



RISKGAMING

06

Experimental Automata

DANNY CRICHTON

Experimental Automata

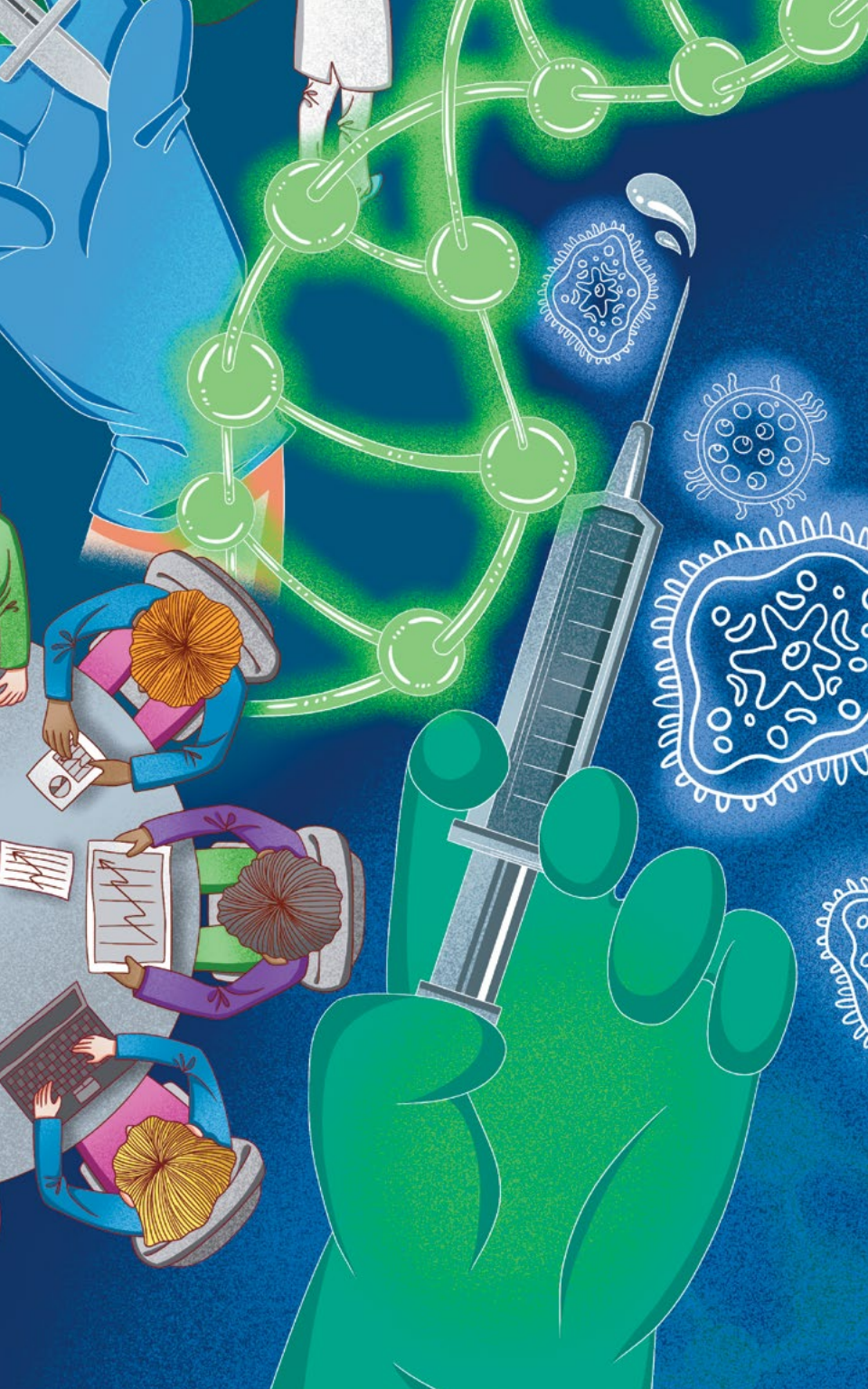
**A Global Investigation of the Future
of Digital Health and Biotechnology**

CREATED BY
Danny Crichton

PUBLISHED BY
Lux Capital

Contents

Introduction	9
Background and Context	19
Character Descriptions	23
Game Overview	37
Scene Story Guides	41
Game Leader Guide	57
Contact	63



Introduction

About Lux Capital

Lux Capital is a New York- and Silicon Valley-based venture capital firm investing in companies on the edge of scientific and technological breakthroughs. Over the past two decades, Lux has expanded from our New York City roots to Silicon Valley, and built a firm with over \$5 billion AUM and more than 30 full-time professionals, with a wide spectrum of technical backgrounds and the versatility to invest at any stage, from \$100,000 to \$100 million.

About Riskgaming

Riskgaming is a strategic simulation game that immerses players in complex scenarios reflecting real-world challenges and dynamics.

CHARACTER-DRIVEN STRATEGY

Players take on the role of richly-detailed characters who can strategically build or break trust with each other throughout the game.

EMERGENT BEHAVIOR

Players make strategic decisions influenced by personal and external incentives, allowing for spontaneity and surprise.

AUTONOMOUS DECISION-MAKING

All players select their actions independently of each other during a scenario, reflecting the autonomy of real-world decision-makers.

PROFOUND EXPERIENCES

Each scenario faithfully models the real world, allowing players to experience an alternative reality that informs our own.

About the Creator

Danny Crichton analyzes science, technology, finance and the human condition as Partner, Research at Lux Capital, a venture capital firm investing in emerging and growth-stage science and technology ventures.

Most recently, he was managing editor at TechCrunch as well as previously a foreign correspondent based in Seoul, South Korea. While there, he wrote more than 1,000 news stories and longform analyses chronicling U.S.-Asia technology relations, semiconductors, data infrastructure, fintech, disaster and climate tech, venture finance, product development, and many other complex subjects with technical and policy intersections.

In addition to his reporting and analysis at TechCrunch, he co-hosted its leading podcast Equity; co-programmed stages at its flagship Disrupt SF and Berlin conferences as well as its Sessions and Early Stage events; launched the premium news service Extra Crunch and grew it to seven figures of revenue; co-managed a multi-million dollar freelance budget; developed the TC-1 series of deep startup profiles and The TechCrunch List; and contributed broadly to the organization's news, operational, and talent development strategy.

