



FLOURISHING FUTURES FROM COVID-19

70 opportunities for turning the current crisis
from catastrophe into eucatastrophe

03/23/2020 - 05/28/2020

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Introduction

For 30+ years, Foresight Institute has been steering imaginations of flourishing futures, and the technologies that get us there. Our work includes [technical competitions](#) to advance crucial technologies, [strategy groups](#) for ensuring the beneficial use of those technologies and [public salons](#) to educate the public and give everyone a stake in positive long-term futures.

We launched the website [Existentialhope.com](#) as a collaborative onboarding document about positive futures directed at the next generation, providing a few shortcuts to find out what is at stake for civilization and how to plug in. The focus is specifically on ambitious, exciting futures, rather than dystopian narratives, to encourage the next generation to dream big again.

A quote that summarizes the website content well:

“Teetering here on the fulcrum of destiny stands our own bemused species. The future of the universe hinges on what we do next. If we take up the sacred fire, and stride forth into space as the torchbearers of Life, this universe will be aborning. (..) Because of us, the barren dusts of a million billion worlds will coil up into the pulsing magic forms of animate matter. (...). A whole frozen universe will thaw and transmogrify, from howling desolation to blossoming paradise.” Marshall Savage

Even pre 2020, the gap between those future possibilities and our default reality seemed looming at times and during the current COVID-19 crisis it certainly seems that we are still farther away from those grand futures that many of us openly —and secretly— dare dream of.

Yet, Ord and Cotton-Barratt vividly point out in [Existential Risk and Existential Hope](#), that if a catastrophe is an event which causes the loss of most expected value, a “eucatastrophe would be an event which causes there to be much more expected value after the event than before”. Applying this framework to the current situation, there may be a few unique opportunities to steer the crisis away from catastrophe toward eucatastrophe. Some of those opportunities demand urgency given the speed with which the crisis is changing and the likely short time-window in which it will be possible to push for positive change.

The COVID-19 crisis is real, it is costing lives, its effects are still ramping up and demand from every one of us to step up our support. In addition, it also opens up the window into a different world. Things never dreamt possible before are happening now, borders are closed, machines are stopped. Many of those scenarios are nightmarish - but not by necessity. This opening of possibility must mean that there is room for upside risk, for Existential Hope, for something extremely good happening. There are many reasons to be hopeful:

Individually, COVID-19 serves as a memento mori that reminds us that it is possible to exist without much of the usual theater and strip the window-dressing away to get clear on what matters. It allows us to appreciate what gift it is to stay alive.

As a society, the way we are stepping up to help is unprecedented. This is the first perceived time that there is one global issue that affects everyone, creating a shared reality amongst humans that could break through echo chambers, and could lead to more global solidarity.

In addition to growing stronger as individuals and as society, we could aim higher. The premise to *“never waste a good crisis”* or that *“only a crisis—actual or perceived—produces real change; when the actions that are taken depend on the ideas that are lying around”* are views often used to brainstorm ideas for leapfrogging humanity in times of a hypothetical crisis. That crisis moment was often vague, and always imagined. Now it is in front of our doorsteps.

This may be just a test for the long-term survival of humanity but it beautifully demonstrates that there is no homunculus in the global control tower who will respond if the test becomes reality. This is terrifying, yet so empowering. As the cards of civilization get reshuffled, much is at stake, but so much more is possible.

Whether we can seize the day depends partly on our ability to act fast. The window of opportunity is shrinking. Soon the dust will settle onto the default world, soon this one issue that unites us will be digested into different echo chambers and fingers will be pointed. Soon the cracks in our broken paradigms through which the light of a different future shines will be stuffed by the same old. Unless, from the ashes of today, the Phoenix of a different future rises.

How may this future look, in practice?

How about a future that is....

- Guided by Hopeful Visions and a Diversity of Views
- Awoken to Life by Art & Awe
- Relayed via Shared Narratives
- Celebrated by Global Rituals
- Championed by a Culture of Honesty, Altruism, and Cooperation
- Invigorated by Physical Health and Transformation
- Nurtured by Mental Health and Well-being
- Strengthened by Tight Communities
- Unlocked through a Rich Virtual Life
- Powered by a Sound Political Economy

- Open to Cross-Cultural Understanding
- Informed by Reasoned Global Sense-making
- Coordinated by People-Friendly Technology
- Accelerated by Foundational High-Impact Science
- Leapfrogged by Effective Investment and Philanthropy
- Resting on the Back of Resilient Institutions
- In Harmony with our Planet's Ecosystem - and expanding it outward?

Those goals may sound a little lofty but as this report intends to show, our communities are actively working on making those a reality:

Sanity Preserver (03/23/2020 - 04/24/2020)

With the start of the shelter in place order, we started the [Sanity Preserver](#), a free, openly accessible online salon that convened up to twice a day to allow global participation from all time zones. For five weeks this global community met online with three goals:

1. Coordinating response: Signal-boosting those who can help others make sense of the COVID-19 crisis, and coordinating support for projects seeking to help with the crisis
2. Strengthening the community: Connecting isolating foresighted minds across the globe on shared goals
3. Exploring opportunities for change: Surfacing unique opportunities for positive long-term change arising in the context of the crisis

Hive Mind (04/25/2020 - 05/28/2020)

Five weeks in, with a strong global community meeting daily online, and slightly less urgency around immediate coordination, we shifted gear to launch the second phase of the experiment: The Foresight [Hivemind](#), a five-week daily online workshop to screen the most promising opportunities for change that were surfaced in the Sanity Preserver and catalyze them into action.

This report summarizes the results of both efforts, comprising ten weeks of daily sense-making on positive paths out of COVID-19. While not every contributor may agree with every statement in this 70+ salon report, I thank all presenters, participants, and the many incredible minds that turned from participants into presenters for their contributions. The following ideas are not meant to be exhaustive, some will be irrelevant at the time of publishing, but I hope they spark your imagination about the changes that we may face as default, and the ones that you can help make possible.

Please read this report as an inspiration to dream big and as a call to action. The menu of ideas in here is broad enough that you may find a new idea that evokes your interest but even if all you walk away with is a new angle to support a cause that you already care about, it will have been well worth writing. The more alliances we forge globally, the more distributed, diverse and resilient our change will be. The more corners of the world give voice to shared goals, the more attractive they will get for decision-makers to endorse. Other ideas don't require advocacy but are ready for execution and the more communities drive those proposals, the less likely they are to remain ideas only.

It may require a kid's eye to see that the emperor has no clothes on and yet, if you can read this, you are also the adult in the room. We have never had that much potential agency and may not for a

Introduction

long time after. Let us not look back at this as a missed opportunity when things have solidified again. Paraphrasing [Robin Hanson](#), our future selves will look back at our current time as “dreamtime”; a time of legend, a favorite setting for grand fiction, when low-delusion heroes and the strange clowns around us could most plausibly have changed the course of history. 2020 is the year in which we leave dreamtime to enter the strange nimbus between dream and reality. We could wake up into the futures we dream up; let us make our descendants and future selves proud.

This report groups ideas for change into the buckets of [health](#), [investment & philanthropy](#), [default institutions](#), [governance architectures](#), [coordination technologies](#), [civil responsibility](#), [sense-making systems](#), [global resilience](#), [planetary ecosystem](#), [diverse worlds](#), [culture & arts](#), [flourishing](#).

To illustrate the possible shift from catastrophe to eucatastrophe, each section is structured in a very deliberate way; it opens with the challenges presented by COVID-19 before pointing to specific opportunities hidden in those challenges for advancing toward flourishing futures. To concretize the challenges and opportunities, the salon videos are provided as spotlights for those of you who would like to dive deeper. [For those in a hurry, skip ahead to in lieu of a conclusion at the end of the report.](#)

If you feel inspired to contribute, please reach out. Chances are that if you are reading this, you are working on an idea that seemed audacious or even unrealistic, before extraordinary times demanded extraordinary measures.

Best,
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Health

Challenge: Saving Lives

Perhaps the most obvious challenge presented by COVID-19 is the need to rapidly understand how the virus affects our body to increase our defenses. The spotlights below highlight a few promising approaches for understanding and accelerating human immunity to COVID-19:

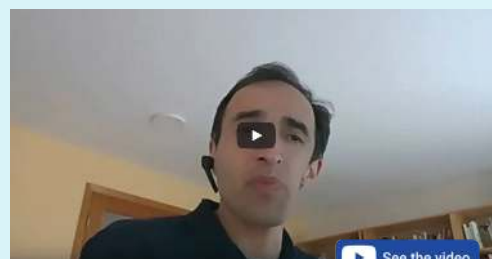
Immunology Deep Dive: Creon Levit

- **Creon Levit**, Planet Labs
- Creon covers the normal functioning of cells, how viruses work, how (mammalian) cells collaborate when infected by viruses, and how this applies to COVID-19, recommending resources for further study, such as *The Machinery of Life* by Goodsell along the way.
- [Presentation](#)



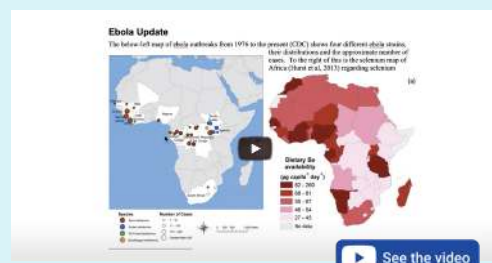
Understanding the Adaptive Immune Response to COVID-19

- **Ravi Pandya**, Microsoft
- Ravi explains the Antigen Map collaboration between Microsoft and Adaptive Biotechnologies aimed at decoding the adaptive immune system, and how they use it to improve our understanding of COVID-19.



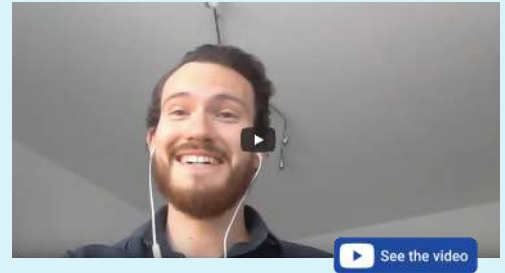
Antiviral Self-Defense: What the CDC is not Telling You

- **Steve Fowkes**, Biochemist, consultant
- Steve explains the biological aspects of host resistance to viruses, its origin in China, and the role of selenium, vitamin D3 and vitamin A in viral disease.



The “Dark Matter of Biology” and its Role in COVID-19

- **Dr. Daniel Bojar**, 2020 Foresight Fellow in Health & Longevity
- Glycans - the sugar chains on other molecules and on our cells - play an outsized role in disease and the current coronavirus pandemic because they are crucial for infection susceptibility, virus cell entry, and vaccine design. Using machine learning, we can develop and apply methods to facilitate the study and utilization of glycans on a systematic level and combat SARS-CoV-2 from a hitherto neglected angle.



See the video

Opportunity: Healthy Long Lives

Enabling a Healthy Long Life

- **Ole Mensching**, Apollo Ventures
- **Aubrey de Grey**, SENS Research Foundation
- **Sonia Arrison**, 100 Plus Capital
- **Reason**, FightAging



See the video

Health Extension Post COVID-19

- **Michael Vassar**, Nanotronics
- **Reason**, Fight Aging
- **Erica Frank**, NextGenU



See the video

COVID-19 painfully crystallizes human health as the foundation of everything we care about. While we need to ramp up defence, it also comes with the wake up call that those in declining health, our elderly, are disproportionately affected. If we want to avoid future pandemics from causing equal or worse havoc, it would be smart to focus our public health efforts on prevention of disease, and in particular on the mechanisms of aging as the root cause for diseases.

A primer on COVID-19 & aging

- **False dichotomy about aging and disease:** There exists a common misconception that the health decline that is so universal, gradual and predictable in terms of when it happens that it feels inevitable (what we call “aging”) is different than the health decline that happens to some people but not to others (what we call “disease”). Thus far our efforts have focused on treating “disease” only. We seem to accept the yearly death toll from influenza, which kills tens of thousands of mostly elderly people, because immunosenescence prevents vaccines from working. Similarly, even though the media is highly publicizing young COVID-19 cases, the vast majority of COVID-19

deaths are [old people exhibiting immunosenescence](#). On a biological level there is often no clear distinction in the decline; the aging process is characterized by the gradual development of a chronic subclinical systemic inflammation (inflamm-aging) in addition to acquired immune system impairment (immune senescence).

- **Immunosenescence, inflammaging & COVID-19:** [FightAging's primer on COVID-19 and aging](#) gives a good introduction into the relationship between COVID-19, immunosenescence and inflammaging, as paraphrased here:
 - **Immunosenescence:** The case fatality rate for COVID-19 grows dramatically with age, with the doubling time approaching that of all-cause human mortality. As we age, health conditions associated with aging, such as heart disease, cancers, and metabolic and autoimmune diseases, combined with treatments for these diseases and with immune senescence, substantially affect responses to vaccines and infectious diseases. The aged immune system functions poorly, and vaccinations for many conditions have low success rates in older people. Thus the vast majority of COVID-19 deaths are old people exhibiting immunosenescence.
 - **Inflammaging:** In addition, men and those with multiple age-related diseases are characterized by increased mortality. In most of these patients, uncontrolled local and systemic hyperinflammation induces severe and often lethal outcomes. At least four well-recognized aging-related characteristics that are strongly expressed in older men go some way towards explaining why these patients account for the vast majority of fatalities: (i) the presence of subclinical systemic inflammation without overt disease, (ii) a blunted acquired immune system and type I interferon response due to the chronic inflammation; (iii) the downregulation of ACE2 (SARS-CoV-2 receptor), which triggers inflammation, particularly in patients with age-related comorbid diseases such as type II diabetes; and (iv) accelerated biological aging, as measured by epigenetic and senescence markers (e.g. telomere shortening) associated to the chronic inflammatory state.

Aging as root of future pandemic response:

With old people generally bearing the brunt of infectious disease as a result of their age, an effective strategy to save lives long-term may target the mechanisms of aging as the cause of immunosenescence and inflammaging. Our efforts to develop vaccines and therapies to stop this and future pandemics are limited by the lack of knowledge of the mechanisms of immunity to protect the elderly and finding those might also unlock new strategies for broader disease prevention and control in older populations. Below are three strategies for increasing progress on aging and COVID-19, including 1) public education, 2) policy advocacy, and 3) specific funding areas.

1. Changing the public dialogue:

- **Biases:** Aging is still a young industry with many previously unfulfilled promises, counterproductive and overoptimistic messaging and many technologies only now coming online. To the extent that we can realize that fighting aging is not only a major altruistic goal but also in our self-interest and in the interest of our families and loved ones, this movement will move quicker and with it the relatively small and urgently needed funding for crucially life-saving research. There are a variety of biases that prevent us from seeing aging as a crucial cause area for benefiting humanity, making public dialogue a valuable goal. For instance, despite progress in biotechnology significantly accelerating, due to status quo bias, we expect

to live in a rather static world, in which cancer research has become a cause you donate to every year without hoping to solve cancer. In some sense, fighting aging is a chicken and egg problem; in light of the false expectation that real progress on aging is nearly impossible, we don't invest in a longer, healthier life because the cost of acknowledging the suffering caused by aging without hope for change is too high. This is exacerbated by the general private and societal aversion around considering one's mortality and future discounting biases which makes anything preventative harder to sell, whether for early onset or late onset conditions.

- **Questioning our default assumptions:** Questions for changing yours and other minds on aging are discussed in [Nintil's Longevity FAQ](#), [Laura Demign's Longevity FAQ](#), [Fight Aging's FAQ](#) or [Longevity Myth-Busting](#), with [The Fable of the Dragon Tyrant](#) providing a good approximation of the urgency around overcoming our cognitive blocks. When discussing COVID-19 with others, you could make people aware of the [ageism inherent in our COVID-19 response](#) and point to specific projects that are working on anti aging, and the need for more funding and better policies to accompany this change, which are discussed below.

2. Directing decision makers attention to prevention and aging:

- **Policy advocacy has big multiplier effects:** Regulators' classification of aging split into a number of diseases that are unrelated is one factor determining the public's opinion, so in addition to changing the public's opinion, directly working on directing the attention of regulators to aging is important. Regulators make the rules of the game, and have big funding mechanisms so even just a small success with convincing decision-makers in the government agencies directly can make a big difference in funding.
- **Early stage funding is relatively inexpensive:** The early high risk high reward work, while being the most difficult to sell is also the least expensive. In theory, for every unsolvable aspect of aging and every type of damage that accumulates there is a suggested path to finding a solution such as [SENS' 7 categories of damages](#) or [Lifespan.io's roadmap](#) that could be funded but some of it is so early stage that it may not immediately be appealing to private investment yet. At the same time, the funding risk is low because the expensive aspects usually occur around stage three trials, at which point the treatments will have been sufficiently derisked that getting larger amounts of funding is more straightforward. Even though the required earlier funding is comparatively low, it is still difficult to convince policy makers to step in.
- **Strategies to engage decision-makers:** Changing this involves pointing to the rapid progress that is occurring in the academic sector and private sector on improving the immune system of the elderly as part of improving the health of the elderly and that this work can be sped up meaningfully with modest allocations of funding to decrease the deaths in the next pandemic. One avenue to do this could be via a prominently endorsed op-ed, for instance on why the public sector needs to spend research money on the immune system, drawing out clear connections, such as summarized on [SENS](#). Prior successful op-ed-initiated efforts to draw inspiration from include the quest for creating a National Institute for Nutrition by using the political motivations inside Congress to entice competition around creating the first bill. Efforts progressed from publishing the first [op-ed in the New York Times](#) in September 2019 to a [National Nutrition Research Roadmap](#) published by the NIH in May 2020 to a recent [white paper on national nutrition](#) published by the American Journal of Clinical Nutrition.

- Engaging with decision makers early:** Our healthcare system is in bad health because we never interact with it unless we need it at which point it is too late for reform. With COVID-19 bringing the system to the forefront of everyone's mind, such as via Forbes articles like [The Greatest Disruptor Of The 21st Century Makes Health Our Most Precious Asset](#) or this recent McKinsey study on [Prioritizing Health](#), reforms may be possible. Currently, the grant system for COVID-19 is emergency-focused, with little attention span for fundamental research. However, at the time when decision makers will focus on prevention and preparedness in the future, competing for their attention is hard. We can expect that future funding will increase for infectious disease research but likely not for the correct underlying causes of diseases. Likewise, we may expect funding to increase for vaccines but not for fighting immunosenescence which prevents vaccines from working in the elderly. Given the complexity of the field and the number of interests at play, we need to start engaging before decision makers start planning for minimizing the human cost of the next pandemic if we want to ensure correct allocation of funding. This spotlight highlights various strategies for onboarding different decision makers into the preventative model with aging at its core.

Aging Policy & Strategy

- **Aubrey de Grey**, SENS Research Foundation
- **Jim O'Neill**, SENS Research Foundation
- **Bernard Siegel**, Regenerative Medicine Foundation



- Realizing alignment:** Focusing on prevention is difficult in the existing institutional system because decision makers that would implement a more preventative system are not beneficiaries of the benefits that accrue to others in the future. However, especially post COVID-19, prevention should be appealing to decision-makers, especially because the growing political movement toward improving the health care system does not work if we don't build aging healthier into the models. The socio economic benefits of preventative health care should appeal to the left and right; it aligns with universal health care goals while reducing lockdown and the enrollment into a broken sick care system. Even those with a vested interest in the current healthcare system should in principle be open to expanding into aging therapies, as many of the preventative treatments are not a one-off therapy but require lifelong therapies, which allows economic models based on prevention.
- Forging new alliances:** Alternative strategies include alliances with patient advocacy groups, and organizations like the [American Association of Retired Persons](#) which are already interested in preventative healthcare and equitable distribution of medicine. Other actors with aligned incentives include insurers. On the one hand, at least private insurers in the US, run into the problem that people can switch insurances annually so they have less incentives for long-term health investment, and insurer's current clients directly benefit from prevention. Yet, it may not matter how long clients live but how long they expect to live healthily, which influences how much and what kind of premium they want to pay. This expectation will change sooner even before the therapies come around so it should motivate the insurers

to change faster. One strategy to communicate the immediacy of the possibility of longer healthier lives would be to increasingly rely on biomarkers of aging, which are already often better predictors than chronological age. Banks are another potential ally because the models of financial advisors are based on a wealth peak at 70 years but as life expectancy is changing, they will need different scenarios. A potential solution to transform health care insurances could be that instead of a one year contract with the client, the insurer could get paid based on a 10 year contract, with a small percentage up front and the rest of the health savings in the future. By making the payer an investor in their client's long-term health, they are incentivized to manage metabolic health, including diet and exercise.

- **Learning from other success stories:** Singapore is issuing opening calls for proposals to address COVID-19 in a radical manner, and a few aging companies such as [Gero](#) have already located in Singapore. What the US aging industry can learn from relative success cases such as Singapore is discussed in this spotlight:

Aging Policy: Lessons from Singapore

- **Brian Kennedy**, National University of Singapore
- **Shazib Pervaiz**, National University of Singapore
- **Swaine Chen**, National University of Singapore
- **Louis Hawthorne**, NaNotics



- Singapore could be a promising funder of aging research, because Singaporeans openly acknowledge their “Silver Tsunami” and have bought into the fact that medicine should not be around sick care. Strategies for advancing aging treatments and fast-tracking them through the regulatory processes have focused on prevention of risk factors for diseases, backed by data, rather than a vocal focus on aging. For instance, by sidestepping whether aging is a disease and focusing on whether a therapeutic can reduce the risk of disease, inflammatory cytokines come into focus, which are not only a driver of inflammaging but also of sepsis, which is a major medical need and contributes to COVID-19 severity. This data-driven strategy for risk-factors of diseases instead of aging may work in a US context as well. In addition, the British NHS and Singapore [are already collaborating](#) and to increase learning from best practices in different institutional contexts, and it may be useful to start a collaborative industry network countries, such as Japan and South Korea who are relatively successful at funding aging-relevant research.

