ODYSSEAN INSTITUTE

WHITE PAPER

The Odyssean Process

An innovative approach to decision making for an uncertain future

ODYSSEAN INSTITUTE

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With thanks to our advisors and collaborators.

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About us

The Odyssean Institute works to mitigate **civilisational risks** by **improving institutional decision making**[1] and facilitating transdisciplinary research. We advocate for the use of effective deliberative methods, in addition to conducting research, modelling, and experimentation. We plan to cooperate with and provide consultative advice for a broad range of key institutions, including intergovernmental organisations, governments, academics, and politicians. The Institute was founded to enable the combination of the latest deliberative methods with the study of civilisational risks, and works to bring together diverse groups of experts and practitioners to tackle pressing problems.

We are a diverse, multidisciplinary team based in London, with collaborators from around the world and academic backgrounds ranging from Oxford, Cambridge, King's College London, the Massachusetts Institute of Technology, and more. Our combined academic and industry experiences span disciplines from history and politics to earth sciences and complex systems modelling. Our guiding foci are **deliberative democracy**[2] and **epistemic effectiveness**; we develop tools and processes that will reduce global risk while giving the wider public a direct voice in decisions that shape the long term future.

Executive Summary

Dominant methods for **institutional decision making** are inadequate to effectively address complex challenges, especially **civilisational risks**, which refers to a spectrum of risks, representing the potential for a severe decline in global living standards, a permanent limitation to humanity's future potential, and even extinction. The current predominant approach to the study of civilisational risk had its origin in analytic philosophy, which has risked systematically neglecting crucial considerations due to its limited engagement with other disciplines and misplaced confidence in the accuracy of its models.

We believe these deficiencies are critical, their contributing factors are interlinked, and can be resolved through the application of appropriate methods. Finally, mitigation of said risks requires democratic deliberation for epistemic (i.e. collective intelligence) and normative (i.e. fairness) considerations, crucial for effective mitigation.

This White Paper outlines an innovative approach that combines **horizon scanning**, **Decision Making under Deep Uncertainty (DMDU)**, and **deliberative democracy** to address civilisational risks. We call this the **Odyssean Process**. There is extensive evidence pointing to the effectiveness of each of these methods, which is surprisingly overlooked in research and policy making. We work to rectify this with novel research, advocacy, and experiments to scale our Process.

Introduction

Emerging threats and challenges are rapidly outpacing our institutions' capacity to address them effectively. Technological development is accelerating, geopolitical tensions are rising, and the climate is changing, possibly irreversibly. We find ourselves overwhelmed by the scale and complexity of the problems and their solutions. Indeed, for any readers feeling overwhelmed by the technical jargon that will follow, we attach a glossary on Page 26.

For instance, despite a catastrophic pandemic having been identified as a probable scenario by countless experts, the COVID-19 pandemic blindsided governing institutions around the world, most of which had, **rather than adequately preparing for such an eventuality, decided to cut the resources allocated to preparedness measures.** Pandemic risk can be conceptualised as a type of civilisational risk. This broadly refers to the potential for deeply undesirable outcomes that affect a significant proportion of the global population. Note that our use of civilisation is not meant normatively, to present a particular way of life as superior, but rather to refer to the complex web of interconnected support systems that make up our globalised world. This is also done to incorporate the social dynamics and institutions often neglected by overly technological pictures of global risks.

Many of the sources of civilisational risk are highly complex, such as systemic risks that emerge from interconnectedness, as the pandemic amply demonstrated. Mitigating such risks requires the aggregating of immense volumes of expert knowledge, and careful, measured decision making that takes into account a vast range of perspectives. Today's governing institutions are ill-equipped to do so. This is a problem faced at all levels of organisation: it applies to businesses, national, regional, and local governments, international institutions, and everything in between. We believe that mismanagement of complexity constitutes a significant vulnerability, and exacerbates civilisational risk.
We begin with an exploration of civilisational risk. This will be followed by an analysis of established models of institutional decision making, which will allow us to examine why today's institutions are seemingly unable to address civilisational risk, followed by illustrative case studies. Having established the scope of the challenges we are seeking to overcome, we will introduce the Odyssean Process and its components.

CIVILISATIONAL RISK & POLICY MAKING

"The real problem of humanity is the following: We have Palaeolithic emotions, mediaeval institutions and godlike technology. And it is terrifically dangerous, and it is now approaching a point of crisis overall."

- E. O. Wilson

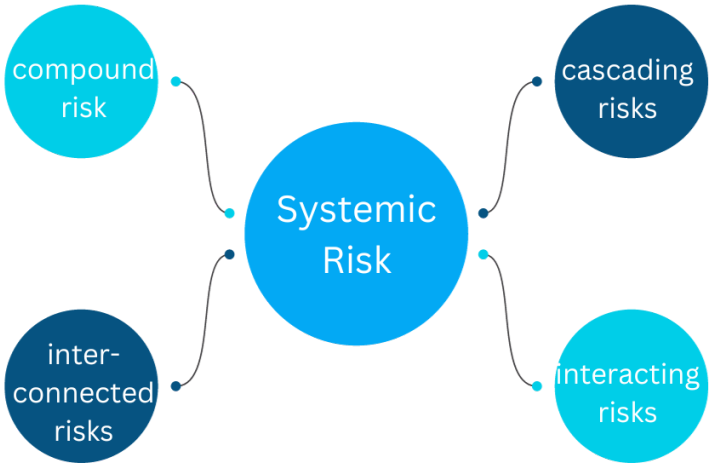
Civilisational Risk

Civilisational Risk (CR) broadly refers here to the potential for adverse outcomes that affect a significant proportion of the global population. This term is used to encompass Existential Risk (x-risk), Global Catastrophic Risk (GCR), Systemic Risk, and Suffering Risk (s-risk), as each could be mitigated with a general purpose improvement in policy making.

