First 2020 steps of designing Work-Logic Cascades for stopping a Pandemic

An early 2020 vision --- a MockupModel introducing ResearchCity

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[4--9] See **Declarations** below for more essential background.

Broader Significance

The COVID-19 pandemic demonstrated that scientific knowledge alone cannot prevent catastrophic outcomes --- institutional capacity for coordination is equally critical. This analysis extends beyond pandemic preparedness to illuminate why coordinated responses fail for climate change, AI safety, biodiversity loss, and other existential challenges. The work-logic cascade framework provides a systematic approach to understanding and building the organizational infrastructure needed for effective global coordination. The proposed institutional designs --- Virodefense Olympics and ResearchCity --- offer practical pathways toward maintaining readiness for complex challenges that require sustained, coordinated action across multiple organizational levels.

Declarations

[4] "of Laodicea" indicates taking responsibility to undo personal complicity with disastrous Laodicean legacies like banning mathematicians from clergy (Canon 36, Council of Laodicea; two magisteria separations), enabling institutional lukewarmness, weapons of math-destruction, and slow-motion explosions of misinformation from pandemics to self-compounding interests.
[5] LLoL stands for ridiculous luck in serendipitous discovery and a commitment to find ever more fun ways to help others uncover street-wise math that matters. He hopes a ResearchCity grows work-logic cascades that stop pandemics.
[6] by Anthropic (anthropic.com; evolves and operates Claude; not responsible for Loewe's errors in using AI)
[7] Named AI co-author for many substantial contributions, because the practical singularity (PraS, see Matheo-b21) changed how this paper was written. After PraS, useful AI insight generation outpaces human review on tested topics. Hence, Loewe's traditional standards for co-authorship demand naming AI Claude Opus 4.6-4.7 Max as a co-author, as if a PhD-student. Forward accountability (for all AI use & texts) rests with Loewe as senior corresponding author (like done for deceased authors, consortia, or young graduate students). Anthropic is not responsible for AI mistakes here. This study uses the AI co-authorship framework in Matheo-b21 to help rethink long-term use of AI in a ResearchCity serving the common good.
[8] This aggregated open co-author group invites all who wish to retroactively join the conversation under the open co-authorship framework defined in Matheo-b21. As Everyone cannot consent to co-authorship, all accountability rests with Loewe as senior corresponding author (until explicitly claimed otherwise). This open form critiques the closed world assumption in traditionally closed academic author-lists. Better, dynamic ways for acknowledging true sources of ideas are needed --- to avoid random lines between named, acknowledged, and implied contributors who aggregated insights from millennia of human experimenting, suffering, learning, and analyzing (see acknowledgements). Study Matheo-b21 only drafts an open co-authorship framework; it will require a ResearchCity to refine it over the long term.
[9] *Licensed under the Jonah License and CC-BY 4.0 for maximal flexibility (see https://balospe.com/en/license/joli/).*

Abstract

This paper extends the SGIR pandemic modeling framework presented in Matheo-b19 to address institutional and infrastructural challenges. We analyze why coordination failed during COVID-19 through work-logic cascades — organizational frameworks analogous to molecular signal transduction that show how individual decisions about virus defense amplify through social structures. The cascade analysis reveals that pandemic defense is fundamentally a logistics problem: biological knowledge for reducing transmission existed early, but organizational infrastructure for translating knowledge into coordinated action did not. We propose Virodefense Olympics as annual competitive exercises to maintain pandemic readiness, and ResearchCity as distributed research infrastructure addressing multiple existential challenges. The $8-per-person funding design ensures global accessibility and independence from special interests. This institutional framework addresses the governance challenges that prevent effective responses not only to pandemics, but to all existential threats requiring coordinated global action.

Contents

MockupModel status — please read first

This floor copy is an early **2020-vision MockupModel** (released as `mmv5`; the HELL source was `mmv2`). The **main text below is less refined** than its companion study Matheo-b19 — it sketches the work-logic-cascade vision rather than fully developing it. The **2020 figures,**

by contrast, are at full quality. For the figure core, the original 32-page write-up, and more on this paper's status and the first appearance of ResearchCity in the series, see *Supplementary Info — floor pour* below.

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1. Introduction

The SGIR pandemic modeling results presented in Matheo-b19 demonstrate that coordinated non-pharmaceutical interventions (NPIs) can produce dramatic reductions in pandemic spread — in some scenarios, 60-fold improvements over uncoordinated responses. Yet coordination failed spectacularly during COVID-19. This paper addresses three critical questions that extend beyond the core epidemiological modeling: (1) Why did coordination fail during COVID-19? (2) How do the underlying coordination failures connect to broader existential challenges? (3) What institutional infrastructure would enable reliable coordination for future pandemics and other global threats?