3. Promising funding areas for aging & COVID-19:

- **Onboarding investors into the space:** In a world in which people only believe in what already exists, regulators and public money allocators are difficult to engage in funding fundamental research and investors may be more receptive to longer-term goals. The persistent reluctance of high networth individuals to invest in aging could be partly due to psychological factors, such as a reluctance of getting one's hopes up, but also due to a lack of knowledge that the diseases of old age cannot be divorced from aging. While breaking through to those individuals is hard because of their limited bandwidth in the face of other areas, efforts like

Foresight's [Longevity Investment Salons](#) are building community around investors in the aging field and the next focus area in this report will discuss a few unique approaches to onboarding new investors into general long-termist projects.

- A bundle of suggestions for aging & COVID-19:** An overview of promising companies in the aging field can be found on [Agingbiotech.info](#). Here are a few specific aging-related suggestions that bubbled up as low-hanging fruits to take on: Increasing funding in companies focused on understanding the immune system is an obvious area but in addition we must spurn research for rejuvenating other parts of the body that contribute to a functioning immune system. Rather than treating vaccines as the only type of preventative medicine that has a special category and approval, some research is done on [inflammation suppression](#) and we should continue exploring the use of symptomatic treatments, anti-inflammatories and anti blood sugar medicines as a preventative. Accelerating current research on [thymic rejuvenation](#) by enabling upcoming studies by [Intervene Immune](#) is especially promising in the current crisis for [Reversing Immunosenescence for Prevention of COVID-19](#). Other interesting work to reactivate includes [DRACO](#), a group of experimental antiviral drugs with reported [broad-spectrum efficacy against many infectious viruses](#), which was halted in 2015 due to lack of funding. Other notable developments involve SENS Research Foundation launching efforts into researching the [rejuvenation of NK cells](#) and Apollo Ventures increased its [focus on Autophagy](#) in response to COVID-19. Two particularly promising research funding areas, regarding the genomic cause of disease, and regarding the relationship between glycans and aging are outlined in the spotlights below:

Reverse-Engineering the Genomic Cause of Disease

- Cosmo Mielke**, 2018 Foresight Fellow in Longevity
- Cosmo makes the case that not only can we associate economically mitigate the damage of future pandemics by addressing the root causes of aging but also by addressing the viruses themselves, we may potentially be able to better address aging, leading to a virtuous cycle.



Glycans, Aging & COVID-19

- Daniel Bojar**, 2020 Foresight Fellow in Health & Longevity
- Professor Gordan Lauc**, GlycanAge
- Daniel Bojar discusses the role of glycans in aging and COVID-19 with Gordan Lauc, whose extensive research on glycans resulted in technology that is the basis of the GlycanAge test of biological age. Current studies by Lauc screen 30,000 people a year from different cohorts, including COVID-19, to see if there is a COVID-19 predictive biomarker in glycans, with a hypothesis that inter-individual differences in glycosylation are an important factor for COVID-19 severity. If it turns out that glycan age potentially predicts COVID-19 morbidity and mortality, and lifestyle and diet predicts glycan age, this could be a "smoking gun" for linking COVID-19 co-morbidities with lifestyle, potentially with a low carbohydrate



diet being one factor to help decreasing the risk for COVID-19 severity. GlycanAge could be of interest to governments because if we had a biomarker to select those at high risk from those who are not at risk we could more effectively isolate. The main problem for glycans is that they are a dark matter to most physicians and that there are still too few labs in this area with the capacity of taking large sample sizes, leaving a great glycobiology part of COVID-19 largely ignored. Recently, Lauc published [Effects of Environmental Factors on COVID-19 Severity and Morality](#), suggesting reasons for why mortality in Florida (and most of the northern hemisphere at the moment) is quite low, and that too much air-conditioning may also be detrimental if relative indoor humidity is decreased below some 40%.

- Metformin and other FDA-attractive proposals:** One relatively recent breakthrough for aging was the [FDA's approval of Metformin trials in 2015](#). There have not been any trials yet, because Metformin is a generic drug so there is little incentive for trials so one low-hanging fruit may be to invest into starting Metformin trials. The FDA approval of the Metformin study is also important because of the definition of aging that was approved, which allows other options to be tested on the definition. A few potentially promising candidates for this in the future include epigenetic programming and mitochondrial repair but they are still early stage compared to areas like senolytics. Senolytic drugs could be investigated as potentially promising candidates to be fast-tracked as COVID-19 treatment now, which are already generating a nascent industry with venture backing and connection to aging. One hypothesis investigated in [this deepdive spotlight](#) with Matthew Scholz from Oisin Biotechnologies is that lower inflammaging could decrease the probability of a cytokine storm, and the comorbidities raising risk may be doing so because they raise chronic inflammation.
- Funding citizen-science and health commons:** While accelerating drug approval through the FDA are important short-term wins, [Adrian Gropper](#) explains that *"in the case of medical research and health records, we need reform that strips control away from hospital chains and corporations. As long as hospital chains and corporations control health records, these entities may put up barriers to hide unethical behavior or injustice. The introduction of local community organizations as trusted intermediaries can improve participation, promote trust, and reduce the privacy impact of health and social surveillance."* Centralized organizations could in some cases be side-stepped by citizen science, using health commons which allow users to collect and share their daily experiences on different medicines. A health commons would allow individuals who pool their health data to share in the downstream value that data with the goal to end the problem of the 'tragedy of idle data'. As explained in this spotlight below, there are existing prototypes of health common-like architectures on different levels, from society-wide concepts, such as the NIH's [All of Us](#), smaller structures, such as [OpenCures](#), or non-profit like structures, and volunteer-efforts such as [Infinome](#).

Health Commons

- **Hong Jiang**, ElonLife
- **Kevin Perrott**, OpenCures
- **Brian Delaney**, Age Reversal Network
- **Keith Comito**, Lifespan.io
- **Steve Fowkes**, consultant
- In theory, given how many people are currently experimenting with different diets, supplements, tests, and health tracking regimes, and studies, it could be valuable to set one up for citizens. Yet, there are main obstacles with commons because they encounter major issues around privacy and data analysis of variations on protocols of different volunteers. Those could potentially be solved via cryptography innovations such as secure multiparty computation, and self-sovereign identity, which allow somewhat-anonymized statistical aggregates while protecting the data of individuals, as described in this [deepdive spotlight](#) and as we will see in the cryptography section in this report.



Conclusion

Rather than focusing on therapeutics only, we need to ensure that people are safe to interact with each other long-term in an environment where the virus is prevalent. Aging research is a promising avenue to reduce the severity of future pandemics long-term. Changing paradigms takes time as seen in the case of germ theory; it took time to convince people that things like germs exist and aging is similar in that we do not see it happening in a visibly distinctive way. If we are successful at informing the public, engaging decision-makers early, and spurring investment into effective areas, COVID-19 could allow for our collective health problems to become a uniting factor around addressing age-related diseases early.



Investment & Philanthropy

Effective Funding

- **Jaan Tallinn**, Future of Life Institute
- **Kevin Duyhang Dong**, Apollo Ventures
- **Andrew Serazin**, Templeton World Charity Foundation
- **Christine Peterson**, Foresight Institute



Challenge: Funding Effective COVID-19 Responses

In addition to public funding and policy, private investment and philanthropy is an integral part of funding the high-impact science that benefits human lives, as well as funding the exploration of potential risks that go hand in hand with scientific progress. Currently, there is a large liberation of capital in response to risks, for instance the [\\$8 billion EU pledging conference for ACT](#), covering drugs, diagnostics, and vaccines. A few promising examples of immediate COVID-19 responses are highlighted in the spotlight below:

Rapid Production of Human Antibodies Using an Externalized Human Immune System

- **Melanie Matheu**, Prellis Biologics
- Melanie explains how the body makes good antibodies, and how we can hack what we know about the human immune system to protect ourselves from pathogens.



Synthetic Coronavirus Vaccines and Peptide Therapeutics

- **Andre Watson**, Ligandal
- Andre explains Ligandal's approach to making peptide drugs that act as vaccines and can inhibit viral entry if administered post-infection. Ligandal is a nanomedicine company with the first commercial approach for coupling gene editing tools such as CRISPR, as well as RNA and DNA, to cell-specific targeting molecules (ligands).



Pan-Corona Vaccine and Therapeutics using Breakthrough Genetic Medicine

- **Dr. John Lewis**, Aegis Biodefence
- For COVID-19, Aegis has screened dozens of DNA vaccine candidates and are targeting the start of Phase I human clinical trials mid 2020, on track to make a vaccine commercially available within one year. The genetic medicine platform Fusogenix is a gene delivery platform that allows the rapid prototyping of nucleic-acid-based therapies, moving them quickly into clinical development.



Opportunity: Increasing Long-term Funding

In addition to increasing the need for funding in a variety of immediately relevant areas, the current crisis may also provide an *opportunity* to secure more funding for key areas of beneficial long-term futures. At the very least, it provides mainstream investment and philanthropy with a strong case of the importance of long-term resilience and scientific progress:

- **Difficulty of convincing HNWI's:** The relatively low success of convincing high net worth individuals to invest in more unconventional causes like aging or Existential Risk prevention suggests that it could usually be easier to spend one's time *making* the amount of dollars than spending the same amount of time *raising* it from them. Reasons for this difficulty include the branding of ideas and difficulties to signal effectively through the noise given limited time and attention of many high net worth individuals.
- **New funding narratives:** However, COVID-19 may provide a unique moment to change the thinking of traditional funding sources as it shines a spotlight onto the importance of long-termism that provides a clear narrative. For instance, COVID-19 can be seen as a "Minimum Viable Catastrophe" that gives us a lived experience of what a species-wide problem is. It provides a good example to point at when speaking to the importance of resilience and that being dismissive about tail risks in our funding approaches is myopic. In addition, COVID-19 could be classified as "Sputnik Moment" because it is a good indicator for us to realize how far behind we are in scientific and technological capacities in any area from vaccines to virtual experiences compared to where we want to be.
- **Urgency and short time horizon:** There is a common classification of investment opportunities into hard to sell vitamins and easy to sell painkillers. Investment into long-term problems are akin to vitamins; while there is potentially a quick spike in philanthropy after COVID-19 when crucial

actors are eager to signal preparedness it is unclear if this spike is sustainable. Thus, it is crucial to leverage this short window of opportunity to convince those with an open ear and ability to fund the unusually strong case for investing in long-term resilience and scientific progress.

A very short primer on funding

- **Selecting the appropriate funding type:** For applying capital in positive ways in the pandemic, seek out the sectors that may benefit from the crisis and could be guided in positive ways or support those that may be hit extra hard with philanthropic money. Decisions during crisis aftermaths will be critical and a long time in the making but paying close attention to the sectors that will be crucial can be done now. There are obvious differences between philanthropy and investing as funding mechanisms and picking one over the other depends on the type of cause but also on personal goals. For instance, investment gets feedback, allowing correction of policies more than philanthropy but investing is more constrained. The metrics to maximize via one's investment are often set, and VC's raise money from other clients which constrains decisions further. On the flipside, apart from ROI, investing grants access to founders and staff of crucial companies, which comes with the opportunity of convincing them of the importance of a beneficial long-term future for life.
- **Allocation as bottleneck:** In addition to securing funding, the allocation process is a major bottleneck. For instance, much of the \$ 1.2 trillion raised by the Gates-initiated Giving Pledge for ultra wealthy individuals is not allocated to charitable projects yet because of the gap between funding intention and finding fundable projects. Funding high impact projects requires some level of expertise and contrarian thinking and is hard to get right. In addition to improving immediate decision-making, allocation can be benefitted by setting up a comprehensive long-term strategy for processing projects. To address both briefly, below are 1) crude heuristics that successful funders have used for selecting their projects, and 2) experiments with entirely new funding styles.

1. Heuristics for individuals for selecting high-impact projects

- **Criteria for evaluating projects:** Look for sound arguments, and highly differentiated projects, combined with a clear competitive advantage over other alternatives. Search for high-payoff early-stage ideas or help people who are good at this, even if they are unconventional from a normal funding perspective. This requires situating yourself in the [correct contrarian cluster](#), *"the place where the borders of knowledge are currently expanding - not just that, but merely the sections on the border where battles are taking place"*. For instance, as will be discussed later in this report, the crisis revealed the need for creating the capacity to ramp up fast manufacturing of vaccines and therapeutics. In addition to ramping up immediate production by incentivizing the building of manufacturing capacity, one ambitious long-term strategy is speeding up nanotechnology research. Advanced nanotechnology could not only produce [superior medical interventions](#) but would allow us to improve our response time to a variety of future risks by allowing on-demand production via atomically precise manufacturing. To see what is already possible in this field, see the summary of Foresight's 2019 technical competition on [Molecular Precision for Materials Science](#).
- **Multiplying factors:** Address problems at their root, for instance as discussed earlier in this report, the pandemic highlights the need to make aging and rejuvenation therapies key targets of a preventative response. A disproportionate amount of senior

citizens get affected by COVID-19 and vaccines rely on the immune system for efficacy, which is declining in older patients. Rather than the current whack a mole approach for treating disease, we can treat aging as a risk factor for developing neurodegenerative disease, cancer, and autoimmune disorder.

2. Experimenting with new architectures for selecting high-impact projects

- **Larger long-term funding of young talent:** Increasing the funding for young scientific talent is especially important as current visa restrictions and hiring freezes across the US and other countries are leaving brilliant scientists that could aid COVID-19 efforts without employment. A majority of scientific research funding comes from governmental sources and requires excessive grant proposal writing. Most proposals don't get funding, and the ones that do, get funded in small amounts, requiring continuous reapplication to small funding pools. Ideally, the grant-writing process should be made more flexible, allow for larger funding awards, longer-term awards, and a broader scope of cross-disciplinary projects. In addition, we should increase the focus on early career funding awards because senior experts have big investments in their paradigms, suggesting that they may find them harder to change. Those funding changes could be done via funding public policy advocacy for systemic change, or by funding young promising talent directly with larger long-term grants.
- **Diversified portfolio approach to philanthropy:** To hedge one's bets for high-risk high-reward funding, an alternative strategy could be to give small amounts to multiple projects or organizations to see if they persist and then gradually increase one's bets, similar to an investment portfolio. To evaluate the projects, one could explore a funding architecture in which qualified evaluators rather than funders evaluate funding proposals, and funders evaluate the evaluators based on their proposal evaluations, creating a track record of good evaluators over time.
- **Prizes:** The general appeal of prizes as a motivator for spurring progress is that they allow agnosticism to the type of solution as long as it fulfills criteria. Individuals or small organizations can have a big impact via prizes, such as Foresight's [Feynman Prize](#), which awards highly ambitious work in nanotechnology, or the [Incentive Prize on Incentives](#), which addresses the structural problems and institutional inertia leading to the poor response to COVID-19 that can be traced back to misaligned incentives. Prior example efforts for health include the [Longevity Prize](#) whose methodology got transferred to the National Academy of Medicine's [Healthy Longevity Global Competition](#).

Conclusion

The points above are merely first suggestions for improving high-impact funding post COVID-19, and there are many resources to learn from experienced funders in specific fields, such as this Foresight intro to [funding AI and AI safety](#) with Luke Nosek of Gigafund or [AI Coordination: What Projects and Capacity are Missing?](#) with Jaan Tallinn from Skype or more general frameworks for thinking about high-risk high-reward projects discussed in [Evaluating Hard-to-Measure Projects](#). There is a short time horizon in which the spotlight on science and technology and the importance of resilience could be leveraged to onboard more traditional funders into funding projects aimed at beneficial long-term futures.



Default Institutions

A High-Impact Scientific Ecosystem

- **Robin Hanson**, George Mason University
- **Jim O'Neill**, SENS Research Foundation
- **John Lewis**, Aegis Biodefence
- **Melanie Matheu**, Prellis Biologics



Challenge: Freeing Up Capacity

The early days of the COVID-19 crisis in the US revealed a surprising lack of institutional capacity to provide much-needed minimal emergency response, for instance regarding testing, masks and respirators:

- **Testing:** In January, as signs for a pandemic increased, while some European countries already offered testing to those who may be infected, the FDA created a de facto monopoly on testing and gave it to the CDC which failed at a smooth implementation. Meanwhile, labs had the ability to sequence the virus and provide tests but this was made effectively impossible by the government, costing the US months in response.
- **Masks:** The emergency reserve of masks from the strategic national stockpile that the CDC keeps at an undisclosed location were understocked, while implemented price gouging laws prevented the market from working to supply PPE, and the Surgeon General and the CDC spread misinformation about the inefficiencies of masks.
- **Respirators:** The FDA slowed the approval of supplies that were intended for other purposes but

were effective to fight COVID-19, such as respirators that were intended for use in the workplace under dust but had the same life-saving specs as hospital-use intended respirators.

Opportunities: From Immediate Fixes to Building Better Alternatives

How can the holes in our systems that became apparent during COVID-19 become openings to produce systemic change? While COVID-19 highlights the need to reform a variety of governmental institutions, the current loosening of red tape around COVID-19 interventions could also provide an *opportunity* for long-term changes that refocus and reconfigure our institutions. Opportunities range from 1) immediate reform toward better institutions, to 2) a comprehensive analysis of constraints and opportunities and 3) parallel exploration of better alternatives:

1. Immediate opportunities for reform

- **Multiplying one's potential impact:** Currently most policy is COVID-19 related but the next stage involves investigation of failure and reassembling the pieces. Regardless of the specific policy area one is interested in, this will be the time of major impact because COVID-19 affects all areas, from medicine to employment policy and welfare policy. While the top decision makers may be hard to access, civil servants are in need of help in coming up with proposals fast so for those seeking to shape policy, now is the time to reach out to those working for the top decision makers in the areas of interest and offer one's service. Below are a few specific areas that are opening up for change in the FDA, NIH, DARPA, HHS, and BARDA:

FDA: Accelerating approval of life-saving treatments:

- **FDA timelines are incompatible with scientific progress:** The main problem with the FDA is that it takes a "guilty until proven innocent approach" to science: Companies developing vaccines against COVID-19 that run on high speed and are able to test up to thirty vaccine candidates within a month encounter in the FDA an institution where a quick approval time for vaccine is around twelve years.
- **Toward adaptive FDA processes:** Fast approval processes could be a double-edged sword of safety and speed, for instance the relaxation of FDA test kits guidance led to poor test kits with false positives flooding the market. Nevertheless, the FDA could establish a more adaptive response and iterative processes in the clinical phase. For instance, it is already possible to sequence the immune profile of a patient and check which aspects of the vaccine have a negative or positive effect on the response before challenging them with the disease. Using this logic, we could introduce phase 2 trials efficacy elements into the safety of phase 1. Science progresses faster than trials which require several years so we need to adapt trials to the scientific changes. Proposals on the more radical end involve that the FDA focuses only on safety, allowing companies to make drugs available after phase 1 to reduce cost and speed that it takes to get the drugs to market.
- **Signs of change:** The FDA is more open to experimentation now with recent positive developments including Scott Gottlieb's reforms, which cut the time to get approval to use convalescent serum in COVID-19 patients to a few hours. In other cases, the

FDA was already able to take emerging data into account and adapt their response, for instance whether or not vaccines should have a neutralizing antibody response given that theoretically, a vaccine could create a counter productive antibody-dependent enhancement response. Expanding on those innovative openings requires public accountability and perseverance to avoid that progress reverses post crisis.

- **Human Challenge Trials:** A recent proposal that could lead to more comprehensive long-term term reform suggests that the FDA approves and accelerates [Human Challenge Trials](#). Two earlier versions of similar proposals to accelerate immunization to COVID-19 via voluntary low-risk exposure to COVID-19 are highlighted in our spotlights below:

Considering Deliberate Exposure

- **Robin Hanson**, George Mason University
- From his article on [Variolation](#): “Just as replacing accidental smallpox infections with deliberate low dose infections cut smallpox deaths by a factor of 10 to 30, a factor of 3-30 is plausible for Covid19 death rate cuts due to replacing accidental Covid19 infections with deliberate small dose infections. Observed mortality differences due to natural dose variations give only a lower bound on what is feasible via controlled doses. Of course we can't be sure until we get more direct evidence. But systematic variolation experiments involving at most a few thousand volunteers seem sufficient to get evidence not only on death rates, but also to verify immunity and to learn ideal infection doses, delivery methods, entry points, and strains, and also the value of complementary drugs to slow viral replication”.



SANE: The Search for an Attenuated Natural [strain] by Epidemiology

- **Daniel Tillett**, Nucleics
- Daniel explains a proposal for immunization suggested in this [article](#): “More than 50% of the people infected with SARS-CoV-2 are asymptomatic or have only a mild case and we can identify the geographical origin of the virus strains by the genetic differences between the different strains. Researchers in China have identified a mutant strain of SARS-CoV-2 which appears to be less pathogenic than most strains infecting people. This suggests a simple and testable hypothesis – there are natural strains of SARS-CoV-2 in the world that have mutated to be non-pathogenic, but which are still infective and will provide immunity to the more pathogenic strains. If we can find one of these non-pathogenic viral strains out in the wild we could give it to everyone because the non-pathogenic strain could act much like the live attenuated polio vaccine.”