Today, he is also a Fellow at the Manhattan Institute, and has published research on AI and urban economics; overseas venture capital; as well as technology and economic development with City Journal, the Foreign Policy Research Institute and the National Review. Formerly, he was an early-stage venture capitalist with General Catalyst in Palo Alto and Charles River Ventures in Boston and New York.

After graduating Stanford with honors in Mathematical and Computational Sciences, he was awarded a Fulbright research scholarship to South Korea, where he investigated the country's modern industrial policy for startup innovation.

Danny is based in Brooklyn, New York.

Acknowledgements

This game was brought about by a request from the United Kingdom's Embassy in Washington, DC. The ambassador and his staff wanted to convene several dozen top scientists, biotech executives and non-profit leaders for a bilateral symposium as part of British Prime Minister Keir Starmer's trade mission to the United States in early 2025. They hoped Riskgaming would be an energetic introduction to the day. I want to thank the entire UK diplomatic staff, and particularly Jonathan Tan, for their industrious partnership in making this Riskgaming session a unique and compelling offering.

Credits

Designer, Danny Crichton

Editor in Chief, Danny Crichton

Front Cover Illustration, Feixue Mei

Editor, Katie Salam

Production Designer, Justin Barber

Website Designer, James Clements

Partner, Laurence Pevsner

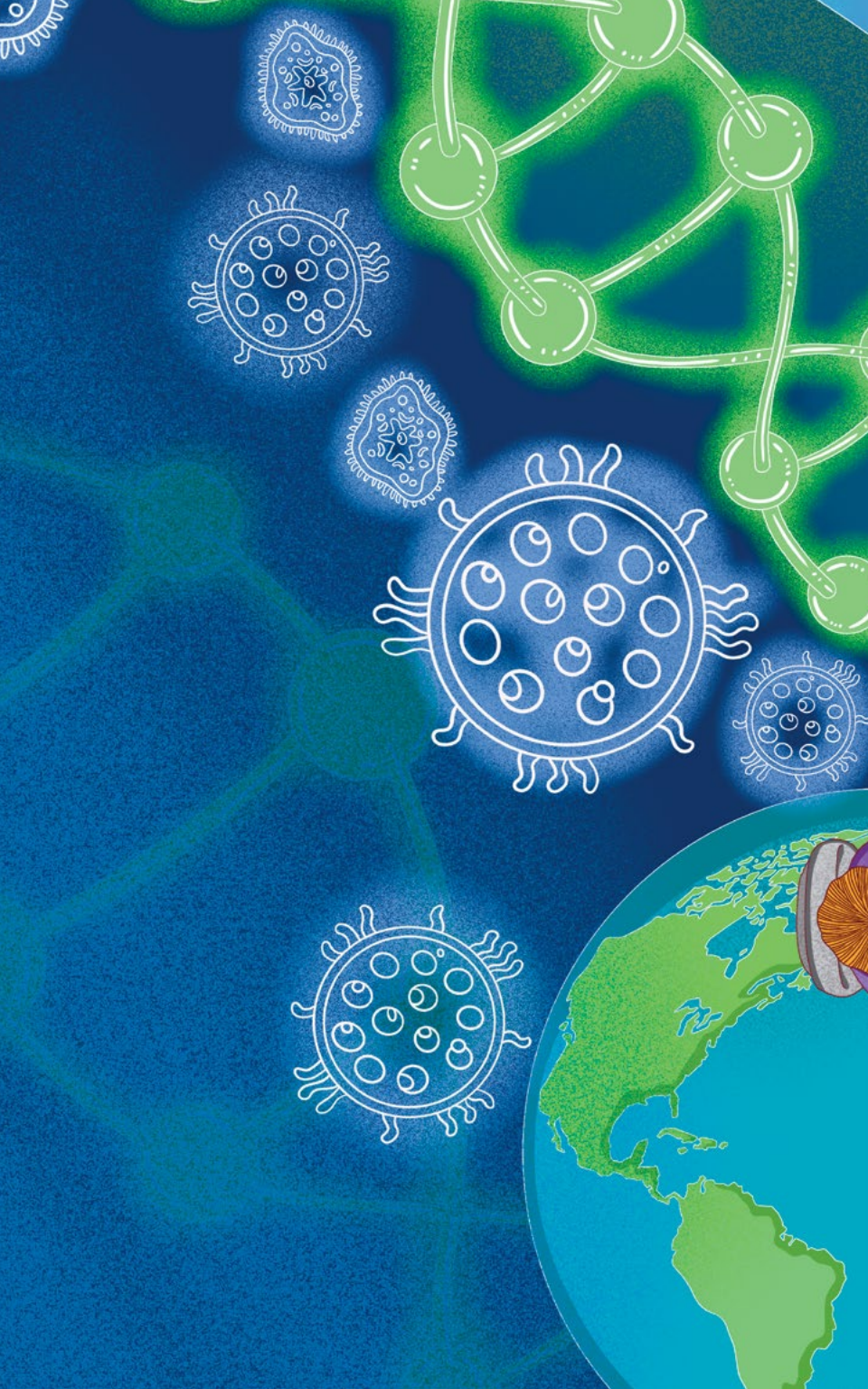


HOW TO DOWNLOAD THE GAME

All materials for the game, including the spreadsheet that drives it, design notes and player handouts, are available on the Lux Capital website.

To download the game materials, please head to luxcapital.com/riskgaming or use this QR code.





Background and Context

Experimental Automata is an educational salon experience for up to 60 people that takes about one hour to complete.

In the game, players take on global leadership roles that encompass politics, business and science while jet-setting to international summits. At each summit, a policy question is proposed, and each player will vote for one of the three available options.

The game has 30 **Indicators**, which are updated after every scene. All Indicators begin the game at 100, and move up and down based on which policy is selected at each summit as well as that scene's particular story. There are six regions for Indicators: the United States, United Kingdom, Europe, China, India, and Global, the latter representing the world as a whole. Each region then has five axes of Indicators: Research Competitiveness, Advanced Manufacturing, Population Health, Fiscal Strength and Supply Chain Sovereignty. For the Global region, Supply Chain Sovereignty is replaced by Supply Chain Integration.