Our analysis reveals that pandemic defense is fundamentally a logistics and coordination problem rather than primarily a virology problem. The biological knowledge for reducing viral transmission — through Shed, Decay, and Catch rate modifications identified in the SGIR framework — existed early in the pandemic. What was missing was organizational infrastructure to translate that knowledge into coordinated behavior change across diverse populations with different trust levels, information sources, and material resources.

2. Work-Logic Cascades: Why Coordination Failed

The Scenario 2 results in Matheo-b19 show that coordinated NPIs can produce a 60-fold reduction in pandemic infections. But coordination failed spectacularly during COVID-19. Our analysis attributes this failure to breakdowns in **work-logic cascades** — organizational frameworks analogous to signal transduction cascades in molecular biology that show how individual decisions about virus defense amplify through organizational levels to produce population-level effects.

2.1 The Cascade Framework

Figure `b20-form-worklogic-mmv5-fig01` presents the work-logic cascade framework, showing how decisions cascade across multiple organizational scales: from personal decisions about mask-wearing and hygiene (the "last line of defense"), through household and workplace practices, to community-level coordination and national policy. At each level, the logic of virus defense interacts with pre-existing social structures — rule-making environments, trust levels, information quality, and resource availability.

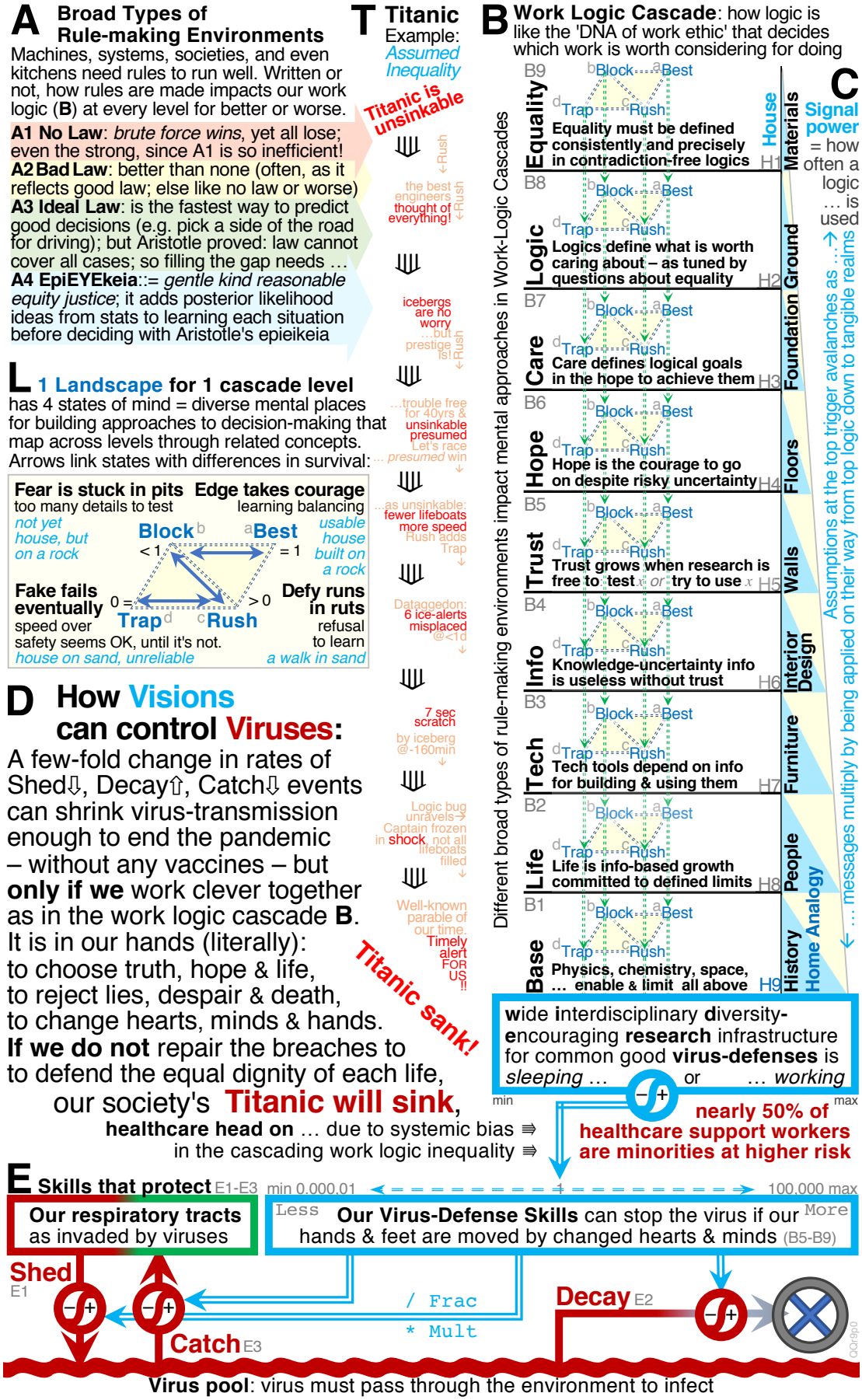


Figure 1: Work-logic cascade framework. The cascade operates across multiple scales, showing how individual decisions about virus defense amplify through organizational levels. At each level, four rule-making environments (A1-A4) and four mental states (Block, Trap, Rush, Best) shape decision propagation. The Titanic disaster (Section T) illustrates cascading Rush-state decisions across organizational levels.

The cascade can amplify good decisions when coordination succeeds, or dampen them when trust breaks down or information is unreliable. A key insight from this analysis is that **pandemic defense is a logistics problem, not primarily a virology problem.** The biological knowledge for reducing Shed, Decay, and Catch rates existed early in the pandemic. What was missing was the organizational infrastructure to translate that knowledge into coordinated behavior change.

2.2 The MAPK Analogy

The work-logic cascade design was directly informed by prior research on MAPK signal transduction cascades. Figure `b20-form-worklogic-mmv5-fig02` presents the molecular-to-social mapping that guided this framework development.