NIH: Decrease siloing to improve novel and cross-collaborative funding:

- **Incrementalism and siloing:** The private sector, both for-profit and nonprofit, could in principle provide effective research while governments could in principle step up in their role as funders of science. However, in practice, grants often reward incremental research and minor improvements. It is hard to get funding for novel projects that advance science beyond the standard agency descriptions, or for projects that are collaborative across disciplines, for instance requiring collaborations between cell biologists and optical engineers.
- **NIH:** In particular, the National Institutes of Health are siloed into twenty five different institutes, which are competing on budgets and have their own separate cultures, treating every disease as a special area, which is neither how the body works nor how research works. For instance, the National Institute of Drug Abuse and National Institute of Alcohol Abuse are both studying science of addiction but in separate institutes.
- **NIA:** A relevant example in the case of COVID-19 is aging. The hyper specialized separation of science is the opposite of how we ought to research chronic disease and the diseases of aging which is that aging is the accumulation of damage and its pathologies are the diseases of aging. Even the National Institute of Aging, whose name suggests a holistic view, has hyper specialized budgets and approaches. For instance, it studies Alzheimer's and Parkinson's, which are both consequences of aging involving dementia as separate issues even though they should be significantly studied together, and specifically studied much more upstream.
- **Toward transcending agency silos:** Because the government largely copies innovative research from prestigious academic institutions, the siloing of government funding may partly be modeled on the existing siloing in academia. Currently, one strategy for producing innovative science is to find a prestigious institution that puts their reputation on the line so that the government can back it, deferring to the reputation of that institution. Ideally, we could move toward restructuring major funding sources and given the connection between aging and COVID-19, it could be a uniquely promising time to restructure the NIA.

DARPA: Signal-boosting promising proposals:

- DARPA already develops useful programs for rapid response or countermeasures to biohazards that could be applied in pandemics. For instance, it backed companies building rapidly prototypable medicines that are built on a platform technology whose safety is largely proven, so the only variable to explore is prototyping the customization for the patient, enabling vaccine production at scale. Nevertheless, sometimes smaller companies, even with validated results, still have problems getting through the noise when interacting with DARPA so finding avenues to signal-boost good projects would be valuable.

HHS: Accelerating our ability to help

- **Continuing positive change in the HHS:** Laudably, the HHS waived HIPAA privacy requirements in telehealth, allowing doctors to talk to a patient's computer that does not have the special HIPAA compliant software. Other crucial improvements include the relaxation of medical practice laws, so that doctors licensed in one state can travel into another to help. This was already an issue with Hurricane Katrina when doctors in Houston could not drive to New Orleans to help. Similarly encouraging developments

can be seen in San Francisco, where the mayor reduced the hiring time for nurses from months to weeks. The relatively fast action on the side of the HHS suggests them as potential actors to empower for future emergencies.

BARDA: Restructuring the federal environment toward a risk-based funding approach

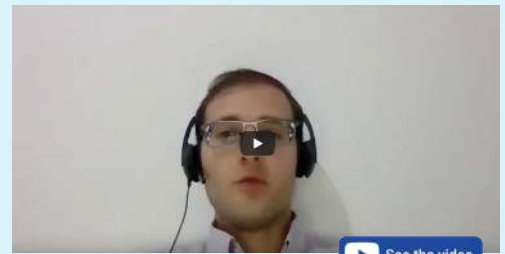
- To deal with risks comprehensively we could take a risk-based approach to all government spending and regulation, and based on that determine what percentage of our defense budget should be bio defense. One specific proposal is increasing the funding for BARDA, the Biodefense Advance Research and Development Authority, which is an agency inside of ASPR, the Preparedness and Response Division of the HHS. It invests in development of vaccines and other countermeasures for pandemics and bioterrorism and has a relatively small normal annual budget of \$500 million per year that could easily be increased.

Government stimulus: Leveraging economies of scale

- **Minimizing the costs of the economic downturn:** While in a crisis, we may be more willing to give control to the government for military, police, law and other areas, this does not mean the government has the freedom to innovate because dispersive opinions and alternatives often tend to be shut out. However, one area that the government could focus on is minimizing the long-term cost of lost innovation and employment: The learning process of how far to stay socially distanced, distance learning, the restructuring of restaurants and offices, the destruction of employment that has the potential to trigger a great depression are all costly for our long-term potential. The work put into adapting to pandemic distracts from other grand visions about how to make society better. If and when things normalize we will have been distracted and delayed in many areas that we care about and need to make progress in.
- **Economies of scale for vaccines and supply chains:** Governments are good at economies of scale for products with little variety or need for flexible adaptation that apply to everyone in a similar fashion, such electricity or water sewers. One area in which government scalability could be desirable is supporting the cohesive scale-up of vaccines. If a vaccine is developed, the next issue becomes scaling it to a comprehensive reach. Vaccine wars about contracts for new vaccines confuse and delay life-saving vaccines, facilities need to be ramped up for producing at scale and even if and when we have them distribution will become a problem: Most vaccine candidates come from small academic labs like Oxford or biotech startups like Moderna which cannot scale up manufacturing fast enough and while in the US a considerable part of the population is uninterested in being vaccinated, in the developing world distribution of vaccines is particularly hard. We need to ramp up global distribution and we need to ensure that manufacturing facilities capabilities are able to scale up without abandoning their current pipelines of drugs which would lead to shortages of other drugs. There are a variety of vaccine production proposals, including [Alex Tabarrok's](#) proposed solution for guaranteeing funding for vaccine production, or a similar proposal to scale up vaccine production highlighted in our spotlight:

A Proposal to Accelerate Vaccine Production Now

- **David Manheim**, University of Haifa Health and Risk Communication Research Center
- In the next 6 months we will need to start producing massive quantities of a vaccine. We don't have enough vaccine production facilities to quickly produce the billions of doses we are likely to need globally, at least without stopping production of many many other types of needed vaccines. But vaccine production facilities are very expensive, in the range of a half billion dollars, and companies are not rushing to build them, and governments are notoriously bad at picking winners in the economy, and slow. This proposal is for the government to buy put-options for any vaccine production facilities that are started now, with a bonus for early delivery. With such an option, a company with the resources to build such a facility can do so with little or no risk - and by the time the facilities are needed, they will be well on their way.



2. Analyzing the constraints and opportunities for change

The potential for institutional innovation discussed above raises the question of how likely it is that we can spark change in our institutions post pandemic. This may partly depend on their public visibility, for instance trying to reverse promising changes in telehealth via the HHS would be visible to the public while more obscure things may receive less attention. It is vital that we as members of the public ensure those issues receive visibility to demand change and demand it with perseverance. COVID-19 surfaces some strengths and weaknesses of our current political system, from its ability to provide basic infrastructure, to the governance of crucial technologies, to the public's trust in institutions, and more. In addition to immediate fixes, long-term we need to seek an understanding of the constraints and opportunities that inform the possibilities around systemic reform, as highlighted in the spotlights below:

How Bureaucracies Respond to Crisis

- **Samo Burja**, Bismarck Analysis, Foresight Senior Fellow
- Many of the world's largest and most influential organizations face challenges in responding to the ongoing pandemic. How do bureaucracies respond to crisis? History has many examples that can help inform our predictions of what will and won't change when the dust settles.



Which Societies Produce Breakthrough Technology?

- **Ben Landau-Taylor**, Bismarck Analysis
- A small number of societies have produced almost all of the breakthrough technologies in human history. Social conditions that allow rapid innovation in technology and industry are rare and fragile. What are these conditions? How do they translate into technological progress?



3. Exploring better long-term models

In addition to leveraging immediate opportunities for reform, and a more comprehensive analysis of our institutions, there is an opportunity to apply the lessons learned to create improved prototypes for better systems. When institutions are outmoded, corrupted, or failing, the result is untold human suffering. Workers are trapped in low wage jobs and dangerous working environments, children don't get educated, adults can't get quality healthcare, and people can't start businesses to support their families. Experimenting with new ideas in societies that are already in existence poses many problems: there is historical momentum which makes change difficult, established interests risk being upset, and if the experiment fails it may harm people. The spotlights below suggest how the COVID-19 lessons learned could be applied for creating alternative models for governance in the form of charter cities.

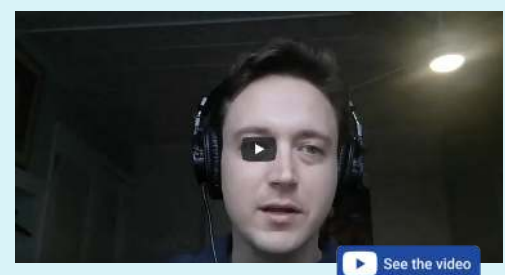
Pronomos: Better Cities, Better Laws

- **Patri Friedman**, Pronomos Capital
- This salon gives an introduction to Charter Cities and why they could be a solution to addressing future pandemics. Pronomos Capital is helping innovators create new cities to experiment with new technological and legal paradigms.



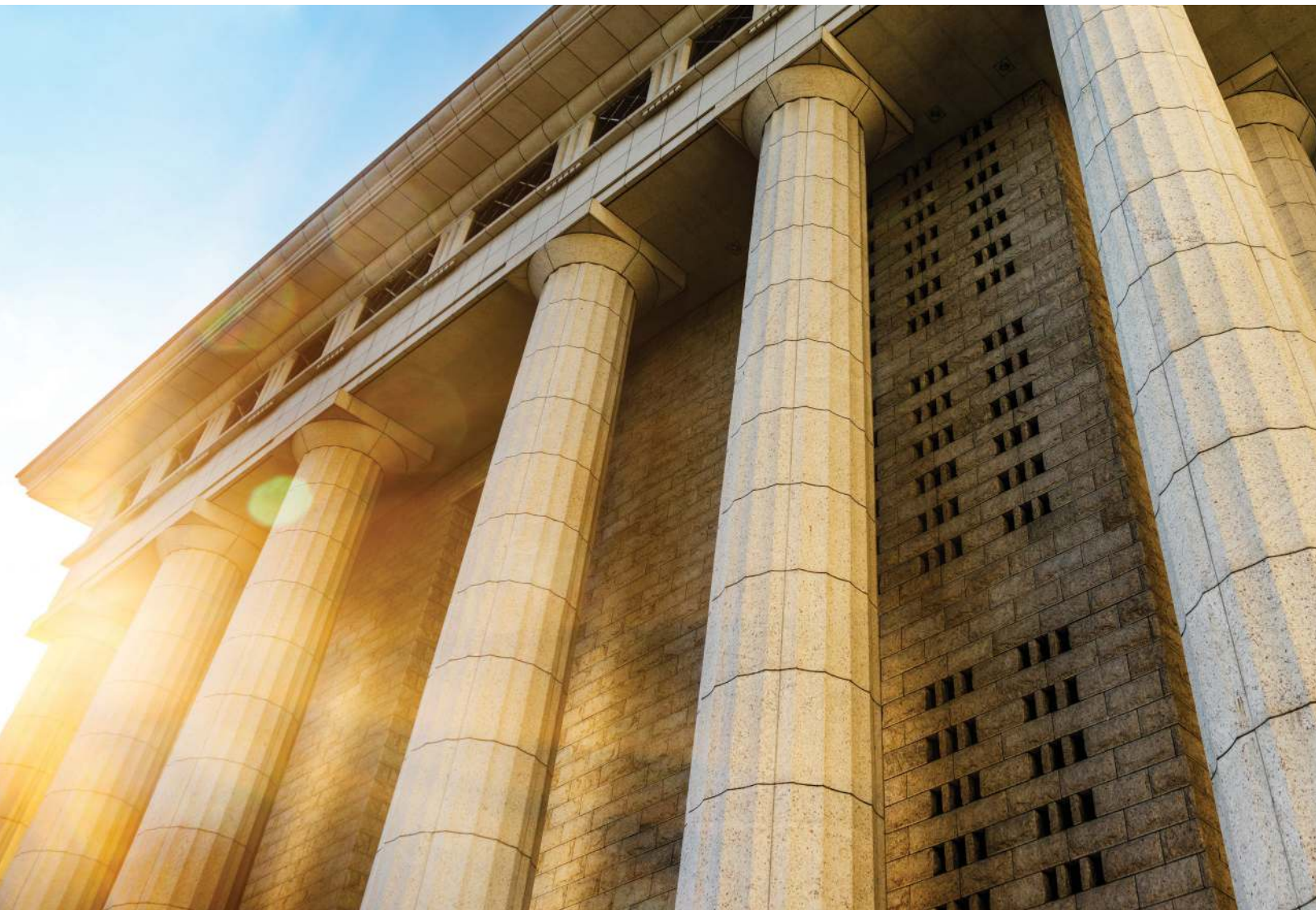
Charter Cities: The Future of Governance for the Cities of Tomorrow

- **Dr. Mark Lutter**, Charter Cities Institute
- The Charter Cities Institute is working with several new city developments, helping them to improve their governance structures. In February the Charter Cities Institute signed a memorandum of understanding with the Zambia Development Agency to develop the framework for charter cities, helped draft the regulations for Enyimba Economic City, and is developing a Model Charter, Model Legislation, and a Governance Handbook.



Conclusion

In spite of the lack of institutional capacities that were revealed during the crisis, there are a few opportunities to create a sound political economy post COVID-19 by focusing on immediate levers for reform, and parallel experimentation with better governance models to inform the process long-term. In the very long-run, we need alternative sense-making and choice-making systems which is a multigenerational process. For promising examples, see this report's section on governance architectures, and coordination technologies.



Governance Architectures

Challenge: Avoiding the Traps of Default Governance

- **COVID-19 as trigger for exacerbating Human Rights problems:** There are over 70 million new urban residents annually, concentrated in Africa and Asia. While historically urbanization has led to an increase in productivity and standard of living, this relationship is breaking down in some countries, meaning tens of millions of new urban residents without the opportunities to improve their lives. In addition, the common conception that as countries get richer they get more democratic because citizens demand rights has proven a myth with increased technological capacities for establishing a surveillance state. More than four billion people in more than 90 countries, making up more than half of the world's population, live under a government that does not permit free assembly, free speech, free and fair elections, no independent judiciary, or other essential rights. This is not just a problem for Cameroon, Vietnam, Russia or Saudi Arabia. COVID-19 response measures risk giving states the leeway for sliding into problems, for instance Hungary has already used COVID as an opportunity to rule by decree, which is one common dictionary definition of a dictatorship. While the perceived threat of surveillance and authoritarianism used to be distant, either in the future, or for distant countries, many Western citizens now come in contact with heuristics such as “when data is gathered, sooner or later, it will be abused to control people” as surveillance issues arrive at their doorsteps.
- **Learning complex lessons from unusual cases:** We need to differentiate and support the narrative that our choice is not only between the populism of the left and the right, but that there are workable models to address our problems. For instance, as described in [How Civil Technology Can Help Stop a Pandemic](#), the Taiwanese government had an enormous success story for confronting COVID-19 far beyond the Chinese government, by relying on on the ground community participation and an extremely rapid scale-up via digital participatory democracy decision-making tools. Hong Kong had a people-driven decentralized response, with most citizens prepared since SARS, resulting in more than 90% of Hong Kongers wearing masks in public and most of them

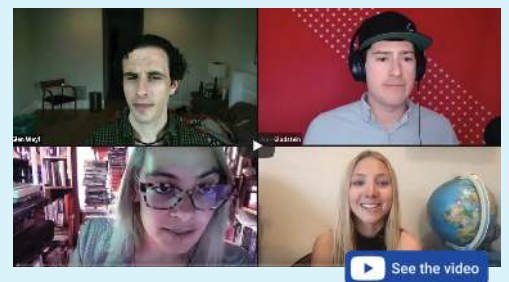
social distancing in February. A small number of East Asian and Australasian liberal democracies were able to have close trust and collaboration with their citizens, which failed in most of the Western European democracies. It spectacularly failed in the United States, which gets the worst of both; most lives lost, and continuous economic opening and closing flops running up to a possibly daunting economic depression.

- **Institutional theatre:** COVID-19 was one of many possible economic tipping points; the percentage of global GDP that went to debt servicing was already high before the crisis led to a drop in GDP and a rise in debt. Market volatility increases predatory behavior, for instance by incentivizing those with intel to short stocks rather than to use early information to save lives. Now, as major bailout sums are being dispersed and competed for, the public needs to hold their governments accountable for distributing it in their interest. For instance, while IMF and ECB previously committed bailouts to the conditionality of a shift to decarbonization, many of the recent bailouts may in practice be directed to aviation and other carbon sectors as in the case of Costa Rica. Many of our systems have degenerated from their original purpose into theatres of education, health care, or democracy over time via rent-seeking and predation. The reason why better information is not coupled to better actuators is that decision makers are not beneficiaries, which requires changes in information and decision architectures in addition to building the better tools.
- **Rising populism and lack of trust:** A common thread across all struggling countries is the relative inexperience with the threat compared to Asian neighbours, for instance South Korea, Taiwan, Hong Kong, Japan, all had experience with viral outbreaks before. In addition, rather than one individual faulty element, such as ignoring the experts or following a populist leader, it is the spread of irresponsible populist polarization that leads to systemic failure. Particularly disastrous were the lack of trust between technocrats and policy makers, the lack of integration of different forms of expertise, and the failure to communicate effectively. This suggests that methods for addressing the lack of trust amongst the public, amongst decision makers and between the public and decision makers is vital. More recently, police violence and movements like Black Lives Matter viscerally demonstrate the precarious lack of trust in the US existing social fabric. To investigate the general violation of public trust that was inherent in the failure of the system, a global COVID-19 reconciliation commission could be established, providing amnesty to those who failed in their positions if they step back and advise a new group of leaders.

Opportunity: Decentralized Communities as Preferred Point for Coordination

Strengthened Communities

- **Glen Weyl**, RadicalXChange
- **Alex Gladstein**, Human Rights Foundation
- **Zarinah Agnew**, Embassy Network



Many of the challenges arising for our current decision-making architectures, such as human rights issues, unresponsive policies, and eroding trust are less likely to become issues on smaller scales, suggesting decentralized communities as desirable coordination points. Apart from encountering less systemic problems, they proved to be agile actors in this crisis. For instance, many cities had a big grassroots push to prevent people from going outside and when the government finally got interested it was a welcome acknowledgement of what many communities were already practicing. To allow resilient communities to emerge as preferred points for coordination beyond this crisis, we now have an opportunity to 1) analyze the strengths of decentralized systems, 2) improve how they make decisions, 3) provide them with increased autonomy.

1. **Analyzing the spectrum of centralized vs. decentralized systems:** Learning from the genealogy and dynamics of different systems can provide useful frameworks for thinking about alternatives to the current dominant governance paradigms. For instance, one could study human coordination around communicating in natural language as a system on the radical end of the decentralization spectrum, followed by markets all the way to the centralized decision systems we have as default. A more thorough analysis of the failure modes of top-down systems and decentralized alternatives is highlighted in this spotlight:

Voluntary Cooperation vs. Top-down Control to Manage Crises

- **Mark S. Miller**, Agoric
- **Christine Peterson**, Foresight Institute
- **Allison Duettmann**, Foresight Institute
- In times when the world proves vulnerable, top-down solutions are tempting but they suffer categorical problems such as that they limit the intelligence that can be applied to a problem, create single points of failure, and create the risk of internal and external abuse. Instead, we can seek decentralized solutions that rely on voluntary cooperation to defend against threats from bio, nano and cyber risks, and tools from cryptocommerce to democratize cooperation.



2. **Improving flexible decision-making:** In contrast to our dominant systems which are not very flexible, for instance by allowing empty planes to carry on flying, the strength of decentralized collectives is in the diversity of processes, structures and agreements, which allows them to react in an antifragile manner by becoming stronger as a consequence of knocks. Those collectives were able to learn fast when responding to COVID-19 because documentation and resources were shared, for instance landlords teamed up with tenants to get support from the banks, groups formed to deliver medical equipment and food to those who could not leave the house, and pay what you can grocery co-ops and solidarity funds for people in needs materialized. A problem for communities leaning to prefigurative politics is often consensual decision making that is not built for fast decisions but there are a variety of recent innovations that seek to provide solutions as highlighted in this spotlight:

Decentralized Decision Architectures as COVID-19 Response

- **Brian Robertson**, Holocracy: How to deal with the crisis using Holacracy and self-management
- **Tom W. Bell**, Ulex: Open source law for non-territorial governance
- **Matan Field**, DAOstack: Distributed governance architectures and the DAOstack holographic consensus



- 3. Toward autonomous communities:** While many physical and digital voluntary communities are small, they can provide a role model for the flexible ways in which society can adapt and coordinate that is responsive to its citizens. Scaling small-scale community experiments and creating decentralized resilient alternatives that can exist autonomously as alternatives to the existing structures would ultimately require the development of physical infrastructure, because maintaining centralized physical supply chains was one of the fragility points exposed by the crisis. A few technological innovations that could increase resilience and autonomy of decentralized communities are highlighted in the spotlight below:

Personal and Local Community Production

- **Mike Doty**, mechanical engineer
- Disruptive new technology has emerged in many fields which enables individuals and small organizations to produce locally and personally. This presents an opportunity to develop a decentralized, distributed, peer to peer alternative economy using alternative financial and monetary systems. It also enables people to replace the need to acquire currency to exchange for products with the ability to produce the items themselves on demand.