Each role in the game has two Indicators assigned as **Objectives** that fully determine the score for that player. The first Objective is worth 2/3 of the final score, and the second is worth 1/3 of the final score. Indicators are distributed across the players symmetrically, with each Indicator being used twice as a primary Objective and twice as a secondary Objective.

In each scene, players will be sent to one of five pre-assigned cities to attend a summit: Atlanta (United States), Bombay (India), Cambridge (United Kingdom), Dalian (China) and Essen (European Union). The summits are conveniently named in alphabetical order, and each city symbolically represents one of the regions

in the game. For about 10-15 minutes, players should debate the policy question offered on their **Ballots**, keeping in mind their own Objectives.

At the end of the debate, players should vote for one policy option and return their Ballot to the Game Leader. The Game Leader will tally all of the ballots from each summit, with the option receiving a plurality winning. If there is a tie, the Game Leader may use the tie-breaker cards or just select an option at random.

After scoring is complete, the Game Leader should inform all of the players what the policy questions were at each summit, as well as which policy choice was selected. Then, the Indicator display will be updated and current scores and rankings will be displayed for all players.

At the game's end, all players will receive a final score, and the player with the highest score will be the game's winner.

NUMBER OF PLAYERS

Experimental Automata is a flexible game designed for a wide range of player counts. It can safely handle games between 30 and 60 players. It's possible to play with an even smaller group if each player takes on more than one role. However, this is not recommended.



Character Descriptions

There are 60 roles available in Experimental Automata. The roles and their objectives are listed below:

1. Chief of Staff to the President, U.S.

U.S. Advanced Manufacturing /Global Scientific Progress

Elected on a platform of rebuilding American manufacturing and advancing bioscience, the President has now appointed you as Chief of Staff. It's time to get to work.

2. Director of the Office of Management and Budget, U.S.

U.S. Fiscal Strength/E.U. Fiscal Strength

A long-time budget hawk and trans-Atlantic specialist, you now head the all-powerful OMB. Your mission is to preserve America's fiscal sanity — and, if possible, extend that stability to Europe.

3. Director of the National Institutes of Health, U.S.

U.S. Population Health/U.S. Research Competitiveness

As head of the NIH, you have dedicated your career to strengthening America's research capabilities and enhancing the resilience of the nation's public health system through innovative advances and timely experiments.

4. Secretary of State for Health and Social Care, U.K.

U.K. Population Health/Global Quality of Life

A lifelong public health specialist, you have recently transitioned from a role in a global organization dedicated to the Sustainable Development Goals to administering the department overseeing England's National Health Service (NHS).

5. Chief Economic Adviser to HM Treasury, U.K.

U.K. Supply Chain Sovereignty / U.S. Advanced Manufacturing

A former banker with extensive experience in factory finance — especially in the United States — you now serve as the British government's foremost economic adviser. Your top priority is reshoring and re-industrializing Great Britain.

6. Chief Scientific Adviser to the Government, U.K.

U.K. Research Competitiveness / U.K. Population Health

The United Kingdom has long been a scientific powerhouse — and that legacy is yours to uphold. In the post-Covid era, there is an increasing emphasis on harnessing cutting-edge science to improve human health, a priority you hold dear.

7. European Commissioner for Health and Food Safety

E.U. Population Health / Global Health System Resilience

As the former head of a global public health NGO, you understand the critical link between global health and regional well-being, even as your main focus is on enhancing the quality of life across Europe.

8. European Commissioner for the Economy

E.U. Advanced Manufacturing / Global Biomanufacturing Capacity

For years, you have prioritized the competitiveness of Europe's economy. Yet you also recognize that in an increasingly globalized and developing world, international redundancies are essential to maintaining a robust global marketplace.

9. Director-General of Research and Innovation, Europe

E.U. Research Competitiveness/Global Quality of Life

From Da Vinci to the ITER fusion reactor in Southern France, European research has consistently been at the forefront of innovation. Now, it's time to connect these advances to every European — and to every person, worldwide.

10. Minister of the National Health Commission, China

China Supply Chain Sovereignty/India Population Health

Your post-Covid mandate is unequivocal: China must establish its own healthcare supply chain for all medicines and supplies as quickly as possible. Achieving this requires robust consumer engagement, leveraging not only China's extensive market but also that of neighboring India.

11. Chairman of the National Development and Reform Commission, China

China Advanced Manufacturing/China Research Competitiveness

For President Xi Jinping, dual circulation is the top economic priority — one that demands the development of world-class factories and the cultivation of top scientific talent.

12. President of the Chinese Academy of Sciences

China Research Competitiveness/China Fiscal Strength

Your personal ambition is to see Chinese science surpass Western dominance. Yet, mounting financial pressures demand that the fundamentals of the Chinese economy — currently holding around 5% growth — be safeguarded.

13. Minister of Health and Family Welfare, India

India Fiscal Strength / India Supply Chain Sovereignty

India's health system is struggling in the aftermath of Covid. Your task is to restore its financial stability while ensuring continued access to affordable, life-saving treatments.

14. Chief Economic Adviser to the Government of India

India Supply Chain Sovereignty / U.K. Advanced Manufacturing

As a former industrial policy researcher at Oxford, you have been entrusted with ensuring India's long-term resilience by strengthening its supply chains. Your valuable contacts in the U.K. give you hope that a revitalized manufacturing partnership with India's former colonial power could help both economies weather upcoming technological challenges.

15. Secretary of the Department of Biotechnology, India

India Research Competitiveness / India Fiscal Strength

India is one of the world's largest importers of advanced science and technology goods — and that must change. This transformation requires significant investment in the next generation of scientists at the forefront of innovation, while carefully balancing the need to avoid over-ambitious budgets.

16. CEO, Phasor

U.S. Supply Chain Sovereignty / China Supply Chain Sovereignty

As one of the world's largest pharmaceutical manufacturers, your goal is to drive the global shift toward sovereign supply chains — a move that promises to raise both prices and profits.

17. CEO, AstroZenith

U.K. Supply Chain Sovereignty/Global Biomanufacturing Capacity

As a major biotech firm headquartered in the U.K., maintaining a robust local supply chain is crucial for your success. At the same time, you aspire to have your products manufactured globally, particularly in developing markets with high growth potential.