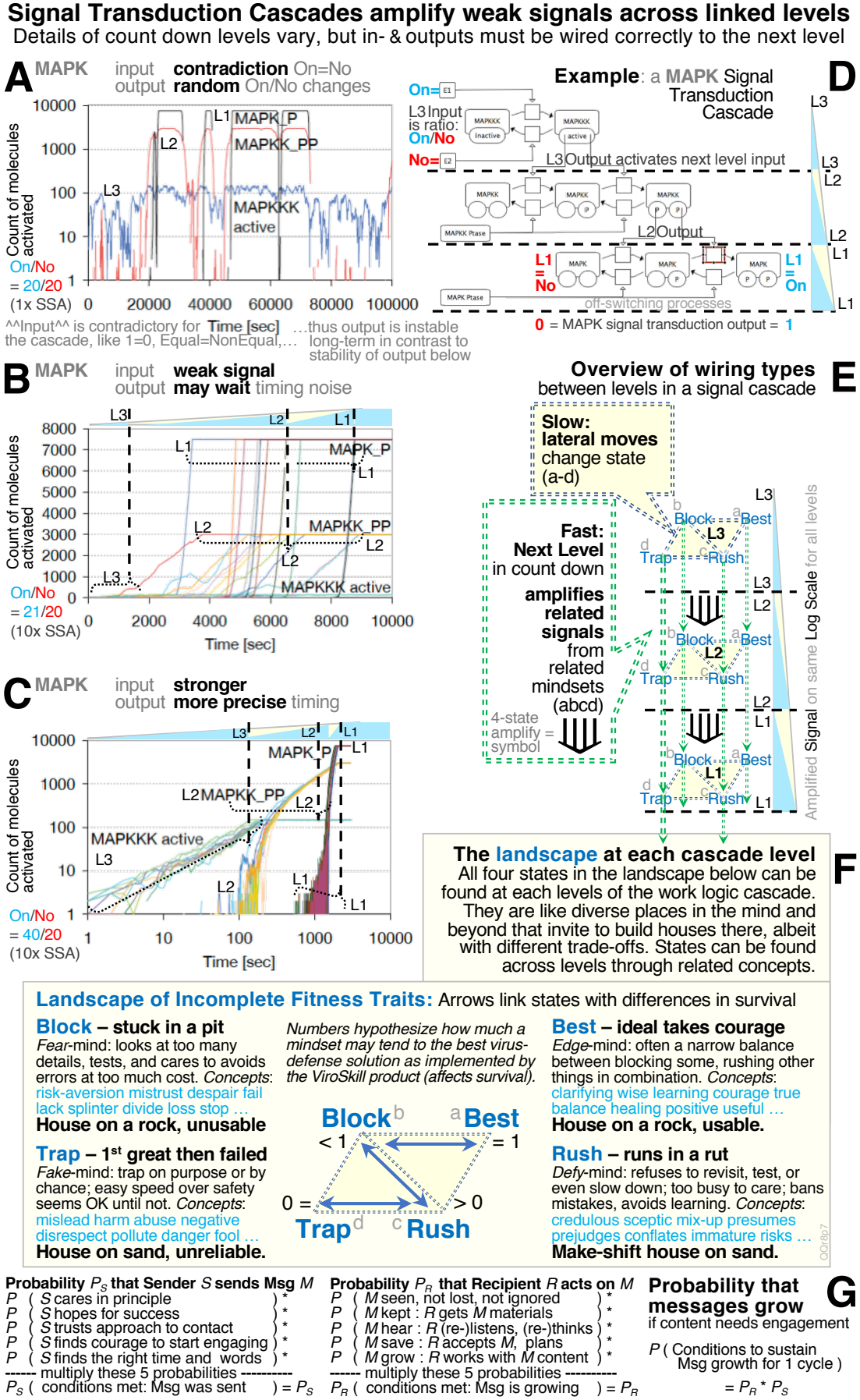


Figure 2: MAPK cascade analogy for work-logic cascades. Panels A-C show stochastic simulations of a three-level MAPK cascade: weak input signals produce increasingly sharp, switch-like outputs through signal amplification. Panel D shows how wiring between cascade levels determines signal amplification or attenuation. Panels E-G map this molecular framework onto human decision landscapes, identifying four behavioral states at each cascade level.

Panels A-C show stochastic simulations of a three-level MAPK cascade: a weak input signal at Level 1 produces increasingly sharp, switch-like outputs at Levels 2 and 3. This signal amplification is the key property that makes cascades powerful. Panel D shows how wiring between cascade levels determines whether signals are amplified or attenuated.

Panels E-G map this molecular framework onto the *human* decision landscape, identifying four behavioral states (Block, Trap, Rush, Best) at each cascade level and the probability conditions under which messages propagate through the cascade.

The analogy is precise: just as molecular signal transduction cascades can amplify a few signaling molecules into a cell-wide response, work-logic cascades can amplify individual decisions about virus defense into population-level behavioral change — if the "wiring" (care, hope, trust in work-logic cascades) is functional.