CRs' causes include but are not limited to: hazards arising from natural phenomena (pandemics, solar flares, major asteroid impact, supervolcanic eruptions, extreme climate change, and ecological collapse), technology (nuclear weapons, artificial intelligence, nanotechnology, and synthetic biology), and society (poor global governance, global systems collapse, and totalitarianism), as well as the inherent connections and intersections between them.

Some civilisational risks can be considered 'systemic risks', meaning that they emerge from our globalised and intertwined society, with its high degrees of interconnected subsystems.[3] Systemic risks can be further decomposed into compound, interconnected, interacting, and cascading risks.[4]

Such complex civilisational risks can bewilder us due to their inherent uncertainty and scale. This need not be the case. Methods such as agent-based modelling, analysis of critical transitions, and systems thinking can help tame complexity.



Civilisational collapse is an especially vivid and relevant class of civilisational risk. Collapse, defined as a reduction in societal complexity,[5] has major implications for humanity especially in a contemporary context of global interconnection. There are compelling historical cases to inspect: the Late Bronze Age,[6] the Western Roman Empire,[7] the Mayan,[8] and Norse Greenland[9] Collapses. These collapses have both risks and surprising benefits, with winners and losers. Historical cases can help us understand the impacts of a crisis and options to mitigate them.

Patterns of collapses identified by approaches such as Structural Demographic Theory (SDT)[10] may prove very useful in identifying early warning signs, as can computational modelling to identify tipping points and critical transitions in complex systems.[11] SDT takes the status of and relations between elites, the public, and state capacity as predictive of large social unrest. It has retrodicted several historical collapses, and it may even have predicted social unrest in the USA in 2020 as early as 2010. As such we highlight it as one neglected approach for this space.

Current Policy Making and its Limitations

Current policy making is often conceived as taking part in multiple, discrete stages, with each stage contributing to solving specific problems. This is reflected in the textbook 'Laswellian' model of policy making, as well as models used by government agencies such as the UK Treasury's 'ROAMEF cycle'.[12]

However, real-world policymaking rarely follows such a clean process. Policy is heavily affected by unexpected events, political ideologies, vested interests,[13] and other factors. Furthermore, policy 'solutions' are often not developed with a specific problem in mind; the proposed solutions are often developed for ideological or political reasons,[14] and then 'latch on' to problems. The Multiple Streams Model, which takes into account oscillations and critical junctures in the political landscape, serves as a more accurate representation. It illustrates how solutions and problems can be combined at 'critical junctures' or 'policy windows'. 'Policy Entrepreneurs' play a key role in creating policy windows. This process, in addition to being inefficient and opaque, fosters path dependency, which runs the risk of creating 'lock-in'.[15]