Conclusion

Rather than fighting particular efforts, we can strengthen the efforts that are working and engage in positive construction. This includes observing which organizations and structures are working well and giving them more mandates to do their jobs. Different levels of organizations have responded differently with state decisions often being more agile than federal decisions and decisions of individual member states of the EU more agile than the response of the European Union. Cities could serve as a powerhouse to fund specific research projects because they have more flexibility to experiment with projects related to public infrastructure so local activism could be especially effective in this crisis. Many of the inertias of our institutional governance structures can be avoided in different constellations of polycentric communities that are better able to adapt to the crises and uphold the rights of their members. Now, just as before the crisis, they rely on active participation and there is no shortage of goal-aligned communities to join and support.

Coordination Technologies

Human Rights & Security post COVID-19

- Mark Miller, Agoric
- Alex Gladstein, Human Rights Foundation
- Christine Peterson, Foresight Institute



Challenge: Testing & Tracing

There are different plans for coordinating on how to exit lock-down in a way that avoids terrible consequences for the most vulnerable members of society, such as Paul Romer's [Roadmap to Responsibly Reopen America](#), or the [Harvard Roadmap to Pandemic Resilience](#). Most proposals rely on scaling up testing and many solutions propose contact-tracing. There are a number of different ways to implement tracing, each with their own challenges and opportunities:

- **Human vs. technological tracing:** Learning from countries that have implemented contact tracing, the success of human contact tracers was often dependent on whether the country had previous experience interacting with other viruses like SARS or MRSA before. In the US alone, comprehensive contact tracing would require equipping hundreds of thousands of people with the skills of responsibly tracing previous contacts of novel COVID-19 patients. Given rising unemployment and the fact that large sums of stimulus money need to be spent, hiring human tracers could be attractive. Not lastly because the fact that paying a large number of humans way past the time that tracing is needed is uneconomical, so it may build a natural barrier to surveillance. In addition, recent technological innovations like differential privacy, federated learning and secure multiparty computation could enable us to use sensitive data about people and their location

to solve individuals and collective problems from transit to public health. Anonymous contact tracing for COVID-19 is an obvious place for seeking to apply those technologies. While contact tracing technology is regarded as insufficient for coordinating on opening up society alone, many proposals seek to support human tracing by contact-tracing technology.

- **Centralized tracing attempts:** There are currently a variety of ongoing experiments on contact-tracing, some of which are coordinated by the government, some occur in a more decentralized manner. For instance, South Korea used centralized collection of financial data, GPS data, and SMS broadcast systems which comes with unacceptable privacy invasions. In Europe, the debate focused on a recent consortium that designs standard protocols for contact tracing that are relatively centralized. A central server assigns and collects identifiers, for instance of the location, which allows the creation of a social graph of people that were infected, that could potentially be triangulated back to a specific person. After criticism, a new protocol, PEPP-PT was proposed that does not aggregate any social graph data and allows users to control the identifiers themselves. It is crucial that the information is anonymously generated by the user who can decide to communicate some information while the risk analysis happens on their level as opposed to at the level of the server.
- **Decentralized experiments:** Current decentralized experiments include bluetooth-based apps that communicate by broadcasting a large random number that changes frequently and gets recognized by other phones. COVID-19 patients can authenticate themselves to share their result with a database so that everyone who has been in contact with them can see that they may have been exposed while others cannot access the data. The open source qualities of those technology experiments are essential for building trust, with examples including the [Safe Paths Initiative](#), [PACT](#), and [Nexttrace.org](#). The open source contact tracing protocols by the TCN coalition in the US and D3PT in Europe also inspired Google and Apple's tracing protocols to include local decentralized repositories, leaving consent in the hands of users and making APIs available to other app developers to create different apps.
- **Centralized systems cost compliance:** The contact tracing debate is surfacing general cruxes in technology governance, such as trust in the app that is required for users to comply. Centralized systems risk destroying the trust, compliance and self discipline that becomes crucial in this crisis. For instance, in past approaches to HIV and AIDS, the lack of sensitivity in the execution of contact tracing resulted in outing people or subjecting their relationships to scrutiny, drawing a wedge between public health authorities and the queer community. The systems we build need to give back people sovereignty to decide what to do with their information.
- **Details matter:** Two detailed presentations on contact-tracing drawing out the risks and its opportunities in opening up society are highlighted below:

Privacy Preserving Contact Tracing for COVID-19

- **Peter Eckersley**, Partnership on AI
- Contact tracing is one of the key tools public health agencies use for containing epidemics. In the case of COVID-19, many groups and governments are exploring the use of mobile apps to assist in this process of tracing potentially exposed individuals, to isolate and test them before they spread the virus further. This talk addresses the complex technical, epidemiological and privacy questions that those projects are grappling with. Three contact tracing indexes were discussed in the talk: [1](#), [2](#), [3](#).



Mastering the Dance: Rebooting society with testing and tracing

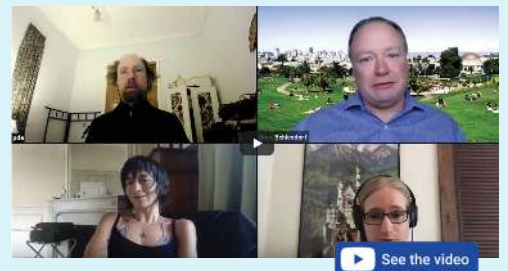
- **Jeffrey Ladish & Tessa Alexanian**, 2020 Foresight Fellows.
- This is an outline of how far we have come with COVID-19 testing and tracing efforts, and how much further there is to go. The good news is that we are finally getting our testing up to the scale required to contain small outbreaks, and South Korea and Taiwan demonstrate that containment is possible. The bad news is Singapore and Japan demonstrate how even well-resourced efforts can be insufficient, so in all probability we have a long and difficult road ahead of us. For further information, please see Tessa's presentation on [Technology-Assisted Contact Tracing](#) and her work at covidwatch.org.



Opportunity: People-Friendly Coordination Technology

People-friendly Coordination Tech

- **Peter Eckersley**, Partnership on AI
- **Brian Behlendorf**, Hyperledger
- **Primavera de Filippi**, Berkman Klein Center
- **Jeffrey Ladish**, 2020 Foresight Fellow



Apart from getting immediate attempts to roll-out contact-tracing and testing right, we could ask what it would mean to expand on the current coordination attempts to allow individuals to coordinate on a much wider set of problems than COVID-19 without infringing on essential rights. On the one hand, better data governance would have enabled a faster response to the crisis via improved health care and contact tracing but the same technology that can trace COVID-19 can trace protestors, and surveillance policies rolled out in emergency situations rarely get rolled back after an emergency. We need to explore alternative data governance models because 1.5 quintillion megabytes of siloed data are being generated per day that could be used in federated privacy-preserving ways for precision-agriculture, ocean preservation, and healthcare. In particular, 1) self-sovereign identity could increase access to services, 2) blockchain could address the lack of trust in institutions, 3) emerging cryptocommerce apps could outcompete predatory services, 4) new cryptography-enforced experiments may allow monitoring without surveillance, and 5) computer security could enable a more secure basis for our cooperative future.

1. From self-sovereign digital identity as privacy preserver to access enabler

- **Self-sovereign identity as privacy preserver:** Immunity credentials are currently being discussed as options to travel across countries and potentially within countries, or for going back to work in some health sensitive fields. We need to consider if this is worth doing, or if it risks creating systems that stay in place after the pandemic has passed. For instance, in cryptography no backdoors in cryptography systems were hardlines that got adopted in the

industry without even entertaining safe-seeming ways to do it (at least not officially, which is why we need better security, as discussed in 5). If immunity credentials are pursued, self-sovereign identity can help to protect privacy and may in addition unlock other benefits. Instead of identity defined by a small set of entities, self-sovereign digital identity consists of information attested by others in a highly federated way via certified credentials or by using blockchain technology. This allows one to prove one's identity in relevant ways when necessary without a trail that creates the power to surveil.

- **Expanding the benefits of self-sovereign identity:** Self-sovereign identity may allow users to decide over their data in tracing and immunization experiments, without facilitating surveillance dystopias like India's [Aadhaar database](#). [ID 2020](#), is a project seeking to establish privacy-preserving digital identity for immunization in the developing world at the nation-wide scale. Additional use case for digital identity involves Sierra Leone's [Kiva project](#) that allows people struggling to get loans to prove their credit history via blockchain technology and [Hyper Ledger Indy](#), which is used by the government in British Columbia to launch business registration systems and to establish trusted digital relationships. [Trustee by HIE of One](#) (Health Information Exchange of One), uses public blockchains, standards, and free software to enable patient-controlled independent health records that can span a lifetime and that could be expanded upon to build the health commons discussed earlier in this report.

2. Blockchain to address lack of trust and enrich information flows:

- **The benefits of blockchain:** Tools like the blockchain can provide opportunities for adding specific technological guarantees into the operations of institutions and software providers via transparency, auditability, and deterministic computation. Those features would allow us to trust a given institution less because we can verify that it behaves in the way it ought to do, so we may be more willing to engage in the level of trust and compliance that we still need to do.
- **Expanding the benefits of blockchain into services:** In addition to creating trusted governance architectures, blockchain-enhanced auditability could be a major game changer for supply chain innovation. For instance, [Trustyoursupplier.com](#) is a company that allows one to verify suppliers according to who they did business with in the past, which is helpful in the case of PPE, where there were multiple online schams of undelivered PPE. Global supply chain is already a coordination mechanism that moves objects around with a price associated with them but there may be other things we want to track like environmental properties, labor practices, and trustworthiness. While it is hard to track this at the moment because different institutions need to buy in for this, increasing the richness of information to empower us to make decisions about goods and services is a near-term opportunity for innovation.

3. Cryptocommerce as insurance against an Orwellian future:

- **Promises of cryptography:** If web and encryption are the main securities for free speech by routing around censorship, smart contracts are the next iteration as enablers of law-like arrangements that bring the benefits of rule of law while being unrestricted by jurisdictional law. As Nassim Taleb states, private keys give citizens power and can make permissionless systems “an insurance against an Orwellian Future”.

- **Current crypto-enabled applications:** Payments are one of the most important areas to get solutions that reveal as little as possible about yourself right first. For instance, Square is the first publicly traded company that allows users to buy crypto using the [Cash app](#). In addition, it created the non-profit-like structure [Square Crypto](#) to do independent research, and to build out the [Lightning ecosystem](#) for a future in which every Square user could enable privacy-preserving transactions wherever Square is accepted. [BTC Pay](#) is another service that allows reception of payments without collection of data on a central server. Other freedom-enhancing technologies that route around the ability to shut down businesses include the decentralized exchange [openbazaar](#), [incognito](#), the decentralized file storage [Sia](#), the decentralized Youtube [lbry](#), and different types of crypto currencies such as [Monero](#).

4. Crypto-enabled monitoring to replace top-down surveillance:

- **Crypto-enabled systems as alternative to top-down monitoring:** Current debates around contact-tracing show that it is difficult to achieve decentralized coordinated action without proper monitoring and enforcement. For monitoring and enforcement we used to look to some kind of centralized entity, which opens up problems of surveillance. Blockchain provides a global and decentralized but verifiable database which allows people to recall information and bind themselves to deterministic computation. Rather than having ex post enforcement, we coordinate via automatic execution so without creating another dominant superpower we can in principle coordinate in a decentralized manner.
- **Possible prototypes:** As an alternative to top-down surveillance, David Brin introduced the concept of “sousveillance”; in which everyone can watch each other so the watchers can be watched also. A potential third way could be enabled in the form of encrypted mutual sousveillance via monitoring fabrics that are inspired by NSA’s [Thin Thread](#) experiment. As discussed in [Intelligent Voluntary Cooperation](#), current prototypes of such systems that only reveal identity if the actor is misbehaving are underway and tools like secure multiparty computation may allow more experimentation with creative privacy-preserving architectures in the near future.

5. Computer security as foundation for cooperation:

- With an ever increasing fraction of our interactions moving online due to COVID-19, computer security becomes a vital prerequisite of the new economy. While acknowledging that we cannot have perfect confidence in computer security, we can in theory get as close as possible using tools like SeL4. The problem is that building software in a sloppy manner will always be cheaper. However, in the emerging cryptocommerce ecosystem insecurities are tied to million dollar crypto bug bounties in cryptocurrencies so services that survive can be said to be red-teamed by attackers. A project that seeks to create ecosystem-wide approaches for computer security from the bottom-up is highlighted in the spotlight below:

- **Dean Tribble**, Agoric

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By exploring additional technological tools that solve some of the traps in our ability to coordinate, we can continue to coordinate with more people in richer ways beyond the pandemic. When building out new coordination technologies we need to have long-term adaptation within complex ecosystems in mind. This includes both risks and potential benefits of being able to better model our relationships to each other and our ecosystems. If done right, the realization of connectivity to each other and ecosystem may entice us to model future actions in orchestration with this complexity.



Civil Responsibility

Challenge: Stepping Up To Save Lives

With the rise of the crisis, we have seen an unprecedented rise of individuals and communities stepping up to save lives and livelihoods, physically and emotionally supporting each other, creating and strengthening the systems we need to respond to COVID-19 and overcome those who prevent us from helping. Two outstanding examples, such as early coordination of PPE equipment and early efforts from Hong Kong citizens to educate the West about the benefits of masks are highlighted in these spotlights:

GetUsPPE

- **Dr. Valerie Griffith**, GetusPPE
- Valerie brings us up to speed on the work that GetUsPPE has done to coordinate PPE from suppliers to hospitals and how we can help save lives of first responders via [donations](#).



Lessons from Hong Kong

- **De Kai**, HKUST (Hong Kong) & ICSI (Berkeley)
- De Kai explains what the West can learn from the COVID-19 Hong Kong response, why masks must be an essential part of any response effort, and how we can defend against cultural biases now to avoid that we exit the crisis more divided than we entered it.



Opportunity: A Culture of Civil Responsibility

Championing Civil Responsibility

- **Cory Doctorow**, Electronic Frontier Foundation
- **Mark Miller**, Agoric
- **Loretta Whitesides**, Virgin Galactic
- **Eric Rogers**, Beyond Return



One path for seeking beneficial long-term futures from this crisis is to support and champion the emerging culture of civil responsibility and people stepping up ethically to “do the right thing”. Below you will find 1) a brief primer on how to start helping, as well as 2) low-hanging fruits for helping that remain to be picked.

1. A primer on how to start helping

- The dimensions of the crisis and the destinies at stake can make it daunting to help. It seems unclear how to plug in, whether you have the permission to do so, and whether you are helping more than hurting. While everyone’s comparative advantage to help is different, here are a few rules of thumb for encouraging you to step up in this and future crises:
- **Dare to start:** Times of crisis are a good excuse to get over one’s imposter syndrome and start helping, even if the acts are small. There are many resources, such as the [SpaceKind](#) training available to aid you in finding how to become an agent for change.
- **Begin locally:** Reach out to local facilities first. In the case of COVID-19, this could mean reaching out to nursing homes and hospitals to see if they need PPE, or to PPE suppliers if they need help distributing.
- **Work in community:** Intentional communities can be engines for change because they allow one to extend care beyond household barriers. Seek to integrate others who are struggling into the webs of community.
- **A crisis opens ambitions:** Even for ambitious change, such as rethinking institutional frameworks, times of crisis are an opportunity because they multiply agency and existing institutions need answers.
- **Learn from what works:** New efforts like [Beyond Return](#) seek to learn from other movements, for instance existing mutual aid movements that have significantly outperformed the government, when seeking to build new sustainable institutions.
- **Learn from the past:** Many of the values we cherish can be traced back to acts of civil activism and civil disobedience activism, from Rosa Parks, to Martin Luther King, to the burning of draft cards to end the Vietnam war, to the ending of crypto export controls in the 90s. Researching successful tactics and pitfalls allows you to stand on the shoulders of giants and avoid their mistakes.
- **Experiment:** A previously unseen number of experimentation with ideas, from open source sense-making efforts, to hackathons, to accelerators like the [COVID accelerator](#) spring up within days and invite for experimentation. In the long-run, the fact that current timelines are sped up, including volunteers, traction, financing, and products may allow us to retain leaner,

faster processes in the future if we learn to adapt in the process.

- **Be proactive:** Speak up, act, build and engage when you see help required or injustice done. Even bending the rules becomes a possibility if it is to save lives; we realize we can supply hospitals with PPE if traditional channels are not able to do it, the maker movement produces life-saving supplies, while citizens at home sew masks. The realization that in times of crisis, asking for permission will kill people may empower us to step up, including supporting those who stepped up to do the right thing when potential lawsuits reach them.
- **Use the tactic that gives you most freedom of action:** According to Lawrence Lessing there are four tactics available for people who want to change the world: code, law, market, and norms, i.e. what is technologically possible, what is legally permissible, what is financially prudent and what is socially acceptable. Pick the one that works best in your context.
- **Opening up default models and expectations:** We need new models, including mental models, of what we can expect of scientific progress, openness, etc. The fact that our current models are shaken up may allow us to open our expectations of possible futures and awaken from our passive stance toward the future, by realizing that there are no omniscient, omnipotent people in power positions.
- **Empowering architectures:** There is adverse selection for power in which the worst rise to the top and out-influencing them requires a power that the right people are usually not oriented toward. If intelligence allows predatory gaming of the system, we need to seek the comparative advantage in intelligence for positive changes. Even if we are seeking systems that are antithetical to the concentration of power, we can still support those seeking to put empowering decision architectures in place.

2. Low-hanging fruits that remain to be picked:

- If you feel encouraged to become active, it can still be hard to pick a specific cause to dedicate yourself to. Seeking communities around the causes you most support is a good long-term strategy. In the context of the COVID-19 crisis, here is a list of a few low-hanging fruits that you may find interesting to explore:
 - **Celebrate causes and heroes:** Celebrating important achievements that unite and empower is a great way to rally support behind a cause that you care about. Signal-boost and celebrate those who step up behind the scenes for others, such as nurse Diana Cantu Reina, who organized [CultivatingSelf.org](https://www.cultivatingself.org/) helping nurses deal with burnout and fatigue of the frontlines via mindfulness. There is still ample opportunity for celebrating our essential workers and those allowing us to function in society, including Chinese industrial workers, Amazon workers, agricultural workers, who we rely on for our material subsistence. You could submit a nomination for the [Future of Life Unsung Hero Award](#) or help us celebrate the [International Day of Remembrance for Dr. Li](#), the Chinese doctor who died of COVID-19 after being shut down by the government for alerting his community to the pandemic. More to this in the previous section on cooperative cultural practices in this report.
 - **Set up whistleblower protection to expose corruption:** Misinformation and corruption within the CDC, WHO, and BOP needs to be exposed to hold those organizations accountable. Many people may not be coming forward because of fear of retaliation; whistleblowing protection and Whistleblower Awards could change this. Protection can be done via lobbying for laws to protect whistleblowers across society but has to be supported by the protective technology that makes platforms like Wikileaks possible.

More on this technology in the coordination technology section in this report.