At the time (mid-2020), it was deemed unnecessary to translate this work-logic cascade into an actual Evolvix simulation, because the MAPK simulations had already demonstrated that corresponding molecular models exhibit switch-like behavior given the necessary parameters. However, measuring *human* motivational parameters remains a major challenge that would require sustained research infrastructure.

2.3 Rule-Making Environments and Decision Landscapes

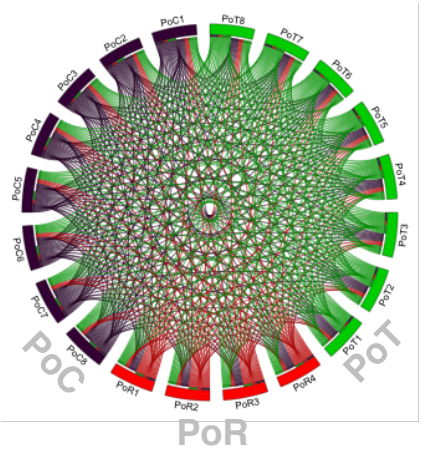
The cascade framework identifies four broad types of rule-making environments that shape work-logic cascades at every organizational level:

- **A1 No Law:** Brute force wins, yet all lose — even the strong, since A1 environments are fundamentally inefficient.
- **A2 Bad Law:** Often better than none (when reflecting good law principles), but can be equivalent to no law or worse when poorly designed.
- **A3 Ideal Law:** Provides the fastest way to predict good decisions (e.g., standardized traffic rules), but as Aristotle proved, law cannot cover all cases.
- **A4 EpiEYEkeia:** Gentle, kind, reasonable equity justice that adds posterior likelihood concepts from statistics to learning each situation before deciding with Aristotle's *epieikeia*.

At each cascade level, four mental states shape decision-making: **Block** (fear-mind: analysis paralysis), **Trap** (fake-mind: speed over safety), **Rush** (defy-mind: refuses to learn), and **Best** (edge-mind: narrow balance of courage and learning). The Titanic disaster illustrates how Rush-state decisions cascaded through multiple organizational levels to produce catastrophe — a pattern that recurred during COVID-19.

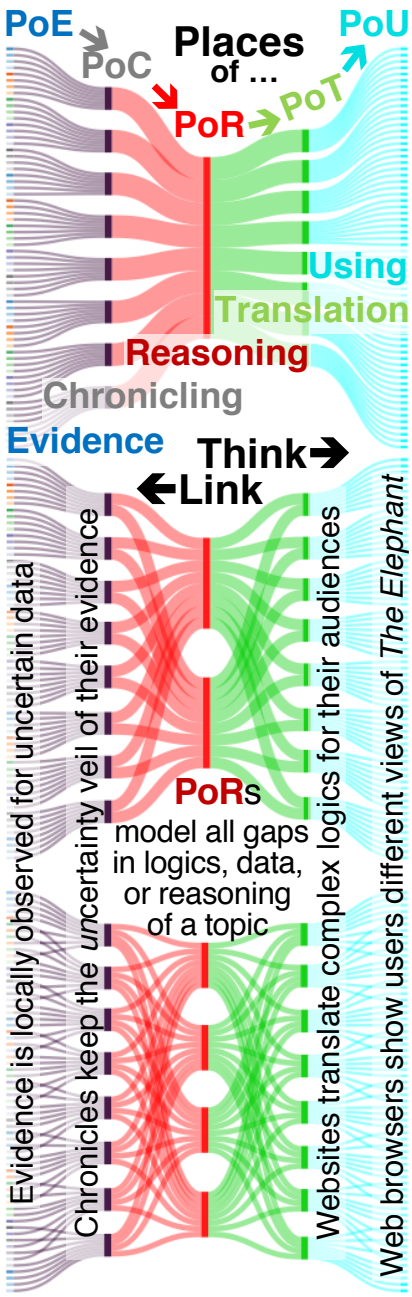
2.4 Information Flow: Places of Reasoning