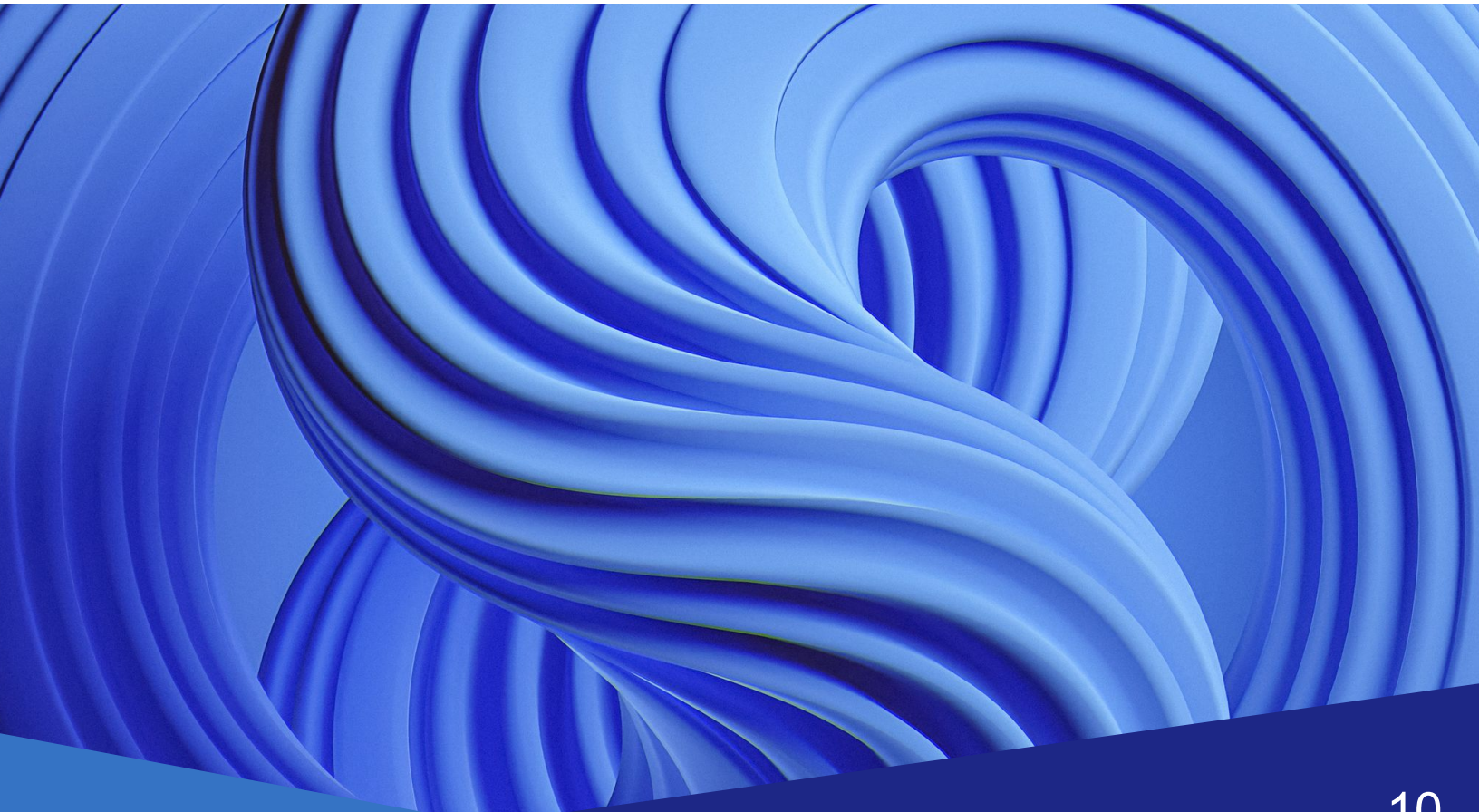
As an Focused Research Organisation (FRO)[16] operating on sustained and scalable policy making enhancement, we are also policy entrepreneurs looking to leverage windows of opportunity and a sense of urgency to improve resilience, representativeness, and competence across governance.

What Makes Civilisational Risk So Difficult to Address?

Covering vast scales and requiring transdisciplinarity,[17] CRs encompass many causal factors and adaptive pathways. However, currently they are often treated as distinct. For instance, Effective Altruism has identified ‘cause areas’ according to the origins of risks. This has encouraged specialised research and networks, as well as discrete mitigation strategies. This however, overlooks interconnections, as threats are inter-linked and ignoring this may prove fatal.[18] Certain examples are illustrative of recurrent failures to conceptualise complexity and address it:

List of Case Studies

1. The Four Pests Campaign
2. Post-Commonwealth Iceland
3. Highland Clearance of Scotland
4. The 'Existential Risk Studies' Field



Case Studies: Complexity and Consequences

Consider the case of China during the Great Leap Forward. In the face of increased food scarcity, the Communist Party identified sparrows as one of the Four Pests driving declining crop yields. The Party encouraged rural citizens to cull the sparrows. In doing so, they removed the natural predator of locusts, which proved far more destructive to the crops. This was one major driver in creating catastrophic famine. Acting without understanding the complexity of your problems can be counterproductive. Locusts' worsening famine in China was a case of unintended consequences, illustrative of the impact a reductive policy made on a finely balanced social-ecological system.

Past ecosystem tipping points of both post-commonwealth Iceland[19] and the Highland Clearance of Scotland,[20] also provide long-lasting examples of the interconnectedness of ideologies, economic policies, social structures, and the environments. The change in land ownership structure and the absence of stewardship decimated the last of the Icelandic birch woodlands. Meanwhile, the prevalence of technocratic arrogance and malthusianism in demographic and economic policies of the Highland Clearance drove the Caledonian forest beyond its natural ability to recover. In both instances, the loss of already vulnerable woodlands pushed the ecosystem through key tipping points, as policies did not take into account past knowledge in human-environment dynamics. These are stark reminders of how certain values and policies can become entrenched or ‘locked-in’.

These risks can be better approached through the literature on critical transitions in key systems,[21] to identify risks[22] from social-technical-ecological feedbacks. Real world case studies[23] as well as simulation in network[24] and agent-based[25] models demonstrate the potential for runaway cascading failure in the critical systems that support human civilisation, and may help us predict and avoid such outcomes in the future. Similarly, social tipping points research allows us to create enabling conditions for just transitions we need to undertake, through identifying the actors, actions, and techniques that can coordinate, innovate, and progress through virtuous cycles - overcoming ‘paralysis by complexity’.[26] Such transformative redirections can serve as ‘evolutionary rescue’ against the danger of our sleepwalking into possible ‘evolutionary suicide’.[27]

The 'Existential Risk Studies' Field

CRs have always threatened humanity, but only recently have serious resources been directed towards studying these problems systematically and analytically.[28] We need methods that are able to understand CRs. Luckily, we have the tools.