- 3. Set up legal defense for those risking their profession to save lives:** The first case in Washington state was exposed via an act of disobedience of medical staff testing after having been denied to test. As an immediate measure, the existence of a legal defense fund to back those who step up in legal grey areas to do the right thing when necessary would allow safety in numbers; by creating the perception that other people are going to step up, each of us individually is willing to step up. This is still a low-hanging fruit that could be picked by skilled attorneys and funders. While in computer science, experts tend to emerge via demonstrating skill that accrues to reputation, the medical industry relies on licensing that requires people to ask permission to save lives. The problem with licensing is that the threat of it being taken away risks forcing obedience. A society in which the only experts that are allowed to practice their expertise are doing so under conditions that make them obedient to official truths is a society that cannot discover controversial truths, or is at least tremendously inhibited from doing so.
- 4. Support DIY makers, medics, and farmers ability to make and use crucial tools**

 - **Freeing the tools to save lives:** [Ifixit](#) which gathers and publishes service manuals for med tech equipment shows the bravery of the medical community, for instance, medical staff and technicians taking risks to repair their ventilator themselves in desperate attempts to help patients. For instance, jailbreaks on BiPAP machines suggested they could be reprogrammed into low-end ventilators, which would massively increase the supply because of how many people may be willing to donate those. Even if we are not prepared to make those attempts at saving lives morally and legally obligatory, we at least should not have a legal right to stop others from stepping up in trying to save lives.
 - **The Right to Repair:** The ability for adversarial interoperability, the ability to modify a product even if the manufacturer disfavors it, is endangered by software patents and novel copyright theories like API copyrights. The Digital Millennium Copyright Act of 1998 made it illegal to bypass copyright law, which is a problem if there is copyrighted software, making it impossible for people to repair the products they supposedly own. For agriculture, this means farmers cannot repair their tractors, and medical staff cannot repair their tools independent of the supplier. To help makers, medics, and farmers have determination over their tools the [EFF](#) is suing the US government to overturn copyright laws that make certain APIs copyrightable. Just like it is not an offense to disclose illegal activity in the finance sector, notwithstanding any contractual law, it should never be illegal to perform a legitimate function on behalf of a legitimate user. Sometimes structural reform is required as well because without market concentration there would be too many defectors to agree on a single set of patents in the first place. Here, one long-term reform strategy could be to reinvigorate traditional strategies such as merger scrutiny and restoration of structural separation. Merger scrutiny helps avoid cases in which everyone who acquired Fitbit but did not want Google's data collection service will be retroactively opted into it and restoration of structural separation can prohibit platforms from competing with platform users to avoid Amazon examining proprietary data of firms that use their platforms to crowd them out.
- 5. Criminal justice reform to better the lives of those with no voice**

 - Apart from populations that are most vulnerable to the virus health-wise, our concern may

expand to those on the receiving end of the dysfunctions of the system. Our current criminal justice system has a high rate of recidivism, is expensive, neglects root causes such as addiction, trauma, poverty, exacerbates race tensions, and fails to serve victims in most cases. It is visibly biased toward vulnerable demographics and violates the law with total impunity. As this spotlight highlights, currently there is an opportunity for long-term reform with the BOP under siege for claiming to have basic COVID-19 safety in place while the humanitarian crisis inside the prisons becomes increasingly apparent to the DOJ and the public:

Unusual Opportunities for Change

- **Shaka Senghor**, Redeemed Sole
- **Zarinah Agnew**, Beyond Return



- **Public health emergency:** The outdated war-on-drugs thinking that only long sentences can keep people safe does not square with the fact that the great majority of prisoners eventually get out and need to be reintegrated. Prisons are incubators for COVID-19 and other viruses, because they don't allow social distancing or even minimum required hygiene, and have a turnover rate that will impact society. For instance, many county jails are “turnkey” with one person entering a jail every 3 minutes. This risks COVID-19 in prisons exacerbating into a public health crisis, with a recent [ACLU study](#) modeling that 100,000 people will die because of US prisons because of the transmission in and out. Regardless of one's politics about harm and punitive measures, this will affect the US as a whole.
- **Misinformation about misinformation:** Many prisons responded to COVID-19 in counter productive manners via lock-down into small confined shared spaces rather than increasing distancing, or increasing release of non-violent offenders as ordered by General Attorney memos. BOP published [a document](#) that supposedly refutes misinformation about the catastrophic circumstances inside of prisons but many of the accusations they refute turn out to be accurate. For instance, while claiming to implement staggered meal times, some prisons enforced lockdown into shared spaces instead and while claiming to have advanced hygiene measures in place, some prisons have been lacking hand soap for years and inmates receive one surgical mask for an indefinite time, while the staff, who have most outside contact, are often not wearing masks.
- **Overcoming perverse incentives:** In theory, most actors should be on the same page about prison reform given the health risk to the public, to prison staff, and to the prisoners themselves. The blocking piece is the profit motive of free labor. A clause in the 13th amendment which states that people should not be subject to involuntary servitude unless they are convicted of a crime creates a loophole for the labor market within prison systems and jobs that pay 17 cents per hour, turning many prisons into labor camps. Under COVID-19, some of those prisons have deteriorated into “death camps” that started to separate those able to work from those who are weak, grouping risk groups together to avoid losing labor.
- **Need to establish common knowledge of the situation:** Previous whistleblower lawsuits in which California prisoners sued the BOP for not providing required mental health service show that citizen-action is possible. The problem is that it is hard to move the system if

people who do not come into contact with it lack information about conditions. Based on the realization that public eye and action are crucial, [Redeemed Sole](#) is curating information, including recorded phone calls with first person accounts of inmates who share meals with hundreds of others without distancing or who have substance abuse issues that would be better treated outside.

- **Prevention instead of bandaging:** Large-scale legal reform could focus on low-hanging fruit first that is easy to support for the mainstream, such as mental health and substance abuse areas. In San Francisco, positive precedents are set by District Attorney Chesa Boudin who reduced prison population and crime in parallel in the first weeks in office. We could invest in alternatives that focus on harm prevention rather than bandaging problems too late in the harm cycle. Apart from education for risk groups, alternatives include restorative justice projects.
- **How you can help:** To listen to inside stories or support specific organizations for aiding prison reform in the context of COVID-19 and beyond, visit [Redeemed Sole](#), an effort that raised funds to donate PPE to prisons, that is now coordinating large scale reform with public attention via [Oprah Winfrey's show](#). To coordinate on activism around criminal justice reform, visit [Beyond Return](#), a project to create transfer cultures. To inform yourself about profit incentives in prisons, start with movies like [13th](#) and consult organizations like [Marshall Project](#) for guidance on advocacy. To ensure that human rights violations behind bars get heard, you can support the [UCLA COVID-19 behind bars data project](#). To seek alternatives to the current justice system, you can get involved with alternative justice projects like [Bay Area transformative justice collective](#).

Conclusion

Regardless of which strategy for change or which focus area you pick to inspire change, everything comes with tradeoffs. For instance, the concentration of political power may be equally damaging as the concentration of economic power; so rather than focusing on lobbying alone, we need to make it easier to build better systems as alternatives for people to flog to. Often success tends to require more than one strategy. For instance, for the legalization of cryptography, civil disobedience was important as well as lawsuits, which affirmed that cryptography and code is a form of free speech protected by the First Amendment. The observation that everything has trade-offs and that success requires more than one strategy is not necessarily discouraging, but to the contrary, it can encourage us to start earlier and inspire others to help.

Sense-making Systems

Informed Global Sense-making

- **Anthony Aguirre**, Metaculus
- **Aviv Ovadya**, Thoughtful Technology Project
- **Kim Osborne**, University of Georgia
- **Phoebe Tickell**, International Bateson Institute



Challenge: Marode Institutional and Public Sense-making

COVID-19 hyper stylized many of the factors that caused friction in society's ability to make sense for a while, both 1) within institutions and 2) within the public's information ecosystem:

1. Institutional sense-making

- **Taking expected value and exponential trends seriously:** Our COVID-19 response showed a failure to think in terms of expected value; i.e. that even a small chance of something extreme happening is going to cost the world trillions of dollars and may merit many billions of dollars of preventative spending upfront. In addition, we have seen how for events like a pandemic, accurate predictions become crucial because delay in decision-making is costly in the face of exponential growth. Early COVID-19-related efforts got deprioritized as the pandemic was treated as an Asian problem and only received the required focus when most effective action pathways were foreclosed.

- **Signaling through the noise:** The breakdown of current adaptive responses was far beyond sense-making but included acting on and communicating the information that results from sense-making. People in power are not only ill-incentivized to take the correct steps but also lack access to good information while those with information access often lack access to resources to make themselves credible via peer review, research networks, or access to “megaphones”. The decisive factor is not just who is good at sense-making but who is good at distributing sense-making and sparking action based on it.
- **Lack of trust and adaptability:** Creating and communicating actionable knowledge about a situation is hard even on a high-trust community level because communication is a time-lagged coordination game by which different people have access to different information, update at different speeds, and according to different goals. Nationally, this sense-making process was further complicated by a lack of trust between technocrats, policy-makers and the public that generated competing narratives. Sense-making as an ongoing process is in conflict with singular political messaging because publicly updating one’s statements can be seen as inconsistency. Here the psychology of individual leaders becomes important and whether they can stand with the crisis and accept that responses need to be fluid and adaptable. This spotlight highlights the importance of effective communication across different stakeholders, and how to translate and manage expectations:

Managing Public Opinion in Crises and Disasters

- **Kimberly Osborne**, University of Georgia
- Communication strategist Kim Osborne shares observations from some of her work with NATO, OSCE, DoD, Red Cross and others in places like Afghanistan, Kosovo, Myanmar, and in multiple natural disasters. This talk aims to inspire hope and invite possibility, especially among those in positions of leadership and influence.



2. The public information ecosystem

- **Polarization hinders COVID-19 response:** According to a recent [Reuters poll](#), less than 2/3 of the US population are interested in taking a future COVID-19 vaccine, but some experts estimate that around 70% of the population needs to be vaccinated to reach “herd immunity” if this even proves to be possible. The poll traces this finding partly back to increased polarization due to social media, suggesting that even if we get institutional sense-making right, institutions have lost relevance for large numbers of the population.
- **The decline of news and the rise of podcasting:** Unfiltered content via c-span can be confusing to the average person without multiple years of context. In theory, journalists bring those years of contextual understanding but thereby add their own contextual understanding which leads to subjective interpretations that are shaped by content that sells regardless of the informational value. The quality of our information ecosystem is a property of the incentives on news organizations, the algorithmic design choices, and the actual product design choices, and every step on the way allows for small changes with cascading character. While the mainstream information system is degenerating from news to content, comedians and long-form podcasters are emerging as the few sources doing truth-preserving and

meaning-seeking deep dives.

- **Increasing potential for violence and apathy:** Our current information distribution platforms like Facebook and Youtube are anti-supportive of sense-making. Platforms cooperate with the CDC and WHO to delete “fake news” off Facebook and prematurely take content on Youtube down, such as a video from our series in which a biologist explains [Evidence for the Antiviral Efficacy of Quinine](#). The fact that CDC and WHO lost credibility since advising the public not to wear masks, leads the public to trust the system even less and lets some further down conspiracy roads. Our current siloed information systems in which trust is dwindling produce a great platform from which elections could be manipulated. Recently, General MCChrystal, a Four-star General who ran covert ops for the US military, announced the use of DARPA technology developed to counter overseas extremism to combat online misinformation of the pandemic. Increased informational warfare meaningfully increases the risk of violence given the amount of people who are anxious and may respond to increased signaling of violence with real violence. At the same time, parts of the public are addicted to different hyperstimuli, which polarize and cause resignation to make the hard systemic changes necessary.

Opportunity: Toward Evidence-driven Foresight

In addition to fixing the immediate flaws in our collective sense-making uncovered by the COVID-19 crisis, there are a few opportunities to go beyond this and push for more foundational paradigm shifts in our sense-making systems. Below are specific projects that 1) improve foresight in an institutional setting 2) improve the public information ecosystem, and 3) create the incentives for foresighted action.

1. Toward foresighted institutional sense-making

- **Beyond preparing for the last crisis:** The army operates on the heuristic that one prepares oneself for the last war by taking the lessons from the experience it just went through and building on it. While this at least creates a process to challenge assumptions and adjust them gradually, we need systems that can be resilient in the face of a variety of future risks. This is a good time to influence some of the organizations set up in response to the pandemic to have a broader charter than just preparing for the next pandemic.
- **Encouraging quantitative policies:** To solve for major failures in thinking in terms of expected value, and the ability for quantitative decision-making, policy needs to decide to take predictions seriously as action-guiding. Leaders should be comfortable in making public statements in terms of expected cost and probability of something happening, including their basis for those probabilities. The credibility for those systems could be built now because there are still many dominos that have not fallen yet in the crisis. The ability to accurately predict and record those and convey them publicly would give higher credibility to those projects post pandemic. There are a variety of tools that could significantly aid our ability to predict and prepare for future emergencies, to make sense of them as they are unfolding, and to effectively filter out and coordinate on sensible actions. A few are highlighted in this spotlight:

Metaculus: Forecasting the Pandemic and other crucial events

- **Anthony Aguirre**, Metaculus
- [Metaculus](#) is a platform that allows users to make predictions on specific questions, all of which have to be quantifiable and precise. The system aggregates those predictions into a single prediction and users accrue a track record in the system for accuracy so over time we can rely on the people who made the best predictions in the past. Metaculus seeks to 1) make the best possible predictions on a variety of topics, including questions where it is difficult to establish pre-existing numerical models, 2) establish reputation for the system as a whole and for individual people in different contexts, 3) give a more intuitive meaning for probabilities, 4) become an aggregation point for people making predictions about similar topics. The new project [pandemic.metaculus](#) contains pandemic predictions on anything from case numbers to vaccine timelines, drug efficacy, economic effects and more to source actionable information about the future to make decisions on.



Additional sense-making tools

- There are a number of additional encouraging projects, many of which are seeking support:
- [Epidemic Forecasting](#), created by the Future of Humanity Institute, with collaborators including universities and technology companies offers models, mitigation maps and even tailored advice for decision-makers.
- [The COVID-19 Forecast Hub](#) on GitHub contains projections of COVID-19 in a standardized format.
- [FiveThirtyEight](#) compares different COVID-19 models by Northwestern University, MIT, Los Alamos, The University of Texas, Columbia University, and others.
- [DataCOVID.org](#) is a French citizen science initiative seeking to produce helpful complementary data for improving decision makers' ability to respond.

2. Toward a truth-driven information ecosystem:

- **The internet as a decentralized sense-maker:** The information environment is not static; we make sense by having relationships with others, so in principle the rising tide of people using the internet more due to COVID-19 should allow us to improve our response. The internet is already a distributed global sense-making machine, with preprint servers allowing us to publish information fast, doing peer review without months of process, and looking up Twitter discussions of a paper, significantly moving the dial in COVID-19 research. While seeing a rise of amplified conspiracy theories, social media, email, and telecommunication are major coordination technologies that are being strengthened as global immune systems while people stay at home.
- **Improving the default information ecology:** Projects such as [Thoughtful Technology Project](#) seek to create a better information ecosystem by proposing pragmatic changes, raising awareness within the public and creating metrics that could be easily adopted by platforms.

One crucial aspect of any long-term strategy here must include empowering the public to understand how to navigate the information space and fact-check information sources. For instance, when fact-checking information, a first step could include searching across trustworthy sources to see if they corroborate evidence, searching for individual strings of unique words to fact check, or prefacing URLs with [Mediabiasfactcheck](#), and using [Control F](#) to search web pages.

- **Creating better alternatives:** We need to build systems that allow us to do argument representation and visualization such as aspired to by previous prototypes like Project Xanadu so that good ideas can rise to the surface according to Popper's logic of scientific discovery. New systems need to not only share information in a reliable manner but also the underlying epistemic process in a way that is digestible and actionable by different communities. As highlighted in this spotlight, there are currently a few promising projects helping the public to map the information space better:

COVIDConvo and Infinity

- **COVIDConvo Argument Chains:**

Although social media has enabled entire societies to get online to have conversations, arguably, we have not yet harnessed technology to effectively coordinate constructive communication at scale which is important for decision-making, education, and democratic representation. The Society Library extracts arguments, claims, and evidence from various forms of media to be organized into databases which house the arguments and evidence from all points of view on social and political issues. This content is then organized into "debate maps" which is a hybrid of a topic map and an argument map. "COVIDConvo" gathers the arguments and debates happening all over the web on COVID-19 subjects and inputs them in a database. Find out more at [SocietyLibrary.org](#), [COVIDConvo.org](#), and [GreatAmericanDebate.org](#).

- **Infinity project** helps to pursue goals together and answer basic questions about the world. <http://000.li> maps goals, ideas and projects, and guides leaders, scientists, artists and entrepreneurs from thought to action. As described in [this video](#), the goal is to understand each other across cultures and currencies by building a [meta-language for civilizational know-how](#). To contribute to this project, you can [register anonymously](#), join the [Telegram group](#), or [add your project](#) to a project map.



3. Incentivizing foresighted action

- **Addressing the structural problems:** In the case of COVID-19, many channels were sounding the alarm early but to no effect. Better sense-making tools are available so if organizations really wanted to improve their decisions they could. Often incentives are misaligned with better decisions because better tools would mean people can be held accountable for wrong predictions and decisions. One mechanism to incentivize better sense-making could be to require organizations to get insurance against failure modes like pandemics or to

make vulnerabilities of companies better known to stakeholders and public in the hope that it corrects the stock price. If we seek the quick adoption of better sense-making systems, in addition to creating better alternatives, we need to address the structural problems of decision-makers who lack skin in the game for the public good when their self-interest is misaligned with it.

- **From reductionist silos to systemic cross-collaboration:** On a systemic level, we select for reductionist thinking that is leaving us blind for ripple effects of events like crises. There are a few tools seeking to enrich quantitative analysis with systemic reasoning, for instance [Sense-Maker](#) which is a system that collects qualitative data and analyzes it by extracting opinions and narratives. In addition to individual efforts, we need to establish links between the silos of institutions, scientists and politics and set up an infrastructure for cross disciplinary sense-making, in which different stakeholders can appreciate the larger context of their work and the role of other actors. To build trust, this should be born from diverse informal networks of people who know how to collaborate. As we will see later in this report, global groups of strategic communication and narrative experts are needed to work on metaphors, imagery and language for a cooperative framing of the crisis.

4. Immediate actions for you and I

- A few immediate ways in which you and I can improve information systems moving forward include:
- **Support successful sense-making projects:** Consider volunteering for one of the citizen-led projects seeking to improve local, national and international decision making that are highlighted above.
- **Establish warning signs for future risks:** It would be useful to have the common knowledge of when an emergency state is reached beforehand to avoid politicization and doubt. For instance, climate change was hard to conceptualize for most people until much later when the effects show. Creating warning signs for future risks, for instance by building on predictions on tools like Metaculus would be useful.
- **Learn from those who informed early:** Many informal expert networks were formed on WhatsApp and other channels, including doctors and politicians trying to share information quickly. We should seek out and learn from those who were essential in helping inform others early.
- **Collecting stories:** There will be a de facto online COVID-19 museum of our stories so the way we tell them will be extremely important for future generations. It requires time to prepare the lessons to be learned but anyone can start collecting stories now by interviewing health care workers, patients and decision makers.
- **Forging links:** Creating alliances with universities, political parties and agents in the establishment now is useful to form the base for bottom-up work of communicating cooperative lessons.

Conclusion

If we want to emerge with a stronger capacity to make sense of the world and act on this information post COVID-19, we need to seize currently unique opportunities to strengthen our institutional sense-making capacity and enrich our public informational ecosystem. This requires both incentives that reward foresighted action on a macro level, and an effort on the individual level to contribute to a truth-seeking information ecology.

Global Resilience

Challenge: Escalation Paths to Global Fragility

A Sound Political Economy

- **Sandrine Dixon-Declève**, Club of Rome
- **Ruth Hickin**, World Economic Forum
- **Sam Hilton**, Centre for the Study of Existential Risk
- **Michael Vassar**, Nanotronics



Global Resilience & Peace

- **Samo Burja**, Bismarck Analysis
- **Dave Denkenberger**, ALLFED
- **Caroline Jeanmaire**, CHAI
- **Shahar Avin**, Center for the Study of Existential Risk



Crucial Risks & Opportunities from COVID-19

- Daniel Schmachtenberger, Neurohacker Collective



COVID-19 started as a medical emergency but is quickly widening its reach to pose large-scale problems to our global system by exacerbating systemic problems that could lead to novel escalation paths for global catastrophic risks:

1. Exacerbating systemic problems

- **Food supply chains:** Key supply chain dynamics for up to 2 billion people have been disrupted leading to the massive culling of animals, wasting dairy and tilling food back into the soil. The movement of fertilizers and pesticides is disrupted and excessive supply that cannot get where it needs gets ruined despite existing demand due to a failure of rerouting it, creating margins that drive hunger at scale. There is a growing concern that export bans and restrictions may negatively affect food-importing countries, and countries that go on lockdown may lack the social support to guarantee food supply for the population.
- **Infrastructure and escalation routes:** We need to prevent possible escalation paths from the virus to broken supply chains to hunger to violence to (civil) war. For instance, Nigeria has large population density and up to 26 million people without food security, in addition to relying on the price of oil, which went through Saudi Arabia and Russia oil shock prices. As local violence is surging, we may see an increase in refugees, when the EU could be hard pressed to take them in under Brexit and COVID-19 pressure. Significant investment and reform of our supply chains are needed as soon as possible, not only to guarantee the required reach of vaccines, but also to anticipate further distribution issues around potential food and health shortages. Improving the technological infrastructure is equally essential, for instance to enable 20+ million people in Africa alone to get access to broadband and accessible healthcare and online education.
- **Hunger and stability:** [The World Food Programme](#) is expecting the number of people on the brink of starvation to double from 135 million to 260 million by the end of 2020 due to an impending food crisis caused by a perfect storm of supply chain disruptions and food market disruptions, in addition to vast locusts swarms spreading from the East Horn of Africa. This, in addition to heat waves that threaten to destroy staple crops, for instance in Bangladesh and India, will mean that people who were on the edge of having their basic needs unmet go unmet. With lack of groundwater and extreme temperatures of up to 52 celsius, this is not a recipe for peace and if violence lines cleave along pre-existing tension lines, they could translate into tensions among the nuke powers India and Pakistan.
- **International coordination around power brokerage:** The crisis produces a tempting platform for major powers to make radical international advances, similar to how the US came out clearly as world leader after WWII. All major powers were already motivated for power

increases before the crisis but from the previous states of equilibrium it was hard to cause radical shifts. For instance, for China this could be a great opportunity to roll out the Belt & Road Initiative because it is the only manufacturer of PPE at a decent scale which is attractive for many countries that may have otherwise not been willing to buy into the conditions. While we see a loss of oil revenues for Russia with an arsenal of hydrogen bombs, Chinese and American tensions are increasing. The climate and biodiversity cop's are postponed to late in 2021, leading to fallouts in international governance on global commons. In the context of the current and near-term boom of biotechnology, international technology governance will become increasingly important without adequate precedents to point to. National and international cooperation becomes a crucial factor in global stability.