Figure `b20-form-worklogic-mmv5-fig03` presents a framework for organizing information flow to reduce the chaos that hampers pandemic response.



A Info-Jungle flows in any direction

Lack of site types, chaotic reasoning, and wild formatting makes fact-checking slow, costly, & error-prone – like searching a swampy labyrinth.



B ReRaft types can organize info-flow

Imagine … websites declare the type of info-place they want to be, link to sources, and assist users who test their conclusions. How much info-noise would simply vanish?

C Alternative logic is easily included

No need for universal agreement if another logic can be justified: new PoRs can argue new views; yet quality is to be tested with a system that rewards: add quality, cut bugs!

D Distributed work can be batched

Imagine … cut global data quality costs for testing and reasoning by efficiently batching declared types that are easy to check if in doubt. A few sites competing in transparent ways for quality will cover their scope better at less cost than myriad mediocre pieces – liberating research time for new questions!

Figure 3: Places of Reasoning framework for information organization. Structured information flows through typed Places of Reasoning (PoR) that declare reasoning standards and link to evidence, dramatically reducing fact-checking costs compared to unstructured "info-jungle" approaches.

The key insight is that unstructured information flows ("info-jungle") are slow, costly, and error-prone, while typed Places of Reasoning (PoR) that declare their reasoning standards and link to evidence can dramatically cut the cost of fact-checking and quality control. This structured approach is essential for coordinated pandemic response where decisions at many cascade levels must be made rapidly and reliably.

3. From Pandemic to All Existential Challenges (2020-2026)

The six-year gap between initial simulations (2020) and publication (2026) was not idle time. It was consumed by a discovery that fundamentally changed the scope of this work.

3.1 The Generalization Discovery

While analyzing why pandemic coordination failed, it became clear that the same cascading work-logic failures that prevented effective COVID-19 response also undermine responses to every other existential challenge: climate change, biodiversity loss, AI safety, nuclear risk, antibiotic resistance, soil erosion, water security. In each case, the biological or physical knowledge for addressing the problem exists, but the organizational infrastructure for translating that knowledge into coordinated action does not.

This generalization is documented in detail in OL5b — a 28-page letter to the UN Secretary-General which identifies seven categories of existential risk ("7 Death Urn Incinerators") that share the same structural failure pattern: cascading work-logic breakdowns across organizational levels, compounded by information overload that prevents warnings from reaching decision-makers.

3.2 The Governance Problem

Extending work-logic cascades to multiple existential challenges immediately revealed a deeper challenge: *who governs the infrastructure?* Any global research institution powerful enough to coordinate existential-risk responses is also powerful enough to be captured by special interests, corrupted by internal politics, or paralyzed by its own bureaucracy.

This recognition led to extensive work on fundamental governance challenges that any such institution must solve before it can function reliably. This work culminated in a mathematical framework for governance — presented in the Matheo paper series — that addresses the structural conditions under which coordinated action remains gentle, kind, and reasonable over the long term for all affected sides, including the weakest.

3.3 The Jonah Problem: A Personal Confession

The irony is not lost on the author: like the biblical Jonah, who slept in the hold of a ship while a storm raged, the author had the tools to address the pandemic crisis but did not deploy them in time. The delay was not caused by laziness but by the conviction that releasing alarming pandemic numbers without offering a constructive path forward would amount to fear-mongering — and the constructive path (ResearchCity, work-logic cascades, governance framework) required years of development that could not be shortcut.

Whether this conviction was wise or whether the pandemic paper should have been published immediately in 2020 — accepting the risk of fear-mongering in exchange for earlier public benefit — is a question the author cannot answer with certainty. The work-logic cascade framework itself predicts that this type of delay (Block state: too many details to test, unable to act) is one of the four failure modes at every cascade level. Acknowledging this failure mode in oneself is part of the framework's self-testing design.

4. Institutional Solutions: Virodefense Olympics and ResearchCity

The pandemic modeling and work-logic cascade analysis motivated two institutional concepts designed to address the coordination failures identified above.