Existential Risk Studies is dominated by a traditional approach,[29] which principally draws from analytical philosophy and orthodox economics.[30] There are potentially fatal flaws within this approach. Some within the movement have argued that principally, it neglects systemic risk, the deep uncertainty of risk, the findings and approaches of multiple highly relevant fields (e.g. Disaster Risk Reduction and Futures Studies), and is tied to a non-representative worldview as well as disproportionately skewed towards particular technological risks and solutions.[31] Conversely, an appropriate approach should include complexity science, tools for decision making under uncertainty, and democratic deliberation.

This may prove necessary to not repeat the errors of prior case studies.

THE ODYSSEAN PROCESS:
DEMOCRATICALLY EXPLORING ROBUST FUTURES

"Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?"

- TS Eliot

Background

The Institute is named after the Odyssean education[32] that Nobel laureate Murray Gell-Mann advocated, which would combine the natural and social sciences to create a new complexity-competent paradigm of study. This style of education is tailored to the grand challenges we face, just as the Process is tailored for a style of policy making that does the same on a collective scale.

Our Process works towards cohering systemic, participatory, and deliberative capacities geared towards inclusive, evidence-based, and robust policy making. We propose the Odyssean Process to address the shortcomings found in many areas of contemporary research and policy. While some have adopted one or the other of the methodologies we advocate, our synthesis of them is entirely novel.

The Odyssean Process is designed to address deep uncertainty, complexity, polarisation, illegitimacy, and indifference. Each piece of the process helps solve problems that in isolation appear intractable. Taken together they increase the odds of detecting and addressing civilisational risks successfully. These methodologies all interlock in an additive process, reinforcing each other. We describe them, here, in turn:

Components of the Process

Methodology	What problem is addressed?	What is the process?	What is the benefit?
Expert Elicitation of Judgement (EEJ)	Lack of actionable data within and between fields for x-risk mitigation policies. Unstructured, ad hoc consultations with limited range of expert insights. Illusions of predictability.	Implementing EEJ such as with an IDEA Protocol for quantitative questions, or horizon scanning for foresight and qualitative questions. This consists of convening diverse experts to participate in collaborative consultative panels where private and group evaluations are gathered. By transparently structuring and iterating expert group predictions and suggestions, we gather 'best bets' on how to approach problems, while the experts can identify and acknowledge key uncertainties.	Contributes to the societal deliberation of science and its effective use for policy making. Sculpts questions and considerations for x-risk and resilience with more nuance and feedback between fields. Provides greater transparency around uncertainties, and more rigorous marshalling of expert consultations, to avoid 'fallacy of misplaced concreteness'.[33] EEJ has already contributed to areas as diverse as forecasting biosecurity risks, threatened species management predictive models, environmental impact assessments, and structured decision-making.[34] Informs Exploratory Modelling and Deliberation in the Odyssean Process (see below).
Exploratory Modelling & Robust Decision Making	Lack of consensus or effective plurality on the nature, or even the existence, of certain complex problems. Zero-sum thinking. Limited analysis and poor formulation of solution space. Multistakeholder confusion and polarisation. Simplified planning consistent with a single prior world and solution set, rather than exploring multiple.	Utilising Decision Making under Deep Uncertainty (DMDU), which is a formal method of identifying optimalities in the range of possible solutions by simulating robust strategies from stakeholder preferences. The simulation of these solutions allows stakeholders to input their strategic needs, and to explore the map of possible solutions more rigorously. For complex adaptations, it is arguably necessary as reductive approaches cannot incorporate effectively the emergent risks from substantive interconnections and compounding factors.	Enables generative policies that work within 'known unknowns', and that rigorously explore 'unknown unknowns'.[35] Identifies robust strategies that can be presented by visualising win-win dynamics for public deliberation and legislative ratification. This increases the likelihood of generating policies that enable actionable consensus. Clarifies optimalities and therefore actionable solutions, contributing further to Deliberation (see below).