2. Escalation paths to Global Catastrophic Risks:

- **Re-evaluating risk paths:** COVID-19 is not a global catastrophic or existential risk and is still small in comparison to the eventualities we should be preparing for. However, if an existential or global catastrophic risk was added now when we are more hostile and more impoverished, we lack the bandwidth to adequately respond. The risk community's default assumptions about the likelihood of catastrophes, dependencies and resources for addressing those are off and need to be re-evaluated.
- **Understanding cascading consequences:** In our re-evaluation, we need to focus on civilization as a dynamic system, whose clock cannot be stopped without causing large-scale cascading effects as shown in [Coronavirus Second-order Effects](#). For instance, the effects on the speed of global trade when ships have to wait for weeks before unloading, the potential for civil unrest without a safety net during lockdowns, or escalation paths to violent conflict in increasingly foreigner-hostile environments. Even our responses need to screen for cascading effects of our actions, for instance, the fact that what is essential to consume for one country may not be for the one which produces it, means that the decrease in production in one country may cause a crisis for another.
- **Understanding the interplay of risks:** In our re-evaluation, a specific focus should be placed on the interplay of individual risks. Climate change will continue in a year that started with Australia burning. While climate change is not regarded as an existential risk in itself, the cascading effects are worrying. For instance, the withdrawal of the US from the Paris Climate Agreement is concerning as it was previously a zone of cooperation between the two powers. Without cooperation on common interests, more conflicts hotspots could emerge and escalate into a dangerous competition, reducing our chance of peaceful technology development. Cooperation amongst those great powers is crucial for the development of safe and reliable AI and will likely require more, not less trust and collaboration across China and the US.
- **Understanding generators of risks:** Just like getting cowpox in the middle of a smallpox epidemic seems disastrous but conveys immunity, our current pandemic may be useful to prepare us for future existential risks from technologies that have the potential to extinguish life on earth. Ultimately, we need to understand the nature of problems in a way that gives rise to better solutions. Upon uncovering that certain solutions to problems are too local and make things worse one layer up, we need to reassess the problem-landscape. While there are many catastrophic risks there may not be that many generator functions that cause a class of them. Zooming out may uncover new opportunities for addressing risks.

Opportunity: Global Resilience and Peace

How can the spotlight on global fragility help promote resilience, peace and cooperation internationally? Here are a few suggestions for large scale goals, heuristics, and how they must be informed by sound historical analysis if we want our strategies to be sustainable and avoid repeating mistakes from the past:

1. Goals and heuristics for long-term futures

- **Designing global defense systems:** For better or worse, the Bretton Woods Conference after WWII gave rise to much of our current global financial order, including the founding of the IMF and the IBRD. There is a similar opportunity for action now. Cassidy Nelson and Robert Wiblin suggest [12 ambitious strategies to create global pandemic defense systems](#) or better still, systems that can be resilient against more than the next pandemic. For instance, UK preparedness was based on what the healthcare system was able to deal with as default, not what corresponded to risk, and was based on past experience rather than potential future risks. [The All-Party Parliamentary Group for Future Generations](#), which is working with the UK parliament, already had pandemic preparedness as part of their 2018 efforts and is now broadening its work stream to look at general preparedness against future risks. One way to instill this kind of thinking is to counter criticism of the WHO and other institutions with an invitation to come up with better policy proposals, such as in [Coronavirus and long term policy \(UK focus\)](#).
- **Scenario planning and role-playing:** Scenario planning, such as modeling and planning for different geopolitical scenarios is a relatively new practice. It received support after the Iranian oil crisis when regular economic forecasting was supported via scenario planning by [Royal Dutch Shell](#). While those practices are already offered by consultancies for specific companies focusing on specific sectors, similar approaches may yield useful insights when aiming to make our global systems more resilient to a wide variety of risks. The point of scenario planning is not to pick the likeliest scenario and plan for it but focusing on strategies that work across a variety of future scenarios. Our priority should be on various escalation pathways to irreversible catastrophic risks and avoiding worst case scenarios, such as massive escalation to violence. We need to be prepared to set priorities, such as keeping critical systems, especially electricity, water treatment, and transportation functioning. Role-playing is another useful skill because it allows one to familiarize oneself with roles of adversarial actors, their motives, strategies, resources and what may move them. One useful strategy for training skilled leaders are games which allow players to take on different negotiation roles in critical global cooperation situations, such as AI coordination scenarios, as explained in [Exploring AI Futures Through Role Play](#). Some of those games are now moving online, increasing access to those skills.
- **Rational political advocacy:** Increasing cross-country collaboration across citizen groups is one avenue to create more collaborative links across countries. International academic collaborations could foster political collaboration down the line by anticipating the issues that will become relevant soon and producing the information that will be needed then. In addition, we currently see an increased awareness and appreciation for science and technology and could focus on improving the reach of actors that have proved themselves competent and caring. Scientists may be more inclined to cooperate than politicians,


similar to when scientists in the Soviet Union and West during the Cold War had relatively good collaborative bonds in comparison to politicians, leading to efforts like the [Pugwash Conferences](#). Analogues that are currently called for now in technology governance include independent oversight boards that increase public trust in technologies, such as discussed in the context of [Artificial Intelligence](#), and in the example of a [Tech Wise Council](#) that seeks to create a Pugwash for the Digital Age.

- **Cooperating on one risk to help another:** While exacerbating US-China tensions could exacerbate risks of unsafe AI development, conversely cooperation on AI may also be attractive for reducing other risks, as described in [AGI Strategy: Toward Cooperation](#). China and the US successfully coordinated against the common threat of climate change when they originally participated in crafting the Paris Climate Agreement in 2015, even though the US left the Agreement in 2017. If the US rejoined the Paris Agreement and rekindled this critical cooperation, this could open cooperation spaces against other global threats. For instance, promising avenues for increasing cooperation amongst the US and China on climate could involve using AI to create monitoring and recommendation systems for reducing carbon dioxide emissions. Ultimately, the goal for decision-making would be to move more toward [Paretotopian goal-alignment](#). The principle relies on aligning actors on cooperative futures that would be preferred by everyone early so that outcomes become possible that would not work in the middle of a conflict.
- **Peace from cooperation:** The fact that this crisis could be much worse means we should be ready for potential scenarios that may be much worse. [ALLFED](#) is creating a [Food Systems Handbook](#) together with the team behind the [Coronavirus Tech Handbook](#) to unite global expertise to find solutions to the unravelling food crisis. One opportunity in this focus is that by showing that cooperation allows us to support everyone in a crisis, we could make the crisis less likely in the first place by making cooperation.
- **Shifting risks into the Overton Window:** Global risk management of the scale necessary is not often part of the discussion for AI, climate, bio, and other risks in the White House but the current shift of attention to once in a decade events could be used to entice decision makers to take them more seriously. It is unclear how long-lived the recent uptake in interest for global catastrophes will be on a national level and we must avoid issues becoming politicized. COVID-19 response as X-risk intervention points to how COVID-19 may help us train ourselves, forge alliances, establish credibility, grow the global risk movement, and create existential risk infrastructure. A detailed list of Existential Risk opportunities in COVID-19 is highlighted in this spotlight:

Existential Risk Opportunities from COVID-19

- **Jaan Tallinn**, Future of Life Institute
- We discuss opportunities that the COVID-19 crisis might yield for addressing Global Catastrophic and Existential Risks. Those may include increasing one's advocacy for countries to establish specific initiatives addressing those risks, developing better technical capabilities for global coordination and decision making like prediction markets, and developing globally cooperative narratives, such as prominent prizes, creative media etc.



 See the video

2. A comprehensive analysis of constraints and opportunities

- While the heuristics for resilience above may sound reasonable enough, their long-term success will depend on how well they integrate with the existing institutional ecosystem. Even if on the outside our actions are not directly impacted by historical events, we are operating with an understanding of human nature that is historically contingent and supported by beliefs in narratives that may or may not be grounded in historical facts. This gives history an important role when analyzing the constraints and opportunities facing our future. For instance, on the topic of nuclear weapons, there is a high emotional engagement, with fear of disaster, hope for security and awe at their absurd power, that political participants today and yesterday have when considering these weapons and in believing narratives about them. A Fortune poll from November 1945 on US attitudes to the Atomic bomb, found that 53% of respondents, knowing about the devastating consequences for Japan, stated that “we should have used the two bombs on cities just as we did”, and 22.7% stated that “we should have quickly used many more of them before Japan had a chance to surrender”. Those results are worrying in the context of future first strike dilemmas and show that to affect change, we need to understand the constraints and opportunities of the systems at stake. The spotlight below highlights historical vignettes of how scientists influenced history to contextualize some of the ambitious goals made earlier in point 1:

How Scientists have Succeeded and failed to change American History

■ David Grosz, President of OptiOpia



- **Learning about global stability from the Atomic bomb:** After WW2, Manhattan Project scientists, the internationalist wise elders Einstein and Bohr, and New Deal allies, launched an effort to educate the public about the new atomic bomb, the promise of atomic energy and to argue for urgent action to put atomic weapons work and fissile materials under international control. While new science-based and scientist-developed technologies had been essential parts of the Allied victory, and it was obvious to all that they possessed powerful knowledge and skills, they encountered fierce opposition to their policy recommendations and soon were intensely scrutinized for their loyalty and trustworthiness. When J. Robert Oppenheimer, the ‘father of the atomic bomb’ and the most politically visible physicist was humiliated and stripped of his security clearance in a 1954 show trial, it was made clear that atomic scientists were subordinate to the state, not Grand Enlighteners. It is questionable whether they understood the game they were playing by defining their most important role as *educators*.
- **Learning about public health from the Fluoride Wars:** A strong case can be made that from 1950 to 1964 no municipal political issue was more engaging and important to Americans than the question of whether to add 1 ppm of fluoride to the water supply to help kids’ dental health against caries infections. When a gung-ho benevolent statist American public health campaign in the 1950s failed to win over wary, rational *and* irrational voters, quality science became a casualty. Valuable lessons can be learned from fluoride wars and “truth decay” in the US for public health measures against other infectious diseases. Pro-fluoridation public

health experts did not win by debating opponents in public and scientists failed to use good science when the stakes were high and nuance was too inconvenient. Examples in the [Flouride Wars](#) include dependence on toxicology studies that were done to minimize legal liability for fluoride polluters and with prior restraint censorship; interlocking of membership of supposedly independent professional associations; outrageous pressure tactics of pro-fluoridationists against an academic dissident; condescending and unhelpful characterization by sociologists of the 'irrational' 'alienated' anti-fluoridationists (paid for by sugar industry interests hoping to address the problem that candy rots teeth by putting with fluoride in the water supply); anti-fluoridationists endlessly recycling broken and factually incorrect accusations; anti-fluoridationists fearing mass poisoning 'naturally' attracted many more simply paranoid people than the side trying sincerely to improve children's dental health, obscuring rational skepticism and opposition. Cultural narratives are strong and may continue today because of how our culture creates a narrative. In particular, elite opinion today may still be influenced by cultural artefacts such as the acclaimed Stanley Kubrick film [Dr. Strangelove](#), in which the paranoid anti-fluoridationist General Jack D. Ripper arranges to launch a first strike against the Soviet Union and causes the extinction of humanity.

Conclusion

While current global trajectories point toward increased fragility, there are real opportunities to increase global resilience by better understanding the underlying causes of vulnerabilities, creating global defense mechanisms that hold across a variety of future risks, and increasing a global focus on cooperation as necessary condition for a flourishing long-term future. Foresight about the long-term viability of success must be informed by a historical analysis of opportunities and possibilities if we want our efforts to be sustainable.



Planetary Ecosystem

Benefiting Our Planet:

- **Tom Chi**, former Google X
- **Will Marshall**, Planet Labs
- **Creon Levit**, Planet Labs
- **David Brown**, Pivot Bio
- **Tia Kansara**, Replenish Earth



Agriculture & Energy Innovation from COVID-19 Deep Dive

- **Creon Levit**, Planet Labs
- **David Brown**, Pivot Bio
- **Saul Griffith**, Otherlab



Challenge: The Scale of the Problem

Understanding the scale of the planetary problem and the systemic impact of our actions in a way that does not simplify things beyond reality was always hard, with sustainability still regarded as a nice afterthought in CSR departments. We were making progress pre COVID-19 and while the lockdown benefitted carbon emissions short-term, the complexity of changes required post COVID-19 may prevent us from dedicating the deserved attention to rapidly deteriorating climate change:

- **Endgame carbonization worse than expected:** IPCC models have not factored in the already committed emissions in our existing infrastructure to hit their targets and assume negative emissions later this century which is thermodynamically very difficult and thus extremely unlikely to happen. The two degree warming is a line in the sand and we have not ruled out that even less than two degree warming could cause runaway greenhouse effects. In addition, if we burn all existing fossils in Saudi Arabia and other places, we are going to hit two degrees whether or not we do an optimal carbon program as well, which complicates the picture as this requires international cooperation. Thus, unless we assume a magical decarbonization later this century, we are now at the last point in history with the chance to remain under two degrees warming.
- **Improving human, animal, planetary health:** Climate is just one of the contributing factors that leads to the loss of 80% of wild animals, 75% of fish in lakes and rivers, and 70% of insects in the last 15 years. If this happened within a month we may be able to understand the impact but the time scales make the loss harder to conceptualize. Helping humanity become net-positive to nature requires a systemic approach, including reducing emissions, changing animal agriculture, and restoring soils.
- **Wartime efforts necessary for green energy:** If we allow every machine that already exists today to live out its natural life burning fossil fuels that will consume emissions taking us close to two degrees. This means that at future purchasing decisions, we need to choose the machine that does not produce net carbon. If we stemmed a wartime mobilization similar to what the US did in World War II, focused not on ships, tanks and airplanes but on wind turbines, solar cells, heat pumps, and electric vehicles, we could scale up the required manufacturing and may be able to hit the required target and infrastructure changeover to stay under two degrees. If we could take the price of solar in Australia, the heat pump policy from Germany and California's electric vehicle model for the US economy, we could save the average American household money very soon. The technological reality is ready, the benefits are clear but the problem is socio-political.
- **Regenerative agriculture as low-hanging fruit:** Becoming net positive to nature involves systemic changes to agriculture and soil. Regenerative agriculture has benefits for climate, human health, biosphere, economy, and the resiliency of our food system, whose fragility we are aware of since COVID-19. Pivoting to regenerative agriculture on a global scale is not extremely expensive in terms of capital, shifts in human nature, or technological breakthroughs but requires a big number of small technological and practical changes. In some areas there is little iteration to how people used to perform agriculture 100 years ago, for instance soil samples are still often being taken in a complicated manual process.

Opportunity: Green Energy & Regenerative Agriculture

COVID-19 may provide a few unique opportunities for meeting the challenge in green energy and regenerative agriculture discussed above:

- **Establishing common conceptual grounds:** There will be stimulus bills for the economy of almost every country that are bigger than most green new deal proposals and we could make those climate bills. Climate and environment solutions require coordination which is made harder by increasing nationalism, partisan polarization, and post-truth. On the other hand, due to COVID-19, the public may be able to conceptualize the systemic nature of planetary-scale problems better.

For instance, seeing the fragility of the food supply system could spur a change to a resilient, distributed infrastructure, and the necessity of social distancing and hygiene increases the urgency around informal settlements. Establishing clear evidence, such as satellite data may help provide a conceptual common ground for communication.

- **Systemic fragility needs systematic rebuild:** Systemic fragility also comes with the opportunities to make different decisions. For instance, because factory farming is environmentally and ethically gruesome, we usually outsource it to far distances but if we want to make supply chains less fragile via increased locality, they must become less horrific to make them acceptable near us. The fear of zoonotic pandemics are a good reason to replace factory farms and slaughterhouses with initiatives involving cultured meat and other animal-friendly products. This could lead to solutions that are better for animal welfare, environment, soil, human health, and better for preventing future pandemics that correlate with places that have sick animals and humans packed in tight environments.
- **Winning the peace:** Apart from immediate political wins, we need to implement a long-term green new deal, for which there should be a lot of support in theory. Different communities from left to right are stepping up to this crisis but in our solutions, we must anticipate how many of the entrenched sectors of the world are responding to not miss opportunities. Some factors that are driving conservatism to change are highly cultural, for instance food, and they require time and finesse to avoid conflict. Other factors are highly complex, for instance farms, which are complicated even if they are monocrop. We need an approach of compassion for the communities which depend on the entrenched systems and make them part of the new deal. To unite traditional divisions we need to make dealing with climate less a luxury political decision but more a personal necessity. The average American spends around 15% of their income on their kids so if climate change credibly became a threat for themselves and their children, they would spend.
- **Giving fossil a skin in the game for green energy:** Because of lending on expected return of fossil fuels, we have financed and put onto the world stock markets and into everyone's portfolios, enough carbon reserves to take us well past two degrees up to four or five degrees. When applying \$7 a barrel of oil to all of the proven reserves, the total value is around \$100 trillion which people now expect to benefit from. Difficult questions like the issue of proven fossil reserves need to be faced head front so that alliances between sectors can be cooperative long-term. To avoid political opposition, a radical proposal suggests to use the stimulus packages from COVID-19 to buy the reserves out at margin of the profit and enable fossil fuel executives to switch from their sub-optimal capital-intensive and high-risk industry by investing their profits in the new energy economy. This would give them a head start in the new economy but they are also experts in building energy infrastructure. In addition, any decarbonization efforts will create more jobs: Solar and wind could employ 10 to 15 million people, while the current fossil fuel industry employs around 2 million people. The job creation of a wartime effort to hit those targets would include 40 to 60 million jobs in the US economy, which goes well in hand with the jobs that are endangered due to COVID-19.
- **Giving old agriculture a skin in the game for new agriculture:** The food sector has a certain amount of inertia, regulatory capture, price taking and externalized costs that we need to transition out of. Potentially, the above proposal of footing the bill for the energy transition may work for agriculture by paying to transform the food system into a more regenerative resilient system. Agriculture may actually be better suited for this systemic political coalition that allows farmers to be part of the solution because there is already cooperation between left and right and farmers

have more influence with congressmen and senators. Farmers could become the best allies for preventing climate destabilization because they care a lot about their land but they get squeezed in the commodity market. The regulatory capture needs to be unwinded so that the subsidies and insurance programs that the federal government offers, which currently incentivize industrial mono-crops to a much greater extent, can incentivize polyculture and regenerative agriculture.

What you and I can do:

- **Private sector opportunities:** Renewables are set to [eclipse coal in the US for the first time](#) and as some investors in the green energy sector get spooked, deals get less expensive which is good for active investors. Some market opportunities that rise in interest due to COVID-19 may also have beneficial long-term effects, for instance, products that reduce uncertainty for farmers and that could allow more resilient longer-term planning. Another example is the uptake in interest in satellite data because remote sensing becomes interesting to people when they cannot send personnel to ecologically sensitive sites, or to test supply chain infrastructure, which may long-term reduce the need to travel.
- **Building on COVID-19 behavioral changes:** The data of how public action has already changed the world due to COVID-19 by producing cleaner rivers and less polluted cities should inspire optimism in people that their behavior has an impact. The changes necessary for avoiding a planetary catastrophe may be less than we have just succeeded in for COVID-19 and there is an opportunity to visualize successes for the planet from behavioral changes with a call for easily implementable future changes and create a movement around this. For this, learning from successful large-scale behavior changes around smoking norms could provide useful insights. Potential changes to advocate for include less travel and more plant-rich diets or meat-substitute diets to reduce mass meat consumption.
- **Transferring learnings from the oil sector to energy and food:** The COVID-19 crisis has brought global oil giants to their knees in thirty days, showing that giant industries can be turned over very quickly. We saved gigatons out of the atmosphere due to how we are transporting ourselves and many of the changes, such as people working from home may stick. Rather than restricting the public to voting as the only lever, transportation shows that consumer choices matter also for food and energy sectors. For instance, by avoiding plastic which is what oil giants are pivoting into, they would have little space to grow into. Showing that oil futures can turn negative in a month of behavior change is empowering because consumer-based businesses are capital-intensive and always fragile.
- **Coordination on value-aligned consumption:** Energy and agriculture have the same problem that the people at the end of supply chain care a lot about having the product but people at the beginning of the supply chain, whether those are farmers or power companies, are price takers rather than price makers. To get systemic change, there needs to be a systematic guiding of funds from those caring about sustainability at the end of the supply chain to those who drive the changes. If sustainability farmers need to change their practices for the same pay, excitement will be low, but if consumers make changes that shift demand, this will move farmers into sustainable directions. Specific consumer changes include buying only goods one is actively excited about and redirecting the money to buy good food to shift the available capital toward those businesses that do agriculture the way that you want. The impact of a change around demand could be multiplied if coordinated by a large number of people, for instance coordinated radically reduced meat demand may affect expected supply enough in a short period to cause systemic changes. For renewables,

even if you cannot install solar panels on your roof you can participate through networks of access to renewable energy and convert the bulk of your household's energy into renewables in a few minutes. If enough consumers do this, it absolutely speeds up renewables.

Conclusion

COVID-19 may be a unique opportunity for the climate community to hasten developments toward green energy and regenerative agriculture if we can manage to win the peace kickstart enough systemic and infrastructural changes now to grow sustainably for the long-run.



Diverse Worlds

Unlocking A Rich Virtual Life

- **Ingrid La Fleur**, The Afrofuture Strategies Institute
- **Erica Frank**, NextGenU
- **Michael Morgenstern**, This is Definitely Real
- **Clarissa Rios Rojas**, Global Young Academy



Challenge: Offline and Online Access

As much of our life, from work, education and social life is moving online, pre-existing problems around access and diversity in our physical spaces risk being transported into our new virtual worlds:

- **Accessibility and diversity online and offline:** The crisis risks deepening disparities between those who have a flexible living and working situation and may have more space now to devote to personal exploration or future planning and those who find themselves dependent on types of work that are difficult to adapt to the pandemic constraints, with african american communities disproportionately affected by COVID-19. To avoid locking a majority out of the discourse about new tomorrows, implementing mechanisms that make the futures we create accessible to everyone must be a priority from the start. This requires not only social changes but must include the digital infrastructure that enables participation.
- **Internet speed as gateway to life:** In the context of COVID-19, internet speed becomes a gateway to the new life because many online tools are not accessible for a big fraction of the population.