18. CEO, Broche

E.U. Advanced Manufacturing/China Advanced Manufacturing

As the executive leading a rare European-Chinese joint venture in biomanufacturing, you have navigated shifting political landscapes to ensure that every region gains access to some of the finest factories ever built.

19. CEO, Guanxi

China Supply Chain Sovereignty/China Population Health

As a leading biotech executive in China and a member of influential CCP committees, you have consistently prioritized the safety and well-being of the Chinese people in all of your business operations.

20. CEO, Chennai Pharma

India Research Competitiveness/U.K. Research Competitiveness

Heading India's biotech national champion, you have become a driving force behind reverse brain drain — from Cambridge back to India. With your recently established secondary lab in the U.K., you aim to forge a long-term scientific bridge between the two nations.

21. CEO, BioSquares

Global Biomanufacturing Capacity / Global Supply Chain Integration

As the head of the first fully decentralized biomanufacturing company, your objective is to guarantee that every product can be produced anywhere at a low cost.

22. CEO, PharmReady

Global Health System Resilience / U.S. Fiscal Strength

Working as a contractor of the U.S. government on global public health initiatives, you aim to lead PharmReady in enhancing the world's capacity to confront emerging, dangerous health threats. You remain constantly concerned, however, about the U.S. government's ability to cover its liabilities.

23. CEO, TrialLinx

India Population Health / India Advanced Manufacturing

As the head of an outsource manufacturing facility in India, your goal is to license high-quality, generic therapeutics from around the world to enhance local health, all while bolstering the country's capacity for superior manufacturing by working up the value chain.

24. CEO, ForgetRx

Global Scientific Progress / U.K. Supply Chain Sovereignty

As the CEO of a prominent U.K.-based emerging biotech startup, your objective is to harness anonymized patient data from across the globe to rapidly enhance the quality of AI-driven models in the biosciences.

25. CEO, CeLLM

U.K. Fiscal Strength / U.S. Population Health

As the head of CeLLM, you have secured generous funding from U.K. research councils and other sources to invest in the future of equitable health. While your largest customer is in the United States, you currently operate in over a dozen countries — and you plan to expand further.

26. Funding Director, Thomas Toews Foundation

U.S. Research Competitiveness / U.S. Supply Chain Sovereignty

The Thomas Toews Foundation is a leading national security think tank specializing in sci-tech diplomacy, development and defense. Recently, its top priorities have been strengthening America's scientific workforce and securing its supply chains in biology, semiconductors and other critical technologies.

27. Funding Director, Goodby Trust

U.K. Fiscal Strength / U.S. Fiscal Strength

Established by Lord Goodby over a century and a half ago in the wake of the Franco-Prussian War, the Goodby Trust was designed to ensure fiscal rectitude. You now sponsor economic studies on government funding across the United Kingdom, the United States and beyond.

28. Funding Director, EUBI

E.U. Research Competitiveness / E.U. Advanced Manufacturing

Originally launched as a well-funded initiative to nurture the next generation of European biologists, the European Union Biotech Institute (now just EUBI) has since expanded its focus to advancing the frontiers of European science and manufacturing through its grant programs.

29. Funding Director, Shanghai Genomics Center

China Fiscal Strength/E.U. Research Competitiveness

As China's economy has sputtered in the post-Covid era, one of the Center's highest priorities has been identifying therapies that simultaneously improve human health while drastically cutting public health costs. In addition, the Center is partially funded by sources in Europe and takes advantage of the best ideas that Europe has to offer.

30. Funding Director, India Health Foundation

India Supply Chain Sovereignty/India Research Competitiveness

The Foundation lives up to its name — dedicated to improving Indian health in every way. This includes developing a robust pharmaceutical supply chain, from generic drugs to advanced therapeutics, while ensuring Indian scientists remain closely connected with manufacturing to fortify the nation's biotech industry.

31. Funding Director, The U.N. Health Foundation

Global Quality of Life/E.U. Population Health

Your lifelong mission is to enhance the lives of people worldwide. Having previously led European health initiatives for the Foundation, you continue to build strong relationships across the continent.

32. Funding Director, Science as Open Source (SOS)

Global Scientific Progress/U.K. Research Competitiveness

U.K.-based SOS was formed during the Cold War to use science diplomacy to bridge the Iron Curtain. Today, the organization is dedicated to helping build scientific capacity in all nations — especially its home country, the United Kingdom.

33. Funding Director, Green Revolution Foundation

Global Health System Resilience / U.S. Supply Chain Sovereignty

One of modern agriculture's most significant achievements, the Green Revolution, is credited with saving over a billion lives. Today, the Foundation seeks to broadly improve public health while remaining true to its origins in the United States.

34. Funding Director, Sino-Euro Friendship Initiative

E.U. Supply Chain Sovereignty / China Supply Chain Sovereignty

Nearly three decades ago in the post-Tiananmen era, business leaders launched the Initiative to mend relations between China and Europe. Today, it serves as a forum for business exchange, prioritizing thoughtful and impactful measures to enhance economic resilience on both sides.

35. Funding Director, Indo-European Advancement Foundation

India Advanced Manufacturing / E.U. Population Health

Originally founded under a different name decades ago, the Foundation has long served as a hub for elite scientists and financiers shaping the future of European-Indian relations. Today, with the Indian government prioritizing industrial development and European nations focusing on health equity, the Foundation has mirrored these objectives with its own grantmaking.

36. Director, EuroGlobal Innovators

E.U. Fiscal Strength / Global Scientific Progress

Founded as a consulting firm spun off from a Swiss bank at the advent of the euro, EuroGlobal champions the improvement of the Old Continent's economic standing while advocating for enhanced scientific progress across universities and research centers.

37. Director, SinoAmerican Wellness Forum

U.S. Population Health/China Population Health

Founded a century ago by emigrés from China following the Xinhai Revolution, the rebranded Forum emphasizes holistic wellness in both the United States and China, embracing the latest advances in allopathic medicine alongside traditional Chinese medicine.

38. Director, SinoBrit Vitality Council

China Population Health/U.K. Advanced Manufacturing

Founded in Hong Kong during the 1997 handover, SinoBrit connects the United Kingdom's manufacturing industry with the health systems of both Hong Kong and mainland China, striving to preserve the long-standing amity between these two nations.

