULB et CAMG/UCLouvain, Brussels, 7 June

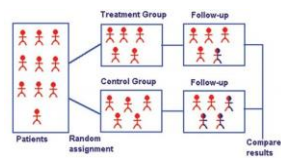
How to get from the traditional Newtonian (reductionist) science approach...



The Challenge



Attribution (Correlation)

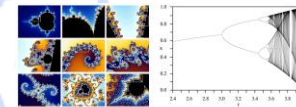


RCT

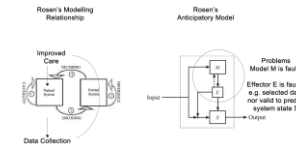
... to the (no longer so new) Humboldtian complexity (eco-systemic) science approach?



Emergence



Patterns



Modelling

J. Sturmberg (2023) Newton is Dead, Long Live Humboldt! Why it's time to change the research paradigm. Conference CR3/ESP/ULB et CAMG/UCLouvain, Brussels, 7 June

The biomedical securitization of global health

[Jens Holst](#)  & [Remco van de Pas](#)

[Globalization and Health](#) **19**, Article number: 15 (2023) | [Cite this article](#)

Findings

In a world increasingly determined by power asymmetries, unequal distribution of opportunities and resources, and inadequate governance structures, securitizing health has become a key feature of global governance. Health security is predominantly based on a concept that neglects the global burden of disease determined by non-communicable conditions rather than by infectious diseases. Moreover, it exhibits a trend towards biomedical solutions and neglects root causes of global health crises.






Conclusions

As important as health security is, the underlying concept driven by biomedical and technocratic reductionism falls short. It widely neglects the social, economic, political, commercial and environmental determination of health. Beyond improved health care and prevention, health-in-all policies are ultimately required for ensuring health security and reducing one of its main challenges, health inequalities within and between countries. Global health security must first and foremost seek to guarantee the universal right to health and therefore emphasise the social, economic, commercial and political determination of health.



Commentary

Playing vaccine roulette: Why the current strategy of staking everything on Covid-19 vaccines is a high-stakes wager

Elisabeth Paul^a  , Garrett W. Brown^b , Andreas Kalk^c , Valéry Ridde^d 



Highlights

- The global community has **disproportionately invested in vaccines** to fight Covid-19.
- This is at the expense of alternative strategies and health system strengthening.
- **Social determinants and co-morbidities** should be factored as part of any response strategy.
- **Risk-benefit analysis and the precaution principle** should guide vaccination policy.
- **A more diversified response to Covid-19 and future diseases** should be adopted.





COVAX – Time to reconsider the strategy and its target

[David Bell](#)^a, [Garrett W. Brown](#)^b, [Wellington A. Oyibo](#)^c, [Samiratou Ouédraogo](#)^d,
[Blagovesta Tacheva](#)^e, [Elena Barbaud](#)^e, [Andreas Kalk](#)^f, [Valéry Ridde](#)^g, [Elisabeth Paul](#)^h  

Abstract

COVAX, the international initiative supporting COVID-19 vaccination campaigns globally is budgeted to be the costliest public health initiative in low- and middle-income countries, with over 16 billion US dollars already committed. While some claim that the target of vaccinating 70% of people worldwide is justified on equity grounds, we argue that this rationale is wrong for two reasons. First, mass COVID-19 vaccination campaigns **do not meet standard public health requirements** for clear expected benefit, based on costs, disease burden and intervention effectiveness. Second, it constitutes a **diversion of resources from more cost-effective and impactful public health programmes**, thus reducing health equity. We conclude that the COVAX initiative warrants urgent review.

Conclusion: we need a(n) (r)evolution in PPR

- Don't separate the PPR agenda from the HSS/UHC agenda (+ surveillance)
- Don't fight diseases/emergencies, think of health, systems, and complexity
- Don't put all your bets on biomedical countermeasures
 - Invest in health promotion and prophylaxis; natural immunity exists
 - Take account of social determinants of health
- One size does not fit all; target measures
- Balance all the effects (+ and -) of interventions
- Ensure evidence-informed policy dialogue and inclusive decision-making processes
- Balance health with other values