For instance, currently [40% of Detroiters are without internet](#), not only high speed internet, but any internet at all, 60% for children. In Detroit, the local response includes mesh networks and the [Equitable Internet Initiative](#), in Peru the local response includes national radio or TV stations streaming education substitutes for in-school classes that can reach remote villages. With COVID-19 accelerating the digital nervous system of the 21 century; we are now paying the price for allowing monopolistic carriers to decide where our fiber goes but we can learn from Finland, which was ridiculed only 15 years ago when it declared broadband to be a human right.

- **Including those hit hardest by the virtual shift:** Many fractions outside the mainstream economy that traditionally rely on in person face to face interactions are the hardest hit after COVID-19. Those include restaurants, hairdressers, and artists who often already make their living outside of the traditional economy. A fund that materialized specifically to aid artists in the Bay Area is highlighted in this spotlight:

Community Safety Net Fund of COVID-19

- **Jonathan Cain**, Community Safety Net Fund
- Jonathan introduces the Community Safety Net Fund that was initiated by Bay Area citizens to support local artists and those outside of the standard economy.



Opportunity: Exploring Rich Futures

There are currently a few opportunities for using online experiences to increase access to our futures, that could in addition create a much richer online ecosystem:

- **A virtual safety net:** In [Why The Net Matters](#), now updated to the pandemic-focused edition of [The Safety Net](#), David Eagleman reviews global communication on timescale of 10,000 years, urging efforts to set up telepresence for businesses, medicine and more. By creating virtual backups of crucial services, we can help create a virtual safety net that supports the physical layer and make many of those services freely accessible online.
- **Democratization of art:** The fact that most art is moving online, either virtual or via gallery live shows breaks open the physical restrictions of artists that are limited by their zip codes and democratizes who gets to make statements about art.
- **Diversity and cultural exploration via VR:** VR could be an opportunity to imagine diverse futures. VR exhibits are already exciting to different audiences including to seniors who are amongst the most isolated. VR and AR experiences are rapidly improving via potential physical enhancers such as [Neosensory](#), a vest that uses patterns of vibrations on the skin to augment information flow, all the way to potential future fully haptic sets. Those tools could be developed into tools that increase cultural exchange and exploration of other realities with cultural windows such as afrofuturism as particularly potent for rich VR experiences. COVID-19 lockdowns led to a large increase in demand for VR devices and significantly increases funding and innovation in this area with the hope to make them as affordable as cell phones.

- **Expanding our online horizon:** The switch to virtual should open up opportunities for much richer, accessible cross-cultural interactions. New online meeting places can become increasingly richer places to interact in, from [SecondLife](#), to [Siempre's online town](#) to [virtual gallery tours](#). One could imagine creating digital maps showcasing free online experiences offered by educational and cultural organizations that are popping up in different countries around the world, including personalized recommendations by local “tour guides”. Many of the emerging virtual worlds allow users to explore other cultures and connect and learn world-wide in increasingly rewarding ways.
- **Online mentorship to foster global talent:** [Global Young Academy](#) was initiated by a founder coming from Peru, who received a PhD scholarship in Australia, and upon reflecting on this opportunity set up a mentorship network for established business execs to mentor Latin American students online. With online lowering the barrier to meet, why not consider mentoring others on an informal basis.
- **Accessible education:** As traditional universities struggle for legitimacy as they attempt to provide quality education online and fear a loss of financial stability as they lose foreign students, this is a great opportunity for universities that provide free online, downloadable accredited education. [MeetHere.org](#) offers accessible online conferences and [NextGenU.org](#) offers free online courses, including new courses on pandemics. See the spotlight below for a deep dive into existing tools that can help make online education and work more accessible and fun.

Anticipating Changes in Digital Tech from Covid-19 & COVID-19 and Opportunities for Accessible Digital Education

- **Brad Templeton**, Foresight Institute Board
- Brad gives an outline of the digital changes we can expect from COVID-19.
- **Erica Frank**, NextGenU.org
- Erica gives an outline of NextGenU.org, the world's first portal to free, accredited higher education, with registrants in every country but South Sudan, and offering the world's first free degree (a Master's degree in Public Health), as well as a MedSchoolInABox that includes Graduate Medical Education.



Conclusion:

While the current virtual switch risks entrenching existing disparities, we could seize current opportunities for the new online to enrich our lives by functioning as a virtual safety net, democratizing art, diversifying our cultural experiences, expanding our horizons, facilitating online mentorship and providing accessible education and a richer remote work experiences.

Culture & Arts

Shared Art & Narratives

- **Jane Metcalfe**, Neo.Life
- **Lydia Laurenson**, New Modality Magazine
- **Jake Harper**, Artist
- **De Kai**, HKUST (Hong Kong) & ICSI (Berkeley)



Motivating Rituals and Prizes

- **Joon Yun**, Longevity Prize
- **Creon Levit**, Planet Labs
- **Francesca Cavallo**, Undercat Media



Challenge: Bias and Polarization

- **Reinvigorating rich virtual communities:** Virtual communities made us excited about the internet in the first place because they allowed people to escape local default communities for communities of choice. Filter bubbles turned negative as they became algorithm-enforced and provided little opportunity to be challenged by other information. Problems with current tools

include the simplicity in what the metrics can measure and optimize for. Our Facebook AI, Amazon AI, Google AI and Twitter AI versions already outnumber us and amplify highly stylized versions of ourselves into society to be fed back into this loop in non-linear ways. At the same time, those tools could be used to create the discourse-enhancing architectures that we need to navigate complex dialogues. This requires incentivizing platforms in novel ways or building alternatives that are interoperable with existing platforms to coordinate users to switch, such as described in recent research on [interoperability](#).

- **Unbiasing our COVID-19 response:** The infodemic is becoming an important factor in how quickly we can address the pandemic. We need a rigorous assessment of how platforms amplify our biases, from overconfidence effect, to ambiguity effect, to pseudo certainty effect, to Dunning Kruger effect, to defensive attribution bias, to future discounting etc. For instance, in the context of COVID-19, shifting the narratives around mask-wearing are critical to saving lives. While in Hong Kong big parts of the population voluntarily wore masks early, in the West this was hindered not only by the WHO suppressing mask-wearing but also by biases against masks. To demonstrate the usefulness of masks, [Masksim](#) is an interactive agent-based model visualization for COVID-19 masking that allows users to experiment with the effect of different masking behaviors. By experiencing how small accidents can affect the spread of infections, users can see the importance of rigorous mask-wearing to stop the spread of the virus.

Opportunity: Unlocking Cooperative Global Cultures

Viruses jumping borders make humans realize our global interconnectedness and that most of our crucial challenges in the future will be cross-jurisdictional in their nature. Art, media, stories, and culture have their own internal value and contribute to much that makes life meaningful. In addition, they can provide great levers to produce beneficial change post COVID-19. In particular, we can use 1) interactive media for cultural translation, 2) art for improving science communication, 3) storytelling to narrate the crisis in positive ways, and 4) cultural practices to celebrate long-termism flourishing:

1. Interactive media furthering cultural translation

- **Interactive art against the infodemic:** Learning across and even within cultures requires more than translation of language but also metaphors, analogies, and narratives. The lack thereof is one factor contributing to the current global information disorder. We can seek frameworks that can communicate content in universally accessible ways. Based on Geoffrey West's notion in [Scale](#) that many of the emergent properties that lead to the complexity of our surrounding can be traced back to simple rules, we can investigate which words cause polarization, and refrain from adjectives that speak to one particular group but polarize another. Because natural language is to a large extent based on metaphor and the choice of metaphor determines how issues are framed, we need to go beyond language. For instance, [Unbias](#) is a project that asks people to help machines translate between biases and metaphors. [Thisisdefinitelyreal](#) is an art project that uses tools from collective storytelling to turn users from consumers of stories into storytellers, uncover how our narratives are shaped and manipulated and allow them to deliberately choose the stories they subscribe to. Another project that seeks to use interactive aspects of art to improve humans ability to

relate to information and each other is highlighted in this spotlight:

Freak the data

- **Jake Harper**, Zoox
- To meet the growing complexity of digital information in the era of AI, how can we freak the data filter to begin thinking and acting according to complex information models? For use cases ranging from news coverage of COVID-19 to deploying algorithms in society with accountability, we don't need surgery or AR, just different straws. The talk is based on [this article](#).



2. Art furthering science communication

- **Contextualizing scientific progress:** In Ossian's [Tales of Fingal](#), the role of the artist in society is described as the "son of other times", with bards singing about the fallen soldiers to keep them alive in memory. The role to imagine other future or pastimes and make them palatable for society is important for enticing the public's current increasing interest in science in positive ways.
- **New media:** Having an affirmative stance toward the future and elevating narratives that highlight best practices is one avenue to make risky outcomes less likely. A variety of new media outlets seek this, such as [Neo.Life](#), which focuses on the biotechnology revolution, with articles such as [After the Madness - Pandemic Silver Linings in Bioscience](#) and [New Modality](#), which brings cultural experiments at the fringes into the mainstream, with articles such as [The Ideology of Transhumanism](#).
- **Viral Art:** Visual art is especially conducive to inspirational and educational interpretations of science, such as the biologist David Goodsell's [The Machinery of Life](#), which showcases colourful artistic drawings of the molecular processes within living organisms, with a recently updated [COVID-19 gallery](#). Another example is [Heather Dewey-Hagborg](#), who sequenced DNA from chewing gums and cigarette butts and visualized phenotypes that could match the genotype, showing how one person's DNA could manifest itself in different phenotypes. She is now working with a molecular discovery company to do a custom antiviral that stimulates the release of the neurotransmitter oxytocin, "treating" loneliness rather than producing it.

3. Storytelling for positive narratives

- **Dr Li and the Crown-shaped virus:** Current stories on the public's eye are [Fever Dream](#) which paints near-term future visions that take the current situation as backdrop, [The Eyes of Darkness](#) about a Wuhan-400 virus, or the [Doomsday Book](#), which weaves the stories of a past and future pandemic together. While many current COVID-19 narratives are negative, writing positive stories can help contextualize the crisis in a positive way, such as [Dr. Li and the Crown-shaped virus](#). The children's book originated in discussions about the origin of the virus that were rooted in xenophobia, fear, and ignorance. Often conspiracy theories are simpler while true theories are complicated, so the intention was to tell this story as simple as possible for kids while also celebrating that there are a lot of things we don't know yet which is part of the beauty of science.
- **Storytelling as coordination device:** Storytelling can be described as an ancient technology for taking complex information, and reducing the number of features in that information to

make it portable. For instance, when describing a sky with a myriad of textures, we don't describe every color but we may describe it as "tempestuous", allowing for a feature extraction that is efficient to communicate. Seeking features of society that can move us forward in positive ways and reducing them to portable stories is a powerful way to coordinate us in those directions.

- **Storytelling for children as investment for the future:** Creating narratives for kids that are inclusive and diverse is a crucial factor in raising a generation of children that are more empathetic and capable of understanding others with different life experiences. There is still a lack of ethnically, genderly and sexually diverse characters in kid's stories. Children stories seeking to change this can be found at [Stories to Dream Big When Your Room is Too Small](#).
- **Video competition on attention inequality:** In response to the race to the bottom of our attention span, the [attention inequality competition](#) introduces the notion of attention inequality to the public by releasing rough video drafts, and giving children the support to produce a better version to reward storytelling that serves the public rather than the storyteller.
- **Essays on inclusive stakeholding:** The premise of this essay collaboration is that skin in the game is maladapted to our modern era because phenomena like fake news are catalyzed by low alignment of interests among strangers. [The first draft of the book](#) invites readers to produce a second iterated draft with no credentials in writing needed and writing support provided.
- **Contest on story telling song-writing:** An example of using music as modality for inspiring change is described in [Interdependent Capitalism](#), as a contest that invites artists to interpret concepts of inclusive stakeholding into songs. The contest leverages the fact that music as modality has a positive feedback loop with people enjoying listening to it repeatedly.

4. Cultural practices around long-termism

- **An annual International Remembrance Day for Dr. Li:** Every year starting in 2021, we propose to honor Dr. Li and the health care workers, first responders, and everyone who sacrificed everything to keep the hospitals and other essential services running during the greatest collective panic of our lifetimes. Join the [Facebook event](#) and help us make this an international celebratory day by sharing the event in your communities. Dr. Li Wenliang died on February 7th 2020 after alerting his medical colleagues in December 2019 via social media to evidence of a newly emerging SARS-like virus outbreak spreading in Wuhan. He was subsequently intimidated by the police and forced to issue a retraction. He then returned to work at his hospital, where he became infected with COVID-19, and more than 17 million people were watching the live-stream for his status updates in intensive care, until he ultimately died of the virus.
- **Toward long-term cultural learning:** Dr. Li as a hero figure not only symbolizes anti xenophobia, and the importance of freedom and science but he was also an ophthalmologist, not a biologist and was stepping out of his established role to warn about the virus. This is an important long-term lesson because it teaches the next generation to go above and beyond our job descriptions when demanded. In the long-run, similarly to how the US celebrates Martin Luther King Day as an acknowledgment of its mistakes to learn from them, the Chinese government may take this day on for its cultural learning. Dr. Li internet searches are still being censored in China but in the case of the US it took years for the celebration

at scale of Martin Luther King, suggesting cultural learning is possible long-term. Other successful examples of celebratory long-termist dates include Galactic Tick Day, Earth Day, or Yuri's Night which was created to celebrate the power of space to bring humanity together, celebrated on the day of the Soviet anniversary of the first few minutes in space and the American anniversary of the first Space Shuttle flight.

Conclusion

Art, interactive media, story telling, and cultural practices all have their own intrinsic importance in society. In addition, they can be useful strategies for advancing beneficial long-term futures. Often, more than one cultural strategy could be useful to engage different stakeholders in contributing to a positive outcome which is great news if you are an activist seeking to advance a cause.



Flourishing

Existential Hope

- **Max Tegmark**, Future of Life Institute
- **Eri Gentry**, Negative
- **Anders Sandberg**, Future of Humanity Institute
- **David Eagleman**, LiveWired
- **David Pearce**, The Hedonistic Imperative



Elevating Human Flourishing:

- **Nell Watson**, COVID-19 Taskforce
- **David Pearce**, The Hedonistic Imperative
- **Yancey Strickler**, Kickstarter
- **Andrés Gómez Emilsson**, Qualia Research Institute
- **Andrew Serazin**, Templeton World Charity Foundation



Challenge: Helping Yourself and Others Cope

Life hacks for lockdown

- **The basics:** This is a good time to focus on the basics, such as optimizing one's diet, keeping sleep discipline, practicing aerobic exercise, relying on traditional innovations like mindfulness and helping others in one's community. For specific tips on basic physical and mental hacks, see this spotlight below:

Physical and Mental Health Tips for COVID-19

- **Nell Watson**, Coronavirus Task Force
- Nell outlines simple yet important tips to keep ourselves and others healthy in body and mind in challenging times



- **Exploring phenomenological richness:** Experiences like Burning Man are a high dose of qualia enrichment. Just like animals in zoos are being treated to environment enrichment to increase their lifespans, we can help ourselves in confined environments, for instance with textures that please tactile senses, a variety of oils to trick our brains into thinking it is traveling the world, all the way to more high-tech opportunities like sub-packs, which vibrate in rhythm with music that simulates concert experiences under lockdown.
- **Introspection:** Reading journals from war-times and other hardships may provide perspective, such as [Man's Search for Meaning](#) by Victor Frankl. In addition, keeping a journal oneself is not only good for collecting real-time evidence during pandemics for future record but could increase one's personal well-being. The skill of transcending negative experiences into hope and optimism is an important strategy now as it creates one's personal eucatastrophe by transforming a net negative experience into a net positive experience. Apart from the more well-known gratitude-practices, one virtue to cultivate now could include forgiveness, which was urged by Martin Luther King as a weapon of social redemption. Other introspective practices involve expanding one's self-interest to an interest in one's future self and others via practices like [Bentoism](#) highlighted in the spotlight below:

Bento: Seeing Beyond One's Immediate Self-interest

- **Yancey Strickler**, Kickstarter
A workshop teaching people a simple practice for developing their active awareness called bentoism. It is a simple framework for seeing beyond their immediate self-interest.



Opportunity: Futures of Existential Hope

How could the current crisis be a eucatastrophe? What beneficial future trajectories are possible now that were not possible before the crisis? To show how we could turn current changes from seemingly negative events into meaningfully positive opportunities, here are a few ambitious goals for awakening the possibilities dormant in current changes. They focus on 1) how the emerging focus on well-being during isolation can be expanded to promote flourishing, 2) how we can hasten the advent of technologies that allow humans to unleash our potential, and 3) how we can shift our collective attention from existential angst to existential hope.

1. Advancing toward a flourishing future

- **Avoid most avoidable forms of suffering species-wide:** The current feeling of trappedness under lockdown could induce more empathy for mass-produced animals, which on some developmental metrics are akin to toddlers but are trapped in a space that prohibits them from meaningful movement. In times of a pandemic it is especially attractive to get rid of factory farming and slaughterhouses to avoid future zoonotic disease and decrease antibiotic resistance by replacing it with factory farms and cultured meat. This would allow us to transcend perhaps the greatest source of avoidable suffering in the world while being cost-effective, because divesting from slaughter into cultured meat and animal products could in addition save the government trillions of dollars.
- **Incentivizing flourishing at scale:** In our aspirations, we could move from mere well-being to flourishing as this better defines the relational aspects of human social connection, physical health, happiness, meaning and purpose which are generated through social interactions. A few anecdotal but encouraging examples that have a humanizing effect include people reaching out to other loved ones in previously unseen ways, celebrities showing themselves in more natural ways because of lack of film crews, comedy shows using organic laughter at evening entertainment programs filmed from home. Many of the experiences that people share like baking their own bread, and embracing a de-escalated stay at home life naturally give rise to a ground up movement for building a society that is more mutually supportive and acknowledges weakness and loneliness openly. Those are small examples but culture is ultimately a product of what we put into the world and everyone can start in their own communities. To incentivize flourishing at a macro scale, we could move to more multidimensional metrics than COVID-19 death rates, markets, and unemployment rates. For instance, the [Human Flourishing Program at Harvard](#) produced metrics of flourishing that are now integrated into insurance systems, such as by Aetna.
- **Enhancing our biological architectures:** Advances in biotechnology are rapidly accelerated by COVID-19 and may allow us to open up beneficial horizons earlier than we thought. Currently people's lives are governed by the fortune of their hedonic setpoint, which is high for some but miserable for others. We may come to realize that gradients of intelligent bliss which sound like an impossible utopian dream are technically possible with advances in genome editing that can slowly improve the quality of life over generations. David Pearce's Foresight talk on Hedonistic Imperative: How Good is Good lays out how in the far future, there may be little limit to the experiences we could create. To take one far out possibility to tickle out imagination, just like twins such as the Hogan sisters already share one thalamic ridge and can to some extent share each other's thoughts and experience each other's senses, we may one day be able to construct reversible thalamic ridges so that we can mind-meld with other human and non-human animals.

2. Enhancing our cognitive architectures to unleash our potential

- **Multiplying factors for solving meta problems for civilization:** In theory, we already have the capacity required to solve the global problems we care about but we are psychologically restrained by the attachment structures that are grounded in activating patterns whose machinery is influenced by outside mechanisms. If technology has big upsides and big downsides and the primary concern is which way we exploit it, we currently tend to exploit the upside in a rational slow manner, but the downside in an aggressive fast manner. [DoomsDay](#)

[Machine](#) tells of this irrationality, for instance when a Democratic Senator tried in vain to get the US to secure funds to help the Russians to secure their loose nukes. A big multiplying factor for achieving positive long-term futures is thus enhancing our ability to act positively in an effective manner, for instance by allowing those creating technological progress and positive change to have a more empathetic understanding of how to integrate their efforts into a larger world system. In addition, it would be useful to debug the mental processes that dispose humans from exploiting technology we don't understand in a neurotic way.