39. Director, Future Britain Forum

U.K. Advanced Manufacturing/U.K. Population Health

Established in the wake of the Great Financial Crisis, the Forum has focused on enhancing British living standards through re-industrialization, increased market competition and better funding for the National Health Service (NHS).

40. Director, Anvil Dragon Coalition

China Fiscal Strength/China Advanced Manufacturing

Established by a group of leading Chinese entrepreneurs, the Coalition collaborates with Beijing's central authorities to enhance China's global financial standing — through initiatives such as the Belt and Road and by bolstering state sovereignty via cutting-edge manufacturing.

41. Director, Euro Vanguard Network

E.U. Supply Chain Sovereignty/E.U. Advanced Manufacturing

Developed in Frankfurt by French and German bankers worried about the future of Europe's manufacturing sector, the Network is dedicated to enhancing the competitiveness of the continent's distribution networks and factories.

42. Director, Delhi Fiscal Fund

India Fiscal Strength/U.K. Fiscal Strength

Founded by two alumni of the Reserve Bank of India, the Fund coordinates fiscal policy research from its offices in New Delhi and London.

43. Director, Anglo-American Insight Network

U.K. Research Competitiveness/U.S. Population Health

Originating over a few pints at a Soho, London bar and later formalized, the Network now advocates for enhanced coordination between Britain's leading health research centers and U.S. public health agencies.

44. Director, Overseas India

U.K. Population Health/India Advanced Manufacturing

Overseas India is the brainchild of a prominent Indian entrepreneur, who has funded it lavishly the last few years. The organization oversees a portfolio of seven projects — from enhancing the lives of Asian immigrants in Britain to boosting India's factory output through local innovation.

45. Director, SinoGlobal Nexus

China Research Competitiveness/Global Supply Chain Integration

SinoGlobal is a forum established by several Tsinghua graduates in Shenzhen, dedicated to leveraging Chinese competitiveness in global research to sustain China's dominance in goods production. It firmly opposes all forms of de-coupling or de-risking.

46. Lead Scientist, BioFoundry Network

Global Biomanufacturing Capacity/U.K. Fiscal Strength

BioFoundry, funded by a contentious series of grants by the U.K. government, promotes the rapid expansion of biomanufacturing to reduce drug and therapy prices worldwide.

47. Lead Scientist, Silk Nexus Institute

China Advanced Manufacturing/India Research Competitiveness

Amid periodic tensions across the Himalayas, the Silk Nexus Institute was established by long-time Indian and Chinese business partners who believe that the synergy of Chinese manufacturing and Indian expertise can foster regional peace for generations.

48. Lead Scientist, ChainFusion

Global Supply Chain Integration/India Supply Chain Sovereignty

Based in Mumbai, ChainFusion conducts influential research on how India's burgeoning tradable sector can expand on the global stage.

49. Lead Scientist, InnovForge

India Advanced Manufacturing/U.S. Research Competitiveness

InnovForge is a consulting firm that has leveraged recent de-risking policies to successfully facilitate the transition of American drone manufacturing from Chinese factories to India.

50. Lead Scientist, Atlantic Synthesis Institute

U.S. Research Competitiveness / U.K. Supply Chain Sovereignty

Founded by two prominent scientists at MIT and Imperial College London, the Institute explores ways to deepen relations between the United States and Great Britain through cutting-edge experiments and re-industrialization.

51. Lead Scientist, DragonCap Research

U.S. Fiscal Strength / China Research Competitiveness

DragonCap is a market advisory firm specializing in global macro analyses of the United States and China. It is especially renowned for its insights into Federal Reserve policies and China's patent output.

52. Lead Scientist, Special Relationship Center

U.K. Advanced Manufacturing / U.S. Advanced Manufacturing

Established as a joint venture between the U.S. Department of Commerce and the U.K. government, the Special Relationship Center is exclusively dedicated to enhancing manufacturing capacity in both partner countries.

53. Lead Scientist, Lotus Capital Institute

India Population Health / China Fiscal Strength

In response to growing travel between China and India, the Institute was founded as a friendship initiative to facilitate Beijing's investments in local health projects across rural India.

54. Lead Scientist, Atlantic Partnership Alliance

U.S. Supply Chain Sovereignty/E.U. Supply Chain Sovereignty

The Alliance is a small yet influential group of scientists and economists who advocate for and design policies to improve biological supply chains in the United States and Europe.

55. Lead Scientist, EuroVital

E.U. Population Health/E.U. Fiscal Strength

EuroVital is a healthcare consulting firm that evaluates and recommends improvements for the public healthcare systems of E.U. member states.

56. Director-General, World Health Organization

China Population Health/India Fiscal Strength

Raised in India and later appointed to the WHO with the unexpected support of China, you have prioritized enhancing the quality of life in the world's two most populous countries — all while facing intense scrutiny from global politicians in the post-Covid era.

57. Director-General, World Trade Organization

U.S. Advanced Manufacturing/Global Health System Resilience

Formerly Spain's health minister and now head of the World Trade Organization, you secured your position with strong backing from the United States. Today, you strive to balance enhancing U.S. competitiveness with your extensive background in global public health.

58. Director-General, Vienna Forum

Global Supply Chain Integration/E.U. Research Competitiveness

Founded during the Cold War, the Vienna Forum once worked to bridge the East and West through trade and science diplomacy. Today, it champions global free trade and open research — especially throughout Europe.

59. Director-General, EuroPlus Initiative

E.U. Fiscal Strength/E.U. Supply Chain Sovereignty

EuroPlus is a transnational organization comprising E.U. member states that advocate for market competition both within the single market and beyond.

60. Director-General, Global Vitality Alliance

Global Quality of Life/India Population Health

Originally partnering with microfinance organizations in India to improve rural healthcare, the Alliance has since expanded its focus to advancing the United Nations' Sustainable Development Goals around the world.



Scene Story Guides

Scene 1: Global Ag Plague (2027)

As climate change intensifies, a year of record heat has depressed farming yields worldwide. In response, an AI-first agricultural company based in the United States developed a valuable new wheat seed designed to boost yields in high-heat conditions. Given mounting inflationary pressures on the global food system, the seed was rapidly and widely deployed following abbreviated testing. Unfortunately, a naturally-occurring novel variant of *Barley stripe mosaic virus* was able to attack the modified seeds, allowing for the unexpected spread of the pathogen. Consequently, wheat and barley production plunged, further exacerbating economic and fiscal stress on countries around the world.