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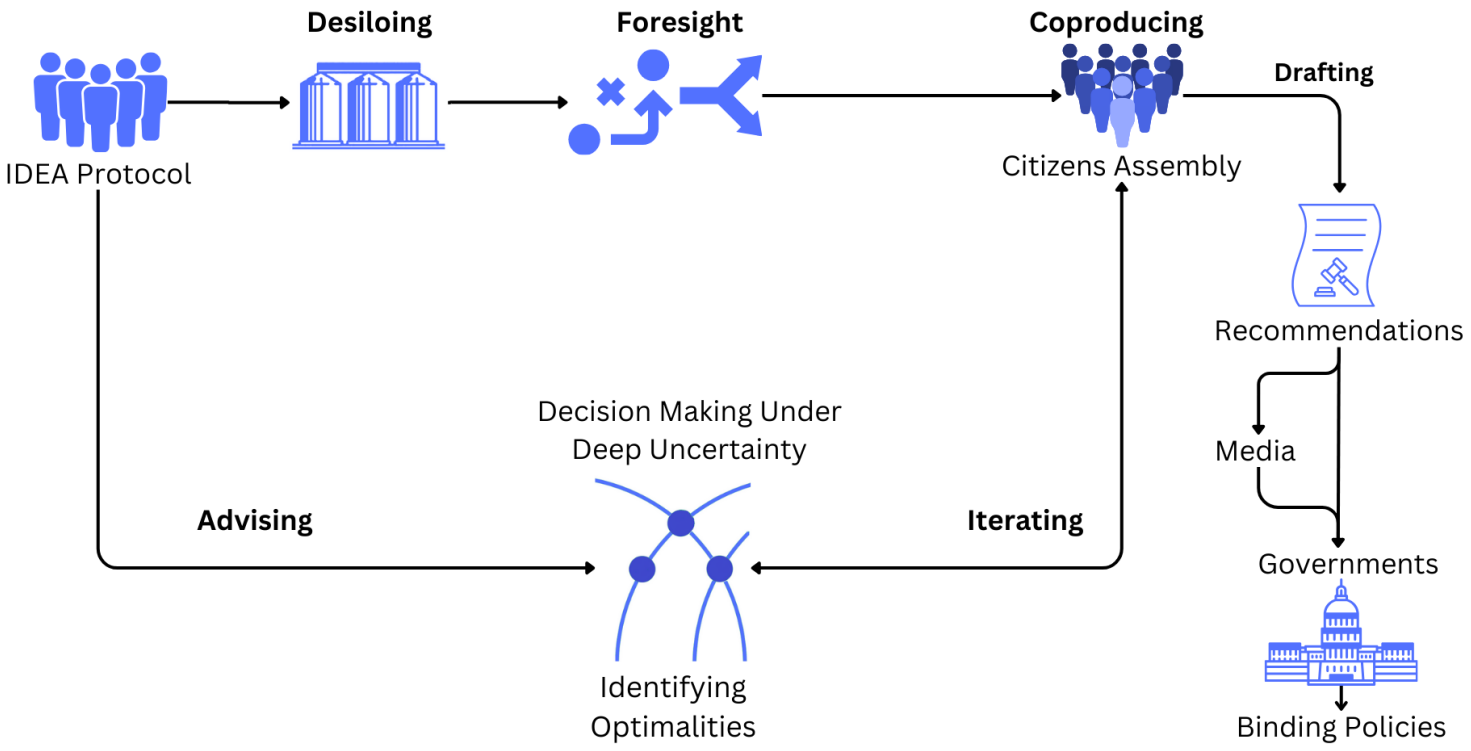
Methodology	What problem is addressed?	What is the process?	What is the benefit?
Deliberation	Reactive, populist, and authoritarian simplifications of diagnosis and prognosis. Democratic collapse risk,[36] as an extreme version of the above. For example, billionaire-funded technocracy. Public polarisation, learned helplessness, and indifference. Poor checks and balances, divisive tactics, the securitisation of risks, and even states of exception. Excessive deference to epistemic authorities, without lived experience, and without working with conditions of deep uncertainty.	Conducting citizen assemblies, citizen juries, foresight exercises[37] and scenario planning. Deliberative Democratic assemblies bring together a representative sample of the population to discuss and decide on policy (whether as a recommendation or binding resolution). By building on the expertise and evidence of EEJ, and the scanning of solutions from DMDU, deliberation is further strengthened on questions of a technical and deeply uncertain nature.	Engages those with 'skin in the game'[38] to address risks, with attention to subsidiarity and local knowledge, with the attendant urgency that comes from their direct exposure to them. Reducing the risk of conflict emerging and spiralling in society.[39] Public participation enables the adoption of whole society solutions that are sustainable and broad-based. Increasing the quality of discourse through enhancing public reason.[40] Engages collective intelligence and synthesises expert insights with the wisdom of the crowd.

The Odyssean Process



Methodologies Explained

Expert elicitation of judgement can enhance the quality and precision of forecasts, which is especially important when data is scarce, as is the case with CR. By focusing on synthesising and refining the highest quality expert insights through deliberation, we can leverage the position experts have in society as specialists, while also combining their knowledge with effective modelling and public deliberation. One such example is the IDEA Protocol. Developed from the popular Delphi Method, it involves panels of 8-12 experts generating private and group insights. IDEA stands for “Investigate,” “Discuss,” “Estimate” and “Aggregate”, and enhances the repeatability and rigour of the EEJ procedure by drawing on best practice elicitation techniques as well as insights from cognitive and social psychology. These include encouraging counterfactual thinking and allowing private judgements and anonymity, helping to avoid well known problems such as groupthink and halo effects. The IDEA Protocol has been successfully deployed by the World Health Organization (WHO) to consider how policies, emerging technologies, and misinformation contribute to interlinked mid to long-term global health challenges.[41] EEJ has also contributed to areas as diverse as forecasting biosecurity risks, conservation biology, environmental impact assessments, and structured decision making more broadly.[42]

Such structured approaches enable a transparent and systematic means to combine predictions from multiple experts, document their models, characterise key uncertainties, and explore competing judgements collaboratively. They are then aggregated either behaviourally, e.g., where the group settles on a single judgement, or mathematically, for instance with weighted averages.[43] As part of a horizon scanning process, this input is essential; EEJ provides a rigorous basis for quantitative weighting of forecasting questions, and horizon scanning with expert elicitation allows foresight exercises to pick up on key trends and uncertainties, as well as allowing for more qualitative outputs. This approach both enriches public reasoning and policy making while avoiding the selective abuse of experts for political reasons.