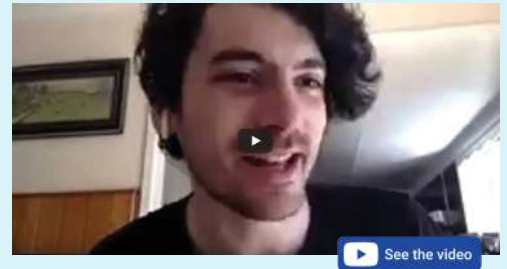
- **Increasing our ability to problem-solve and empathically relate:** Transcranial Magnetic Stimulation is already a popular last resort depression treatment with potentially stronger efficacy than SSRIs and recent research suggests potentially more wide-ranging applications. Allan Snyder's [Centre for the Mind](#) focuses on rapid skill acquisition using magnetic pulse stimulation (TMS), transcranial direct current stimulation (tDCS) and brainwave sensing (EEG) with encouraging results. For instance, in the NYT article [Savant for a Day](#), Allan Snyder uses TMS to modify the author's brain to allow him to learn intuitive cartooning in a few minutes, and retain some ability after the fact. In addition, Allan Snyder and Richard Chi published [Brain Stimulation enables the solution of an inherently difficult problem](#), a study that showed that tDCS can help solve inherently difficult problems, such as the 9-dot problem, which was unsolved by participants without stimulation or sham stimulation but was solvable by 40% of participants who received stimulation. In another instance, in [Switched On](#), autistic author John Elder Robinson documents his experience with TMS, finding that the treatment had dramatically increased his empathic abilities with positive and negative side effects, concluding: *"Imagine spending the first forty years of your life in darkness, blind to the emotions and social signals of other people. Then imagine that someone suddenly switches the lights on."*
- **Working toward human potential:** The Israeli company [BrainsWay](#) recently got FDA-approval, and Japan has a reasonably functional medical system that is working with TMS already. Those anecdotal success stories suggest that TMS and related therapies could produce large effect sizes accidentally or intentionally with FDA-approved devices compared to regular drugs. The fact that a small amount of funding for a small number of labs across the world was able to produce exciting results makes TMS promising, in addition to its non-scandalous history, low toxicity, relative safety and higher precision of control in comparison to the clinical use of psychedelics and other more exotic approaches. While there are potential adverse risks to TMS research, discovering beneficial use cases of TMS beyond the last resort depression therapeutic uses may be a low-hanging fruit in promising beneficial technology-development. TMS and tDCS are lower-hanging in comparison to more ambitious projects on the path to Brain Machine Interfaces, such as [OpenWater](#) or [Neuralink](#).

3. Toward a culture of Existential Hope

- **Rethinking cultural priorities:** Similar to how the Renaissance is said to have originated in the Plague, the roaring 20s emerged after the Spanish Influenza, and World War II was followed by demands for sponsored mortgages and better health care, similar changes may be possible post pandemic. This spotlight shows which potential cultural shifts may become possible in the current crisis:

“The Renaissance Came From the Plague”

- **Tyler Alterman**, Human Advancement Project
- “The Renaissance Came From the Plague”: Modern-day historians speculate that the Black Death caused a shift in worldview that led to the renaissance. 100 years from now, the historians of the future note that a new renaissance emerged from this new plague. How did the renaissance happen? What was the renaissance like to be a part of? Are there similar horizons opening now?



- **Treating a hopeful civilization as public health matter:** Given the risk of disappointment when vaccine trials don't work and quarantines don't lift, we need to find avenues to accommodate for long-term hope, which may be hard in a culture of expectation of instant satisfaction. Mass panics happen when hope is lost, and we need to counter this threat up front by igniting a feeling of connectedness that wards off despair. As highlighted in this spotlight below, pointing to potential upsides may allow us to determine different paths ahead than the reactive stands that tend to make up our default narratives:

Potential Upsides of COVID-19

- **Creon Levit**, Director of R&D, Planet Labs



- **Zooming out and encouraging the long-view:** If COVID-19 has shown one thing then it is that the bigger picture matters for each of us. In times when the immediate future is bleak, zooming out in space and time can help provide perspective. As Max Tegmark reviews in [Life 3.0](#), we must not lose sight of the bigger picture that, for all we know, the universe we know has been dead for the past 13.8 billion years, is now alive and breathing with positive experiences, and that we may be the first civilization that has the potential in making a difference. We may spark a universe teeming with life and incredible experiences or wipe it all out. The spotlight below highlights one contextualization of our role within this grand future:

Grand Futures: Thinking Truly Long Term

- **Anders Sandberg**, Future of Humanity Institute, Foresight Senior Fellow
- How can we think well about the far future, and use this to guide near-term projects? In this video and the [spotlight](#), Anders Sandberg shares what got him excited about futures of Existential Hope, as loosely paraphrased here: *“As a seven year old kid, I was playing hide and seek with a friend, who hid in the library of a house, so I was peeking behind the curtain and looked at the books, and thought;*



"I want to know everything in those books. I want to understand this room. Actually, I want to understand the entire world." And the next thought was, "I better live for a very long time". A few years later, at the Stockholm municipal library, I was collecting books with interesting equations and had been looking through a thick book that had some awesome equations about the laws of astrophysics, which I didn't understand at all. I opened the last pages to read the last word. It said, "at this point, intelligent life will have acquired all the information that's logically possible to know not just in this universe, but in all universes, and that is the end." I had found the Entropic Cosmological Principle which is a fantastic book. As a young nerd when I realized, "whoa, I really want to get to this point" I started thinking backwards: "Okay, so to get there, I need self replicating space probes for that we probably need a lot of AI and we need space settlers. We need strong materials and better computers." One of the end goals was that I probably should ace exams in schools, and read up way more on the physics shelves to understand the rest of it. That's how I ended up here."

Conclusion

Especially in the current pandemic, positive long-term futures can seem far away. It is hope that ties far-out futures to the current realities. Working backwards from perhaps impossible visions to see practical goals emerge is uniquely useful now, when seeking eucatastrophes from catastrophes such as pandemics.



In Lieu of a Conclusion

Half-time into 2020: Bye Bye Neverland

The strange widening abyss between what we expected 2020 to be, what it turned out to be and where it could be headed

Think about where you were at New Year 2020. What were your hopes and dreams for this year? Your 2020 goals? How many of them are still relevant? When we think back to the beginning of 2020, it may seem like fairy land, a time of puppy protection, a beautiful puberty, dreamtime.

It is strange that we are now in unprecedented times but it also feels strange that it doesn't actually feel that strange anymore; in fact sometimes it is harder to remember what life was actually like before. Meanwhile, the life of some of our European friends is going back to normal, creating drifts between the felt realities in different cultures that feel like living on different planets. Collectively, we are all going through this crisis but it has hit many countries, communities, and individual lives so differently.

Things that were impossibly abstract philosophical indulgences, either in the future or at least other far away countries, have arrived at our doorsteps, inside our home confinements. The world is compressed; human lives can be saved at a cost comparable with that in otherwise developing countries, and the future is here with changes unfolding so fast that we seem in a time warp, leaping years within a week. With every day that passes the corners are knocked off the certainties of this world and the next one too.

Looking ahead, the abyss between the possible futures unfolding in front of us is getting bigger. As we get ready to jump, forces are pulling in different directions, upwards and downwards, left right, somewhere new. Seeing the opportunities for better futures bubbling up that are juxtaposed on the default trajectories can be confusing as everything is unhinged, everything becomes possible, and suddenly it really matters what we do.

This can make for some major cognitive dissonance. It takes time to let it sink in that too much has happened in the past few months for us to go back to normal - even if we wanted to. That where we are headed could be grim by default but that it could be much better. Our ten weeks of daily online salons clearly show that there is no shortage of pathways toward beautiful futures from here but it can be estranging to immerse oneself in opportunities for change, and then snap back into the deteriorating default. Instead of a summary of the report, here are a few hyper stylized juxtapositions between what is within reach and the deteriorating default

to entice us to hold both states in our head, and instead of getting confused by them seize the upside risk and not give up the hope that more is possible if we reach for it.

Health & Emergency

- **Within Reach:** The link between aging and COVID-19 couldn't be clearer, with the biggest predictor of death from the pandemic being a person's age. This should be a pretty straightforward call to invest in health extension research, rejuvenation and prevention beyond the current biotech and vaccine development hype cycles. In addition, just as the financial crisis triggered everyone to get up to speed on finances, the same holds for health statistics now; what better for public health than the currently awakening awareness around the importance of health, diet, exercise. From extensive testing and people leveling up on supplements and home medication, it is not a huge leap of faith until citizen-science biohacking could take a hold in the mainstream. The biotech sector, which was already taking off rapidly in the past few years may get the final push so that biotechnologies that were placed around 2100, from advanced genetic engineering to nanobots could make an early arrival in the present.
- **Deteriorating Default:** Meanwhile, governments are still (???) squandering at efforts to get basic PPE from A to B, hospitals were only stickily exiting a state of crisis before the recent spike in cases, and triage needs have traumatized doctors for life. While the biotech sector is booming, the rest of the economy is vacating, with a job loss projected to eclipse that of the 2008 financial crisis, and recovery times dreaded up to a generation, setting back innovation timelines, dreams, and real human living standards.

A Rich Cultural Life

- **Within Reach:** We get a glimpse of the virtual promises from sector to sector, from telemedicine to globally accessible online education as expensive universities get stripped from the monopoly on education, and struggle to see into a future that isn't financed by foreign student fees. With software as venue for life, work, and education, communities rebooted into Second Life, and the collective VR awakening, dreams of shared Brain Machine interfaces seem virtually within our reach.
- **Deteriorating Default:** Meanwhile, unless Starlink comes to the rescue in time, big parts of the population, from Peru to Detroit lack high-speed connection and will be locked out of this online utopia. With whole countries on "home confinement", kids missing the summers of their lives, and domestic violence peaking, social media hyperstimuli that we can usually counterbalance by real human connection, get the better end of us. While racism, police brutality, and criminal injustice is causing protests across the world, we may expect to kiss goodbye to lavish international travels, or even mundane crowd gatherings, perhaps for the better part of the next few years, unless we can afford pandemic insurance.

Stability & Violence

- **Within Reach:** On some days, post apocalypse can feel like utopia as you start the day with a virtual meditation, before dusting off your bread-baking skills and, if you hear the call, dabble in sewing masks, reach out to your loved ones, strangers, or join the singing and clapping for care workers in acts of unprecedented solidarity. COVID-19 could be the ultimate coordination device to create a shared reality that unites humans as humans.
- **Deteriorating Default:** At the same time, an increasingly dystopian post-apocalyptic world is

normalizing outside of our doors. Gun shops are emptied while police cars reliably circle in and out of one's eye sight every few minutes, signaling presence and overwhelm. With every day into this new normal it will be harder and harder to remember how civilization used to feel like, which norms we mutually upheld, which social contract we collectively bought into and why.

Human Rights & Civil Liberties

- **Within Reach:** We see what it looks like when heroes step up, against all incentives, by whistleblowing the emerging pandemic, by rescuing lives in legal grey areas, by rallying their communities into self-organizing efforts to donate and direct PPE, to provide emergency relief for those unhoused, or deliveries to the most vulnerable. Those communities are punching way above their weight and most heroes after this crisis won't be found in governments or individuals but in resilient communities who effectively cooperated. Tools that could help decentralized communities function as effective actuators in the future are so close, with bitcoin, immutable peer to peer markets, exchanges and coordination tools back on the mainstream's radar as privacy-preserving approaches to contact tracing come into view. If only they had been a few years further ahead, perhaps we could already leap into this parallel operating system, but we can still double-down on the urgency.
- **Deteriorating Default:** Alternatives for cooperation become especially desirable as, without effective action, we see the surveillance state rolling in in shining armor, swiftly expanding into every nook and cranny it can muster, and using our limited attention for increasingly atrocious human right violations by governments, such as China's most recent predation on Hong Kongers. Do we have the headspace to care right now? We should, not only because we're next. Will we have fair elections? If we have them, are we ready for online systems? If not, who will be able to vote, who won't? How much stability can we expect post virtual elections given the Cambridge Analytica scandal that overshadowed the last elections? With the police overwhelmed, is there a better time for cyber attacks, misinformation, or interference by other nations? One may bet a bottle of bubbly against fair 2020 elections in the hope to share it on the night of the election.

Sense-Making

- **Within Reach:** We see which experts and systems are good at forecasting with incredible work coming from Metaculus and other platforms. If we could allocate capital and power accordingly, a meritocracy may be ours, and futarchy-style governance could usher in previously unheard of dreams of collective prosperity. All this shift requires is wanting to find out what works and what doesn't and holding those who fail us accountable in a transparent way
- **Deteriorating Default:** Instead, Twitter and Facebook, team up with the CDC and WHO, who have been discrediting themselves ever since their masking misinformation, to reserve the right to delete tweets and Facebook posts, threatening those who called the pandemic early, and leading more people to lose trust in institutions and shared information realities and instead further spiral down conspiratorial paths.

Unusual Opportunities for Change

- **Within Reach:** Within the US national political economy many many fires are burning, but sometimes opportunities for change are uncovered that would have been impossible a few months earlier from desiloing of the NIH, to loosening red tape around the FDA, to US prisons, the

portal pathways for viruses, as pathway for criminal justice reform.

- Deteriorating Default: Thus far, our institutions seem to respond with theatre, the BOP for instance reversed their decisions to release high risk inmates after weeks of solitary confinement quarantine, while their families were already traveling the country to pick them up. Instead of dabbling in minimum efforts, kleptocratic elements may succeed at riding out the crises if they can rely on short attention spans.

Resilience

- Within Reach: Using COVID-19 as minimum viable catastrophe, we may put structures in place so that instead of preparing for the next pandemic only we become more antifragile against a variety of risks. A number of organizations and cooperative efforts were born from difficult times and both nations as well as private individuals are majorly ramping up their international aid for other countries. Voluntary communities, coordinated by cryptocommerce technologies and supported by decentralized economic and financial systems are blossoming and would allow our global system to fall back onto multiple redundancy layers.
- Deteriorating Default: It is not impossible that we will squander the opportunity, and become more vulnerable to global conflict. While China is helping on an international stage with increasing strings attached, it risks repurposing the freedom-mandate of digital currencies as surveillance apparatus. On the long end we may see new global alliances emerging, with those countries that got it together creating a new economic order, restraining trade and labor movement amongst themselves, locking out those who pose significant risk, such as the US, which is already not uninvited from many European nations. As headquarters relocate to those new global centers to guarantee employee safety, we may see a shift in power on an international scale, which has rarely been peaceful on an international level in the past.

Our Planet

- Within Reach: As we see on satellite imagery, and in real life, how our cities look without pollution, as we come to grips with the fact that the oil sector can be brought to its knees within the span of a few weeks by consumer choice and that similar choices could affect a switch to the renewable energy sector, a neon green future seems within reach.
- Deteriorating Default: Instead of the wartime effort that is required to halt climate destabilization at anywhere near the rate required, and that may be possible now if the generous bailouts are used for new green deals, stimulus packages already get squandered on the fossil sector. While the negative oil futures may be great for a switch to a green new deal they are dangerous on a geopolitical level because Russia's oil price war with Saudi Arabia, while sitting on an arsenal of mass destruction, is not a recipe for peace.

Those binary trajectories are hyper stylized but they are living options and it is mostly humans who make them flip one way or the other. It is painful to see that much potential and that much potential terror so close to each other, knowing that each day a lot of the decisions are made that nudge us to one rather than the other extreme, nearing some event horizon. Perhaps it is good to also consider that inaction is action itself; the alternative to striving for much better worlds is not the status quo; the abyss is steep, deep, and widening.

This Community as Proof of Concept that Eucatastrophes Are Possible

Digesting all of this possibility and the uncertainty inherent in the opportunities uncovered by the 10 weeks of our daily meetings that are summarized in this report can be daunting, yet reflecting on the effort itself makes me hope that we may be closer to beneficial futures than is apparent. This is because the opportunities for change we discussed in theory materialized in realtime on a micro-level in our community. Here are a few real examples that make me think that if we can figure out how to scale whatever happened in those 10 weeks, we would be much much closer to the worlds we want to live in:

Communities as ground for coordination: Our community met throughout a total of 70+ salons, with 100+ speakers, and 600+ participants over the span of the salons. We had up to 25% new attendees per salon, suggesting growth while maintaining a strong community of recurring participants. We connected with other communities, and shared best practices, such as this presentation [COVID-19: From Catastrophe to Eucatastrophe](#) at [ResetEverything](#).



Accessibility and diversity: While over 50% of participants were located in North America, followed by Europe with around 20%, an increasing community was regularly attending from Asia, followed by Africa, and South America. We welcomed participants across ages, from 21 to late 70s, across the globe, across the political spectrum, and across occupations, from health care workers, to tech CEOs, farmers, and (ex) government officials.

Sense-making: We cast a wide net and left few areas untouched, with the goal to dive deeper in rapidly scheduled follow-up sessions if a topic merited further investigation. While we did experience the erosion of the public information ecosystem as some of our videos such as [Evidence for the Antiviral Efficacy of Quinine](#) got censored from Youtube without warning or justification, internally participants raised the sanity waterline. Even though discussion in the chat was heated, it stayed compassionate, with participants steel-manning other views, assuming good intention and onboarding new members into the chat culture.

A Rich Virtual Life: We experimented with Zoom, Gmail, sheets, Google calendar, Slack, Youtube, Otter transcripts, and Keybase. Because participant preference between Slack and Google group remained almost perfectly at 50%/50% across polls, we let both run in parallel to allow email as default and Slack as a more engaged alternative. To connect in richer ways, we explored a virtual Dolores Park in OnlineTown together, and made it into Forbes: [Your Guide to Feeling a Human Connection with the Group in Zoom](#).



Coordination: To facilitate collaboration across participants, we used a shared spreadsheet in which participants signed up marking one thing they would love help with and one thing they could help others with. Several currently ongoing projects were initiated in those 10 weeks, received funding as a result, volunteers and collaborators.

Resilience: We got to practice resilience up close as we experienced Zoom bombings and the community stepped up in various online and offline care-taking and strategizing. While there are official avenues for [external support](#), the most valuable ways in which people showed up for each other were community-based with different working groups forming that resulted in best practices to help others such as this video on [Navigating Zoom Bombings](#).

Civil Responsibility: A great core of participants logged on on a daily basis, a few became presenters, a few close collaborators, monitoring and caring for the container, with other tech-savvy participants venturing out onto Keybase and other platforms to experiment with more secure ways of communicating.

Existential Hope: Because not every aspect of positive futures can be put into words alone, we ended some salons with favorite songs of contributors, and shared other cultural artefacts such as paintings, sculptures, media art, photographs, architecture extracts or else to combine them into a mosaic of hope.

Celebratory practices: We created bonding social experiences by having a kick-off celebration that united speakers and participants to share their bit of Existential Hope and create a strong container with high trust and cohesion. Find the bits of hope in our [HiveMind Kick-off video](#).



Toward Human Flourishing: For a flourishing community, we ended many salons with a prompt that gave participants the chance to connect on a personal level in breakout rooms and had regular informal meet and greet chats. We started each salon with a Zoom poll on the audience's feeling on a scale from 1 (very bad) to 5 (very good). At the start of shelter in place, during the launch of our container, we started off with 50%+ of participants feeling between 1-3, and finished the 10 weeks with 50%+ of participants feeling between 4-5.

These instances are anecdotal, yet they provide ground for hope by showing how the abstract opportunities for change that are discussed throughout this report can be prototyped in the microcosm of community.

Thank You and What's Next

An incredible 10 weeks have passed; and as expressed in [10 weeks daily global salons](#), I would like to thank everyone who made this container so special.

We had rapid iterations of highs, lows, and an infinitude of learnings, and I feel like we lived a lifetime together. Thank you for that. I realize that when I act in the world, I don't feel like just a singular agent anymore, but I actually feel like I have a few hundred goal-aligned friends who I'd like to change the world with. This is a very different feeling to before, especially because you are all over the world, making the world feel a little bit more like home. I am hoping you feel some of that, too. I miss seeing many of you daily and I hope we get to meet in person sometime.



Until then, I would like to finish with a call to action: In a functioning reality, where things work as they say they do, this could be the time to call on our best scientists, artists and creators, for research to flourish, for multidisciplinary cooperation of unprecedented scales to save the day. We will miss the boat if we wait for authorities to call us to the task; the skills that many here bring to the table are in demand, but the time window to affect change is shortening, and our reach is shrinking as the deteriorating default is doing its thing.

Just like many in our community saw early how bad COVID-19 would get in terms of immediate deaths and spread, but were incapacitated by social taboo and ostracizing, I fear the same may be true now but regarding the long-term effects. We are discouraged to look under the hood, or to extrapolate current trends out because it sounds nuts what we will find and very not how we imagined 2020 to go at all. The earlier we can get cozy with nuts as the new normal, the earlier we can transcend it. For three not so nuts long-term scenarios, read [Black Out](#), [Bone Blocks](#), and [Naked Sun](#). They aren't exactly X-hope style but vividly drive home the cost of inaction. On the other end, if the renaissance came from plague, the roaring 20s from the Spanish Flu, just maybe we can turn this catastrophe into an eucatastrophe, too.

If the second half of 2020 continues at this pace, New Year 2021 will be strange indeed; when reflecting back onto this year, we may look back in peril onto the strange randomness of factors that currently decide the fate of the lives of millions, or with fondness at the ways we rose to the challenge, and graduated ourselves from puberty into the newly rung maturity of humanity, still itching from growth streaks. Let's take the next few months to say Goodbye to Tinkerbell and friends, take a deep breath and soak the outskirts of Neverland into our memory as we depart into these new waters. I hope you join Foresight's ship and set sail with us: All videos are uploaded to our [website](#), and you can sign up to our [mailing list](#) and [add us to your calendar](#) to not miss a beat of the next iteration of our weekly online salons. We are committed to making this a sustainable, global long-term movement toward futures of Existential Hope. We are just uncovering what is possible and our work is entirely funded by your donations. To collaborate closer, consider becoming a Senior Associate, Patron, or Partner, [by donating \(fiat, crypto, stock\)](#) which unlock different [membership benefits](#); please [reach out to me](#) if you'd like to know more.

Toward new waters,
Allison



FLOURISHING FUTURES FROM COVID-19



03/23/2020 - 05/28/2020

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