Atlanta: International Risk Management of Emerging Bioscience

The sudden spread of a well-known plant pathogen via a newly bioengineered seed has triggered immediate concern about other biotechnologies and their potential downsides. How should the world manage future biorisks?

- **Option 1: Global Biosafety Certification Framework** — Mandate an international, government-led framework requiring multi-stage testing and standardized biosafety certification for all new biotech and agtech innovations before their public use.
- **Option 2: Regulated Risk Sandbox Pilot Programs** — Establish controlled “regulatory sandbox” zones where new bioscience products can be deployed on a limited scale under strict oversight.
- **Option 3: Industry Self-Regulation** — Create a global private-sector consortium that develops and enforces voluntary biosafety standards for emerging technologies.

Bombay: Global Crisis Management

With wheat and barley prices skyrocketing and food inflation rising across the world, affordable food access has become a crisis, particularly in the developing world. How should the world respond to this emergency?

- **Option 1: Centralized Global Response Authority** — Establish a powerful civilian international crisis management body — operating under the United Nations or a similar entity — to centrally coordinate resource allocation, emergency response and crisis communications for all transborder famine threats.
- **Option 2: Global Food Crisis Task Force** — Establish a specialized international task force solely dedicated to the management of this food crisis.
- **Option 3: Minimal Intervention** — Allow individual nations full control over their crisis response while international bodies serve in a supportive, advisory role and provide limited emergency resources.

Cambridge: Trade Policy and Food Crisis Alleviation

With acute food shortages throughout the world, attention has turned to agricultural tariffs, which consistently remain among the highest of tariffs as nations attempt to protect farmers from the vagaries of the global markets. Should the world change its trade policy in the context of this year's crisis?

- **Option 1: Open Trade** — Eliminate tariffs and trade barriers on agricultural products while streamlining global logistics to facilitate the rapid distribution of food supplies during the crisis.
- **Option 2: Emergency Food Banking** — Launch a large-scale, government-funded program to build strategic food reserves and provide subsidies to stabilize food prices, protecting vulnerable populations and farmers in the short term while maintaining historical trade policies in the long term.

- **Option 3: Targeted Trade Adjustments** — Implement additional temporary trade restrictions — such as bans on non-essential exports — to secure domestic food supplies.

Dalian: Open Source / Intellectual Property

With the global food crisis in full swing, attention has turned to the private business behind the bioengineered seed, whose proprietary technology is not available for public inspection. Should the world require open innovation in biotechnologies?

- **Option 1: Open-Source Innovation Mandate** — Require that all biotech innovations relevant to the crisis — including the new seed technology — be released under open-source licenses to encourage global collaboration and rapid iteration.
- **Option 2: Tiered IP Protection with Emergency Licensing** — Create a two-tier intellectual property regime where core technologies are protected normally but are subject to mandatory emergency licensing during declared crises.
- **Option 3: Voluntary Patent Pooling** — Encourage the formation of a voluntary patent pool for crisis-related technologies to foster collaboration without forgoing IP rights.

Essen: Farm Modernization

Amidst the food crisis, there are growing questions about the use of biotechnology in agriculture. Should the world press ahead with new technologies, or pull back to more traditional agricultural methods?

- **Option 1: Full-Scale Biotech Modernization Initiative** — Launch a multi-year government-funded global initiative to aggressively expand national and international investment in biotech-driven agriculture.
- **Option 2: Public-Private Ag Innovation Hubs** — Foster regional public-private partnerships to create agtech hubs offering localized support, technical innovation centers and integrated services to help farmers transition to new technologies.

- **Option 3: Protect Traditional Agriculture** — Promote the preservation of traditional, organic or locally adapted farming methods while actively rejecting the use of biotech in food production through trade barriers and other market regulations.

Scene 2: Global Macro Crisis (2028)

After a period of intense food insecurity and global inflation the likes of which the world hasn't seen for decades, the global economy is reeling from fiscal shock and its after effects. Countries are under serious financial strain, with political leaders forced to choose between very challenging priorities, from investing in the future of advanced technology to protecting the health of their populations despite skyrocketing costs. Populist movements driven by farmers are growing in power, with each nation trying to protect its own interests at the expense of the global commons. Biological research continues across all labs, and while fundamental insights are interesting, they haven't yet proven useful in the clinic or in the market.

Atlanta: Fiscal Recovery Strategy

With the immediate food crisis subsiding, most governments now face a serious fiscal crisis that demands an urgent response. How should governments approach their budgets?

- **Option 1: Austerity for Stability** — Governments adopt strict austerity measures such as cutting public spending, reducing subsidies and tightening budgets in order to quickly restore fiscal balance.
- **Option 2: Balanced Fiscal Approach** — A moderate blend of austerity and stimulus measures: cutting non-essential spending while targeting investments in high-impact areas to preserve public services and promote growth.

- **Option 3: Stimulus for Growth** — Governments launch a large-scale stimulus package, injecting funds to jump-start the economy, boost research and support manufacturing — even if it means higher deficits in the short term and greater debt in the long term.

Bombay: Investments in Health Services and Innovation

Public health is one of the largest government expenditures for advanced nations across the world. During this fiscal crisis, should international funds be directed toward future investments in health technology or toward greater investment in health services today?

- **Option 1: Tech-First Investment** — Channel international funds toward high-tech research, digital innovation and advanced manufacturing in order to prioritize technological discovery and build long-term economic strength, even at the expense of urgent public health needs.
- **Option 2: Balanced Investment Strategy** — Judiciously allocate resources between disruptive technology and immediate public health needs, seeking moderate gains in both areas.
- **Option 3: Health-First Allocation** — Focus global resources predominantly on bolstering public health such as improving healthcare systems, ensuring food security and supporting immediate community health needs, even at the expense of long-term tech innovation.

Cambridge: Challenges to Global Cooperation

A global fiscal crisis has placed strain on every nation's balance sheet, but not every country has the same challenges. Should governments work together through multilateral institutions to try to solve the emergency, or should each go it alone and focus on their own competitiveness?