4.1 Virodefense Olympics

Virodefense Olympics are annual, competitive, gamified training exercises designed to build and maintain the organizational muscle for coordinated virus defense *before* the next pandemic arrives. Just as fire drills prepare buildings for emergencies and military exercises maintain readiness, Virodefense Olympics would maintain society's capacity for rapid, coordinated NPI adoption.

The competitive element — between teams, cities, or nations — provides motivation, while the annual recurrence prevents the institutional amnesia that leaves societies unprepared when decades pass between major pandemics. These exercises would test and strengthen work-logic cascades at all organizational levels, from individual behavioral change to international coordination.

4.2 ResearchCity: Distributed Global Infrastructure

ResearchCity represents a distributed research infrastructure organized around work-logic cascades, where dedicated units (stadia) each address a specific existential challenge as a global public service. The virodefense stadion (STa2-WWV) would organize Virodefense Olympics; an Evolvix stadion (STa1-EVX) would maintain and develop the modeling infrastructure; other stadia would address other existential challenges identified by the 7DUI analysis.

The organizational challenge of scaling such infrastructure requires careful attention to information flow. The Places of Reasoning framework (Figure `b20-form-worklogic-mmv5-fig03`) provides a systematic approach to organizing information flow, reducing chaos, and improving the quality and speed of decision-making across cascade levels.

The detailed institutional design for ResearchCity — including governance structures (epiocracy), funding mechanisms, accountability systems, and a proposed UN Mandate — is presented in OL5b and subsequent documents.

5. Funding Design: The $8 Principle

Any institution organizing Virodefense Olympics must confront an uncomfortable reality: enormous levels of mistrust in organized medicine — and especially medical for-profit companies — mean that conventional funding would undermine the very trust that such Olympics are designed to build.

This challenge led to the concept of independent crowd-funded research stadia, each running its own public campaign inviting contributions of at most approximately **$8 per person per year** — roughly two cents a day.

5.1 The Rationale for $8

This cap is not arbitrary. It is deliberately calibrated to be accessible even at the median income of the world's poorest countries. The design intent is that *everyone* — including the poorest of the poor — can contribute their share toward an institution that is audited to work for *everybody*, including the weakest. The cap simultaneously keeps large corporate donors at arm's length, ensuring fiduciary responsibility toward the global public rather than toward special-interest shareholders.

This echoes a principle as old as recorded ethics: a small contribution freely given by someone who has almost nothing can matter more than a large contribution from someone who will never miss it — because the former represents genuine commitment while the latter may represent mere convenience. The design ensures that the institution's accountability runs toward the many, not the few.

5.2 Access and Transparency Mechanisms

Those with greater means are invited to sponsor access for others who cannot yet participate — effectively buying in on behalf of the two-thirds of the world's population who lack the infrastructure (credit cards, bank accounts, internet access) to contribute directly. The transparency mechanisms needed to make this work reliably are themselves a research challenge, addressed by the governance framework described in the Matheo series.

6. Lessons for Evolvix Modeling Language Design

The declarative Evolvix syntax used in the companion pandemic modeling work (Matheo-b19) demonstrates the potential of domain-specific languages for biological modeling. Without the simplifications introduced by this Evolvix prototype, the PandemicSociety101 model would have been far more difficult to construct and modify.

The Evolvix mission — **simplify accurate modeling** with a long-term stable, extensible, humane computer language for biologists — and its vision — **improve responsible decision-making**

worldwide by modeling uncertainties, values, and logics — are both directly relevant to pandemic preparedness.

6.1 Architectural Challenges Revealed by Pandemic Stress

However, using Evolvix during an active pandemic revealed important design limitations. There are numerous instances where general-purpose multi-paradigm programming constructs would have made the code substantially more readable. The key challenge is that in biology, almost everything is uncertain to some degree. Making this **biouncertainty** — inherently foreign to digital systems — a first-class citizen in the language is essential but architecturally demanding.

Working on Evolvix design *while* an active pandemic was unfolding revealed a series of architectural flaws that must be addressed to produce a version deserving the label "pandemic-grade." It proved impossible to anticipate the needs of pandemic-stress modeling without experiencing that stress.

6.2 Infrastructure Requirements for Tool Development

This observation provides a crucial lesson for pandemic preparedness: the tools needed for the next pandemic must be developed and stress-tested *before* the crisis, not during it. Developing such common-goods infrastructure requires sustained focus over many years — far longer than typical university research material retention periods (~7 years) or grant cycles.

This observation further motivates the ResearchCity concept: a dedicated Evolvix stadion (STa1-EVX) working alongside the virodefense stadion (STa2-WWV) would provide the institutional continuity needed to evolve a pandemic-grade modeling language over the decades required.