DMDU is the umbrella term for three components: Robust Decision Making (RDM), adaptive planning, and constructive decision aiding. RDM aims to simulate numerous scenarios and stress test strategies across them, identifying robust pareto-optimal solutions within the wider space of options.

This is accomplished through Multi-Objective Evolutionary Algorithms (MOEAs). Value and policy lock in and path dependencies can then be avoided for decision makers, enabling proactive, anticipatory, and transformational policies rather than reactive ones. This is particularly true if used in concert with Dynamic Adaptive Policy Pathways (DAPP).

Complex, latent, or systemic risks, can be better modelled by simulating multiple different possible world-states, revealing strategies that are robust to a wide variety of possible futures. As crises become more complex, interconnected, and commonplace, they become more expensive and intractable to address with simplistic predict-and-act approaches. New modelling ontologies and clear, iterated adaptive pathways can give strategic confidence that this is not irreversible.

Deliberative decision making processes (deliberation for short) such as citizen assemblies or citizen juries, have been implemented to great success in hundreds of cases around the world.[44] Participants are compensated for their involvement, and trained facilitators assist them through a process of onboarding, learning about the evidence and reflecting on lived experience, and finally deliberating on the issue and drafting recommendations.They have contributed to solving previously intractable issues such as:

- Abortion[45] and LGBTQ+ rights in Ireland.
- Digital transformation (as well as many other issues) in Taiwan.[46]
- Polarisation and electoral reform in the United States, finding considerable consensus on reform proposals across Republican and Democrat voter bases.[47]

Participant selection uses standardised methods that can either aim for a representative sample of the public, or bespoke samples for specific problems, such as prioritising those most vulnerable to the risks. For example, Involve UK's citizen jury on gene editing was composed of those living with or caring for with heritable genetic conditions. There are numerous benefits to deliberation: including but not limited to enhancing participants' autonomy, knowledge, and thinking – **deciding together on problems as if they were an engineering problem to be cracked, not as a team sport to fight over.**[48] All of these factors allow for democratic collapse risks to be combated, with nuanced views of power allowing for needed reflexivity on questions of CR's magnitude.[49]

APPLICATIONS AND PLANS:
PUTTING IT ALL TOGETHER

“You never change things by fighting the existing reality.
To change something, build a new model that makes the existing model obsolete.”

- Buckminster Fuller

Key Principles

In addition to engaging citizens and experts through the structured processes above, we use a set of heuristics that help address monumental problems. We believe these have been neglected by current approaches within Existential Risk Studies.[50]

Principle/Heuristic	Context and Contrast
Subsidiarity	Capturing local knowledge and placing decision making power at the level closest to where those impacted by the decisions are. Localising decision making gives participants both real and perceived agency. Inverses: Centralisation / alienating/alienated power / Elitism / technocratic arrogance).
Resilience Thinking	Robustness against shocks, and faster adaptation to and recovery from them; engaging infrastructural and societal scale antifragility. Inverses: fragility, conditions of fear in response to risks and uncertainty, lack of adaptability.
Integration	Synthesising diffuse but interrelated disciplines. Also pertains to holding a complexity mindset. For example, transdisciplinary combinations of complexity science, exploratory modelling, ecology, history, and political science. Inverses: siloing, over-specialisation, over-reticulation, confusion.
Non-Zero Sum Thinking	Through intelligent structuring of analysis, integration, and deliberation, we can identify win-win dynamics by avoiding divisive dynamics in framing and deciding issues. Inverses: tragedy of the commons, rivalrous games, polarisation.
Ecological Thinking	Ecologies of rationality, thought,[51] science, and cultures. Inverses: mechanistic metaphors, top down, reductive, or absurdly limited reasoning.
Meta-(Analysis)	Improving robustness of approaches by taking the cumulative knowledge we have at our disposal. The focus is on the system self-learning, iterating, and then targeting higher, more effective leverage points. Inverses: neglected insights, bisociation failure,[52] siloing.

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Key Principles Continued

Principle/Heuristic	Context and Contrast
Representativeness	Everyone has something to contribute. Cognitive diversity as well as experiential and social diversity, is a crucial component of this.[53] Reflecting those at risk in the body of participants e.g. engaging those with skin in the game, for both epistemic and justice grounded reasons. Inverses: constrained collective intelligence, minoritarian rule, stagnation due to vested interests vetoing adaptations, race to the bottom.[54]
Wisdom	A rigorous approach to embracing irreducible pluralism, without abandoning the potential for arriving at consensus deliberatively. Targeting a more empathetic, sustained integration of the innumerable viewpoints out there, with a focus on human flourishing beyond material capacities central. Inverses: cold intellect, under-developed cognition and affect, lack of empathy, scientism.
Existential Hope	Confidence in our better angels and our best systems in delivering unto them; we are dealing with x-risks because we believe we can, and that doing so will bring out the best in us. It may be now or never, but it is always an opportunity as much as a threat. Inverses: reactive, restrictive, overly risk-averse stances towards the future.