- **Option 1: Isolationist Protectionism** — Countries adopt aggressive protectionist measures by raising tariffs, imposing

export controls and prioritizing domestic industries in order to secure their local economies and protect national interests.

- **Option 2: Selective Engagement** — A hybrid approach that combines strategic protectionism in critical sectors with targeted international partnerships, aiming to safeguard domestic priorities while reaping some benefits of global cooperation.
- **Option 3: Global Development Initiative** — Nations commit to a global development initiative that would see large transfers of funds to countries with the most severe fiscal crises. Those not joining would be penalized through trade restrictions.

Dalian: Fundamental versus Translational Funding

At a time of great fiscal stress, budget cuts are inevitable. Should governments advocate for more emphasis on fundamental scientific advances in global research funding, or should they encourage more translational opportunities that bring previous life-science advances to the clinic faster?

- **Option 1: Fundamental Research Emphasis** — Advocate for increased global funding for basic scientific research to build a long-term foundation for innovation, even if immediate clinical benefits are limited.
- **Option 2: Diversified Research Portfolio** — Encourage a diversified funding strategy that supports both fundamental and translational research, seeking to secure long-term innovation while achieving moderate near-term benefits.
- **Option 3: Translational Research Emphasis** — Push nations to reallocate research funding to projects that promise near-term clinical breakthroughs and tangible public health improvements, even if it means scaling back on fundamental science.

Essen: Trade Policy and Supply Chain Resilience

With a global fiscal crisis underway, there is tension between those who want to actively support and defend local industries and their supply chains and those who believe that opening up trade may be the best solution. How should governments design their economic policies?

- **Option 1: Protectionist Trade Policies** — Implement aggressive tariffs, export controls and domestic subsidies to protect key industries and secure domestic supply chains at the expense of international trade openness.
- **Option 2: Targeted Trade Adjustments** — Use selective, temporary trade measures to protect critical sectors without fully closing off international trade.
- **Option 3: Free Trade and Integration** — Remove trade barriers and promote open markets to enhance global supply chain integration, boost efficiency and drive international cooperation — even if national sovereignty is diluted.

Scene 3: AI is here, it's just not equally distributed (2029)

After years of exponential growth in the quality of artificial intelligence models, 2029 has become the year of the near-singularity, particularly in biotech. Personalized CRISPR-based treatments can now be simulated by AI, routine imaging scans are processed by autonomous radiology agents, and seeds and plants are increasingly bioengineered for robotic processing in the field. Meanwhile, human nutrition science has become more precise thanks to the proliferation of accurate continuous monitoring devices. Yet these breakthroughs remain the privilege of a select few. In the wake of last year's Global Macro Crisis, widespread social

unrest has erupted as many people see little improvement in their own lives from these high-tech marvels. This growing backlash is reshaping societal expectations and fueling protests as the gap between cutting-edge science and the common citizen widens.

Atlanta: Global Patient Data Commons

The use of AI in biotech and health has surged, but that has led to a massive challenge: access to data. With patient records traditionally considered highly confidential, engineers lack the massive amounts of high-quality clinical data needed to advance frontier AI models. What should the world do?

- **Option 1: Global Data Mandate** — Due to the growing need for massive datasets to train biotech AI models, a new international treaty would require every signatory nation to contribute anonymized patient data to a single, centralized commons managed by a supranational body (e.g., under U.N. oversight).
- **Option 2: National Health Exchanges** — Data remains largely under private control by hospitals, tech companies and national health systems. Individual countries can undertake additional work to integrate these sources together and make them available to researchers.
- **Option 3: Decentralized Private Data Networks** — Using advanced encryption and blockchain technology, personal health records are stored securely on a distributed ledger. Data sharing is governed by smart contracts, which allow individuals to grant access on a case-by-case basis.

Bombay: Global AI Dividend

The rapid rise of AI technologies has suddenly imperiled millions of clinical workers throughout the world, who are now competing with automated programs owned by a handful of individuals

and corporations. What should be done to ameliorate the labor displacement?

- **Option 1: Mandatory Global AI Dividend Tax** — A binding international framework mandates that all profits from AI-driven biotech breakthroughs are heavily taxed. The collected revenue is then redistributed as a “global dividend” to citizens worldwide.
- **Option 2: Tiered Development Dividend** — A global dividend scheme where taxation and redistribution are calibrated: developed countries pay higher tax rates on AI profits, while developing nations receive larger per capita dividends.
- **Option 3: Voluntary Corporate Social Responsibility** — No mandatory tax is imposed, but instead, governments may enact incentives for companies to help workers who are affected by AI obsolescence.

Cambridge: AI Equality

AI is producing prodigious wealth for the handful of nations and companies working at the frontiers of the industry. Yet, many nations are left behind without the necessary talent and compute resources to compete. Should governments help to equalize the imbalance?

- **Option 1: Open-Source Mandate for Publicly Funded AI** — Globally mandate that all AI algorithms and biotech innovations developed with public or international funds be released under open-source licenses, ensuring that breakthroughs are freely available to all.
- **Option 2: Tiered AI Licensing Model for Global Markets** — Developed nations maintain exclusive rights to cutting-edge technology whereas lower-income countries are provided with legacy AI tools that, while less advanced, still offer significant benefits in healthcare and biotech.

- **Option 3: Fully Proprietary Innovation** — Encourage national sovereignty of key technologies by allowing all AI-driven biotech innovations to remain proprietary.

Dalian: Critical Supply Chains

AI technologies now underpin critical sectors of the global economy, such as pharmaceutical development and health services. To what degree should nations cooperate to share critical technologies or maintain their competitive edge?

- **Option 1: Nationalization of Key Supply Chains** — Countries should seize control of critical biotech, medical and agtech AI supply chains by nationalizing essential compute infrastructure and technologies to protect distribution of vital products.
- **Option 2: Public-Private Global Supply Chain Partnerships** — Encourage governments to form strategic alliances with leading multinational corporations to jointly manage key supply chains.
- **Option 3: Market-Driven Supply Chains** — Allow market forces to manage supply chains with minimal government intervention. Companies compete to optimize efficiency and resilience, with any necessary support coming from targeted incentives rather than state regulation.

Essen: Responding to Labor Strife

Many workers are concerned about their livelihoods as AI technologies make enormous strides forward in quality and power. How should governments consider those who are left behind?