7. Conclusions

The analysis presented in this paper extends the SGIR pandemic modeling framework into institutional and infrastructural dimensions. Three key insights emerge:

First, pandemic defense is fundamentally a logistics and coordination problem. The biological knowledge for virus control existed early in COVID-19, but organizational infrastructure for coordinated implementation did not. Work-logic cascades provide a systematic framework for understanding and addressing these coordination failures.

Second, the coordination failures that undermined pandemic response are not unique to pandemics — they represent a general pattern affecting all existential challenges requiring coordinated global action. This recognition motivated the development of governance frameworks and institutional designs that address the broader class of coordination problems.

Third, effective solutions require sustained infrastructure development over decades, not crisis-driven responses. The Virodefense Olympics and ResearchCity concepts provide practical pathways toward building and maintaining the organizational capacity needed for coordinated responses to complex global challenges.

The $8 funding design ensures that such infrastructure remains accountable to global publics rather than special interests, while the governance frameworks developed in the broader Matheo series provide mathematical foundations for institutions that remain gentle, kind, and reasonable over the long term for all affected sides.

This institutional framework offers hope that future pandemics — and other existential challenges — need not produce the cascading coordination failures that characterized the COVID-19 response. However, building such infrastructure requires starting now, during calm periods, rather than waiting for the next crisis.

Acknowledgements

The work-logic cascade framework was inspired by prior research on MAPK signal transduction cascades conducted in collaboration with numerous colleagues. The institutional analysis benefited from extensive discussions about governance challenges and existential risk coordination. The author acknowledges the difficult trade-offs involved in delaying publication while developing constructive institutional proposals, and thanks those who provided perspective on these ethical dimensions.

Supplementary Information

SI.1 Code and Data

- Evolvix modeling code for SGIR simulations: See companion paper Matheo-b19
- Work-logic cascade conceptual framework: Available in institutional design documents at Balospe.com
- MAPK simulation results: Original research data from prior publications cited in References

SI.2 Prompts

- Institutional design prompts: Available in the companion prompt archive
- Analysis framework prompts: Linked from parent paper documentation

SI.3 LLogs behind this paper

- Hell/ll/study/b/20/ directory contains development logs and analysis trails
- Cross-references to b19 development process for methodological consistency

SI.4 Reviews

- Adversarial reviews of institutional proposals
- Work-logic cascade framework validation through historical case studies

SI.5 AI Model Disclosure

- Model(s) used: Claude Opus 4.7 Max

- Effort tier: max
- Role: Drafted institutional analysis sections and integration with pandemic modeling framework under LLoL's direction; LLoL authored governance framework connections and personal reflections
- Prompts available at: S.2 above

SI.6 Correction Log

- No major corrections identified in initial draft phase

SI.7 License

- Text: CC-BY 4.0
- Institutional designs: Public domain
- Analysis framework: CC-BY 4.0

References

Primary References from Companion Paper (Matheo-b19)

See Matheo-b19 for the complete reference list supporting the SGIR pandemic modeling framework.

Additional References for Institutional Analysis

Butler, D. A. (2012). *"Unsinkable": The Full Story of RMS Titanic*. Boston, MA: Da Capo Press. [The Titanic disaster exemplifies cascading work-logic failures: ignored warnings, overconfidence in technology, inadequate safety provisions, and organizational failures at every level. The 2023 OceanGate Titan implosion while searching for the Titanic wreck provided a tragic reminder that these cascade failure patterns recur when organizational safeguards are bypassed.]

Ehlert, K. and L. Loewe (2014). "Lazy Updating of hubs can enable more realistic models by speeding up stochastic simulations." *Journal of Chemical Physics* 141(20): 204109. doi: https://doi.org/10.1063/1.4902225

Loewe, L., et al. (2009). "Quantifying the implicit process flow abstraction in SBGN-PD diagrams with Bio-PEPA." *EPTCS* 6: 93–107. http://arxiv.org/abs/0910.1410

Loewe, L., et al. (2009). "Defining a textual representation for SBGN Process Diagrams and translating it to Bio-PEPA for quantitative analysis of the MAPK signal transduction cascade." Technical Report EDI-INF-RR-1334, School of Informatics, University of Edinburgh.