Combining the Pictures

Numerous examples instil confidence that the Odyssean Process can bring about long-term, future-focused action that will be crucial for the survival and flourishing of our society, from the successful use of adaptive delta management in the 2nd Dutch Delta Programme[55] to the adoption of citizen assemblies with binding authority in Poland,[56] and the deployment of EEJ for ecology. Here is how implementation of the Process might play out:

Imagine a case with complex tradeoffs: the public, living under a sensationalist media, are encountering emerging technologies through the news, with a crucial sector of their economy vital to these technologies. Simultaneously, growing this sector involves extracting resources from an ecosystem that is critical to the functioning of the biosphere. With a large, diverse set of assumptions, values, and levels of awareness, traditional policy making appears impotent. Policy makers thus kick the issue into the long grass, compounding growing public unease as developments appear to accelerate inevitably beyond control.

The Odyssean Process maps the relevant global, national, and local considerations. It then explains them with visualisable models, working in co-production with local and global experts to identify crucial considerations. These could be comparative case studies, historical precedents, and current best practices, as well as key uncertainties. By engaging the varied range of public perspectives and directly concentrating their otherwise diffuse autonomy with a citizen assembly, the sense of learned helplessness that leads to spiralling deadlock is reduced. By iterating the Process, involving both experts and the public, network modelling highlights where the greatest ecological vulnerabilities are, and analysis of potential tipping points reveals how far the ecosystem can be safely pushed. By identifying global trade partners who can mitigate the unsustainable distribution of production through mutually beneficial trade deals, a better regulatory framework for emerging technologies is established multilaterally. The decision fulfils multiple criteria through working with optimalities identified.

In this case, the public are able to protect the ecosystem, and continue to economically develop, but not as aggressively or narrowly as before. Instead, they develop sustainably, while also gaining international recognition, standing, and investment for responsible development. The Odyssean Process addresses problems at multiple levels, and takes into account those so often neglected by such problem classes in doing so. By engaging the public at the closest level to their lived experience possible, while also involving meta-analyses, comparative and global scale considerations, a focus on resilience and non-zero sum thinking is enabled. The representativeness of collective intelligence is then able to foster a wise multi-criteria optimisation; one that restores a sense of existential hope around these daunting challenges, as opposed to despair.

Our Plans

To bring about such outcomes, our plans are:

- Establish ourselves as a Focused Research Organisation with our findings of consultative value across conceptual, practical, and political applications.

- Test, refine, and scale the Odyssean Process through pilot study on complex risks and transdisciplinary incubation of resilience options. This would likely be an exploration of systemic and multi-factor integrations needed from the EEJ first phase.

- Contribute to Existential Risk Studies through scientific models, conceptual theorisation, and the integration of relevant civilisational risk fields and other disciplines.

- Advocate for the use of the methods and principles we have combined in the Odyssean Process, where they may add value in isolation.

- Convene strategically-placed assemblies drawing on local and global communities to think together clearly, charting a course through otherwise intractable issues using the methodologies outlined above.

We have broad candidates for the full process leading to an assembly, which include:

- An EU assembly on complex existential risks and regional resilience, which could create an opportunity for beneficial global policy diffusion through the Brussels Effect on regulatory standards, building on recent work by Myriad-EU[57] on multi-level risks.

- A Taiwanese assembly on global supply line fragility, semiconductors, and Taiwan's unique position regarding its deliberative political culture, its proximity to active stratovolcanoes, and potential conflict involving China and the United States.

- An Amazonian assembly on climate tipping points and deforestation. For instance, encouraging a shared approach to land management[58] and enforcement mechanisms alongside positive incentives to halt deforestation.

Provocations, Invitations, and Acknowledgements

If you care about impact, policy impacts every single cause area: why not take seriously the need to be bolder, and address policy failure systematically?

If you care about tractability, you should care about deliberation, as it has produced change in many contexts previously considered intractable.

If you care about neglectedness, horizon scanning and DMDU should be vital for you, as they find the weak signals, and identify actionable pathways to addressing them in ways such that everybody wins.

We would like to thank you all for reading and engaging with our initiative and wider work. We invite you to reach out at contact@odysseaninstitute.org.

We are especially interested in prospective collaborations, research associates, and funders who want to get involved.

Special thanks to all of our editors and advisors, and everyone who has supported our work over the last year.

Thanks also to our academic advisory board and trustees for their continued insights and contributions.