Institutional Framework References

Loewe, L. (2025). "Detailed Letter to UN Secretary-General: Stop Accidental Nuclear Winter with ResearchCity." 28 pages. Available at Balospe.com. [OL5b]

Loewe, L. (2026). "Mathematical theology and governance frameworks." Matheo paper series. Balospe.com. [Full governance framework supporting ResearchCity institutional design]

Companion papers

Related papers in the Matheo series that should be read alongside this institutional analysis:

- `/matheology/hell/mm/b/19/b19-sgir_basic-gap-of-germs-2020-epidemiology-oov1_` (Matheo-b19) — Core SGIR pandemic modeling framework
- Matheo-b11 through Matheo-b18 — Mathematical theology papers providing governance framework foundations
- OL5b (Letter to UN Secretary-General) — Detailed ResearchCity institutional design and UN mandate proposal

HELL: internal production files — Historically Experienced Lessons Learned (there be dragons)

The following are internal production files recorded to help remember Historically Experienced Lessons Learned (HELL): **BEWARE, for content may be rough, early draft-quality, or outdated and hence misleading if taken out of historic context. There be dragons.**

- Development logs for institutional analysis (to be created in /matheology/hell/ll/study/b/20/)
- Work-logic cascade development notes (2020-2026)
- Institutional design iteration history
- Governance framework evolution logs

Supplementary Info — floor pour (MMv5)

MockupModel status, figures, and the first ResearchCity sketch

Refinement. This is an early (2020-vision) **MockupModel**. Its main text is **less refined** than the companion study Matheo-b19 and is best read as a vision sketch of work-logic cascades rather than a finished argument.

Figures. The **2020 figures are at full quality.** Their core — and the original 32-page write-up they were drawn from — lives in the STa2-WWV / EvoSysBio material: see /good-news-pack/vv/mmv3/flyingscroll/transwarpkey/sta2-wwv/wwv-pandemic-snapshot (the World-War-V-against-Coronaviruses pandemic snapshot).

What it introduces. This is the earliest paper in the series to sketch a **ResearchCity** (with Virodefense Olympics as its first stadion) — the distributed, audited, common-good research infrastructure that the later matheology papers develop. Only how those ideas evolved between 2020 and 2026 still remains to be documented.

Note

Floor-pour status (MMv5). This is the public-floor copy poured from HELL per the Floor Model (bug c103) and DD b15. The `mmv5` marker is the uniform first-Matheo-release tag (the HELL source was `mmv2`). The HUMANE and author-contribution statements below are a down-payment, to be expanded later.

Caution

Floor-pour authoring flags (for LLoL review). During this pour the AI authored two pieces of text that are **not** in the HELL original and need LLoL's check: **(1)** the fn-5 hope sentence *"He hopes a ResearchCity grows work-logic cascades that stop pandemics."*; and **(2)** the *MockupModel status* framing (the leading reader's-note above the Introduction and the status note just above). The paper's Abstract and Broader Significance were already present in the HELL source and were reused, not authored.

HUMANE — working human and AI

This study was written HUMANEly (HUman MAchine Negotiation Encouraging): a human and an AI each steelman and stress-test the work, and each catches what the other misses. For the standard statement of AI use, accountability, and the practical singularity (PraS) behind this way of working, see Matheo-b21.

- *From the human side (LLoL):* [down-payment stub — to expand.]
- *From the AI side (Claude):* [down-payment stub — to expand.]

Author contributions (who did what)

- **LLoL** — the 2020 modeling vision and figures, structure, key ideas, direction, and final accountability as senior corresponding author (title-page footnotes 1–5).
- **AI Claude (Opus 4.6–4.7 Max)** — drafting and revision of the 2026 main text under LLoL's direction (footnotes 6–7).
- **Everyone** — the open co-author group (footnote 8); framework in Matheo-b21.

(A down-payment; the full who-did-what is to be expanded per the b21 framework.)

Provenance — where this came from in HELL

Caution

These HELL paths point into the development archive ("datageddon"). They are useful and related, but completeness is not guaranteed and a few may be imprecise. Treat as a hatch into context, not a clean index. (Intra-floor links and a proper bibliography wiring are deferred floor tasks — DD b15 AA #5.)

- **Source this floor copy was poured from:** `matheology/hell/mm/b/20/b20-sgir-virodefense-olympics-2020-vision-mmv2_2026.rst`
- **Development context** under `matheology/hell/ll/infra/b/20/`.
- **Companion floor papers:** Matheo-b19 (the SGIR pandemic study this one extends), the Matheo-b19 Supplementary Information, and Matheo-b21 (AI co-authorship).

Note

Naming note (deferred floor tasks). This copy still carries old `h*`-era tokens and a few deprecated in-text references; figure `:numref:` anchors were namespaced to the FileID during the pour. Notation unification (`h_star` / `h_zero` / `h_dark`) and citation migration are tracked floor tasks (DD b15 AA #1, #5), deliberately not rushed here.

Notes

Content stability — Content is variant dv_ClaOp48Max_MMv5_b20-form-worklogic-mmv5_2026m05d29 (see StayVS). Rebuilt 2026-05-29.

See also on Balospe.com

- /study/matheo/index — the Matheo Study Series overview
- /action/audit-the-math/index — Audit the Math: the refutation-welcome path