Glossary

Term	Definition
Civilisational Risks	Civilisational risk broadly refers to a spectrum of risks, which represent the potential for a severe decline in global living standards, a permanent limitation to humanity's future potential, and even extinction.[59]
Compound, Interconnected, Interacting, and Cascading Risks	Arise from the interaction of hazards, which may be characterised by single extreme events or multiple coincident or sequential events that interact with exposed systems or sectors. These occur when an extreme hazard generates a sequence of secondary events in natural and human systems that result in physical, natural, social or economic disruption, whereby the resulting impact is significantly larger than the initial impact. Cascading impacts are complex and multidimensional, and are associated more with the magnitude of societal vulnerability than with that of the hazard (modified from Pescaroli & Alexander).[60]
Expert Horizon Scanning	Having experts repeatedly deliberate and vote on the likelihood and magnitude of the impacts of various issues by a certain date. These often form part of structured expert elicitation processes, e.g. the Delphi Method or the IDEA Protocol.[61]
Exploratory Modelling	Exploratory modelling is a computational experiment that yields information about the model itself. The goal of exploration is a compelling argument illuminating the choice among policy options. In constructing such an argument, models must be built and used in service to an analytic strategy, and in a study's conclusion they are relevant only in the context of an argument that takes their limitations into account.[62]
Extinction Risk	The probability of human extinction within a given timeframe.
Foresight	Incorporating qualitative tools which often – but not always – eschew firm predictions in favour of information and insight about the broad contours of possible futures.[63]
Global Catastrophic Risk (GCR)	The probability of a loss of 25% of the global population and the severe disruption of global critical systems (such as food) within a given timeframe (years or decades).[64]
Improving Institutional Decision Making (IIDM)	Working to help governments and other important institutions improve their decision making in complex, high-stakes decisions especially relating to GCRs.[65]
Natural Hazards	Natural hazards are defined as environmental phenomena that have the potential to impact societies and the human environment. Natural hazards can also cause secondary natural hazard events that create additional hazards. Natural hazards and natural disasters are related but are not the same. A natural hazard is the threat of an event that will likely have a negative impact. A natural disaster is the negative impact following an occurrence of natural hazard in the event that it significantly harms a community.[66]

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Term	Definition
Path Dependence	A process by which self-reinforcing feedbacks make deviation from the chosen path increasingly costly.[67]
Policy Lock-in	A situation in which path dependence and/or political circumstances shape institutional decisions that are then too costly to reverse, limiting future options for policymakers and civil society.[68]
Resilience	The capacity of interconnected social, economic and ecological systems to cope with a hazardous event, trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure. Resilience is a positive attribute when it maintains capacity for adaptation, learning and/or transformation.[69]
Risk	Risk refers to outcomes (e.g. the "potential for adverse consequences") We conceptualise risk as a function of Hazard, Exposure, Vulnerability/Capacity, and Response, which is an adapted version of the IPCC risk framework.[70]
Risk Cascade	Chains of risk occurring when an adverse impact triggers a set of linked risks.[71]
S-Risks (Agential S-Risk) (including totalitarianism)	Agential s-risks arise when an agent actively and intentionally wants to cause harm at a scale analogous to those covered by x-risks e.g. global. Agential s-risks might also arise when people harbour strong feelings of hatred towards others. One relevant factor is the human tendency to form tribal identities and divide the world into an ingroup and an outgroup. In extreme cases, such tribalism spirals into a desire to harm the other side as much as possible.[72]
Social-Technical-Ecological Feedback	An interaction in which a perturbation in an integrated system that includes human societies and ecosystems quantity causes a change in a second and the change in the second quantity ultimately leads to an additional change in the first. A negative feedback is one in which the initial perturbation is weakened by the changes it causes; a positive feedback is one in which the initial perturbation is enhanced. The initial perturbation can either be externally forced or arise as part of internal variability. The system's structure is characterised by reciprocal feedbacks, emphasising that humans must be seen as a part of, not apart from, nature.[73]
Societal Collapse	Significant sociopolitical fragmentation and/or state failure along with the relatively rapid, enduring, and significant loss of capital, and systems identity; this can lead to large-scale increases in mortality and morbidity. For example, a rapid loss of societal complexity.
Societal Fragility	The potential for smaller damages to spiral into global catastrophic or extinction risk due to societal vulnerabilities, risk cascades, and maladaptive responses.
Systemic Risk	The potential for individual disruptions or failures to cascade into a system-wide failure.[74]
Technological Risks	Technological risks come from the rapid development and deployment of new technologies, with limited protocols governing their use. The ever-increasing intertwining of technologies with the critical functioning of societies is exposing populations to direct domestic threats, including those that seek to shatter societal functioning. Alongside a rise in cybercrime, attempts to disrupt critical technology-enabled resources and services will become more common, with attacks anticipated against agriculture and water, financial systems, public security, transport, energy and domestic, space-based and undersea communication infrastructure.[75]

Table continues on next page

Term	Definition
Tipping Points	A level of change in system properties beyond which a system reorganises, often in a non-linear manner, and does not return to the initial state even if the drivers of the change are abated. For the climate system, the term refers to a critical threshold at which global or regional climate changes from one stable state to another stable state. Tipping points are also used when referring to impact: the term can imply that an impact tipping point is (about to be) reached in a natural or human system. See also: Abrupt climate change, Adaptation, Irreversibility and Natural Systems.[76]
Value Lock-in	An event that causes a single value system, or set of value systems, to persist for an extremely long time. Value lock-in would end or severely curtail the moral diversity and upheaval that we are used to. If value lock-in occurred globally, then how well or poorly the future goes would be determined in significant part by the nature of those locked-in values. Some changes in values might still occur, but the broad moral contours of society would have been set, and the world would enact one of only a small number of futures compared to all those that were possible.[77]

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