- **Option 1: Universal Basic Income for the Transition** — Encourage governments to institute a universal basic income (UBI) to provide every citizen with a guaranteed income regardless of employment status.

- **Option 2: Comprehensive Retraining and Job Guarantees** — Governments launch expansive global retraining programs paired with job guarantees or public-sector employment opportunities for displaced workers.
- **Option 3: Minimal Government Intervention** — Protect economic dynamism and flexibility by putting in place minimal backing for worker retraining or income support.

Scene 4: The AI Hangover (2030)

Last year's surge in artificial intelligence has led to massive productivity and health gains across the globe. Yet like all new technologies, its rapid deployment has created a whole new set of problems all nations must grapple with. A challenging year for Earth's climate has led to a spike in energy prices, leading to large-scale dislocations around the world. Meanwhile, terrorist groups are using AI for their own purposes, including for the invention of synthetic pathogens and attacks on patient health data. Plus, there's growing ethical concern about the potential for certain AI applications to violate historical animal experimentation norms.

Atlanta: Counterterrorism and Cyber Defense

With more and more aspects of daily life under the control of AI algorithms, computers have become ever more important targets for cybercriminals and international terrorists. How should governments respond to this vulnerability?

- **Option 1: Global AI Security Pact** — Forge an international alliance dedicated to tracking and neutralizing AI-based threats, including joint operations against terrorist groups leveraging AI for cyber or biological attacks.
- **Option 2: Additional National Funding for Cybersecurity** — Increase funding for offensive cyber teams to track down threats, potentially using proprietary information from industry.

- **Option 3: De-Cyber Critical Systems** — Remove networked computers from critical infrastructure systems, reducing connectivity but increasing resilience and security.

Boston: Synthetic Pathogen Regulation

Advancements in AI — particularly within biotech — have spooked security analysts, who are witnessing extremist groups increasingly using these tools to develop novel pathogens that could endanger human and plant life. How should governments respond to this threat?

- **Option 1: International Biosecurity Protocol** — Implement a global regulatory framework that strictly monitors research and development in AI-enabled bioengineering, with heavy penalties for breaches and misuse.
- **Option 2: Temporary Moratorium on High-Risk AI Bio-Research** — Enforce a temporary ban on AI research and usage in areas deemed high-risk for synthetic pathogen development, offering time to policymakers to develop safe regulatory frameworks.
- **Option 3: Industry Incentives for Pathogen Defense** — Aggressively fund national efforts to create prophylactics and other biodefenses against AI-designed synthetic pathogens.

Cambridge: Global Climate Controls

AI's rapid rise has triggered a global crisis in the energy markets with demand soaring in all regions of the world, even as this year's temperatures hit all-time highs. How should governments balance the benefits of AI against the costs of climate change?

- **Option 1: Aggressive Geoengineering** — Use the best AI modeling and manufacturing advances to rapidly geoengineer Earth's atmosphere to induce global cooling.

- **Option 2: All-of-the-Above Energy Expansion** — Encourage expansion of all available energy resources — from nuclear power to coal — in order to drive energy prices down in all regions.
- **Option 3: Global Coordinated Energy Rationing** — Implement temporary government-imposed energy price controls and targeted rationing of AI systems to protect vulnerable global populations from runaway energy costs and the effects of worsening climate change.

Dalian: AI and Animal Experimentation

Advanced AI models can increasingly understand the complexities of human life, which means they are also capable of analyzing and evolving animal life. That's opened up new ethical frontiers on the conduct of animal experimentation. What safety policy should apply?

- **Option 1: Aggressively Reduce Ethical Boundaries** — Encourage scientists to aggressively expand the boundaries of animal research, including through such techniques as cloning, genetic engineering, experimental species hybrids and more.
- **Option 2: License AI-Evolved Animals** — Allow scientists and industry to explore the frontiers of animal life only in regulated experimental facilities that are globally licensed.
- **Option 3: Protect Life** — Forbid the use of AI technologies in the pursuit of speculative new animal species and hybrids.

Essen: Global Health System Overhaul

With AI radically changing the treatment options available for patients, there is a growing push to rethink how healthcare services are provisioned across the world. How should governments advocate for international medical care?

- **Option 1: Right to Health Migration** — Develop and sign a global treaty guaranteeing the right to health care for any person in the world, to be paid by the host country.
- **Option 2: Global Health System Investment Fund** — Create a global financial institution to rapidly deploy biotech advances in all countries while also subsidizing companies with frontier technologies.
- **Option 3: National Medical Sovereignty** — Encourage all people to return to their home countries for all medical treatments.



Game Leader Guide

Experimental Automata is a relatively simple game to manage using the materials available for download on the Riskgaming website. Each player will need their own badge, and the Ballots for the 20 summits in the game should be printed out ahead of time for ease of distribution.

All scoring is handled via the scoring spreadsheet. The spreadsheet requires only the specific policy numbers that were selected by the players at each summit — the Game Leader does not need to input every ballot, but rather just the winning choice.

Since the game is meant to be discussion-oriented and flexible, the Game Leader has wide latitude to add commentary or have player groups discuss the outcomes of the various policy decisions after each scene. As such, we recommend the game be used alongside a relevant conference as a breakfast, lunch or happy hours activity that can stimulate conversation with different stakeholders in a fun and high-energy way.

GAME OUTCOMES

While the implications of all of the policies in *Experimental Automata* are vast, there are a few important patterns in the game worth highlighting.

First, each policy affects nearly all of the Indicators in the game. Given that the world is a deeply interlocked system, it's very hard to surgically improve one indicator without affecting others. For example, improving the research competitiveness in one nation generally implies a relative decline in the competitiveness of another, although positive sum policies do exist.

That leads to a major tension in the game between developed countries and emerging markets. The overwhelming weight of policies in the game help developed countries that are on the frontiers of research and business, making it difficult for emerging

market countries like India to catch up. The high cost of AI research and its insatiable demand for energy only exacerbate this tension.

Some players have indicators to improve the Global region as a whole. Just as in real life, however, they are a distinct minority of the players in the game, giving them little ability to move policies toward greater openness and cooperation. Where their interests coincide with the pecuniary interests of the sovereign nations, there is traction, but such moments are rare.

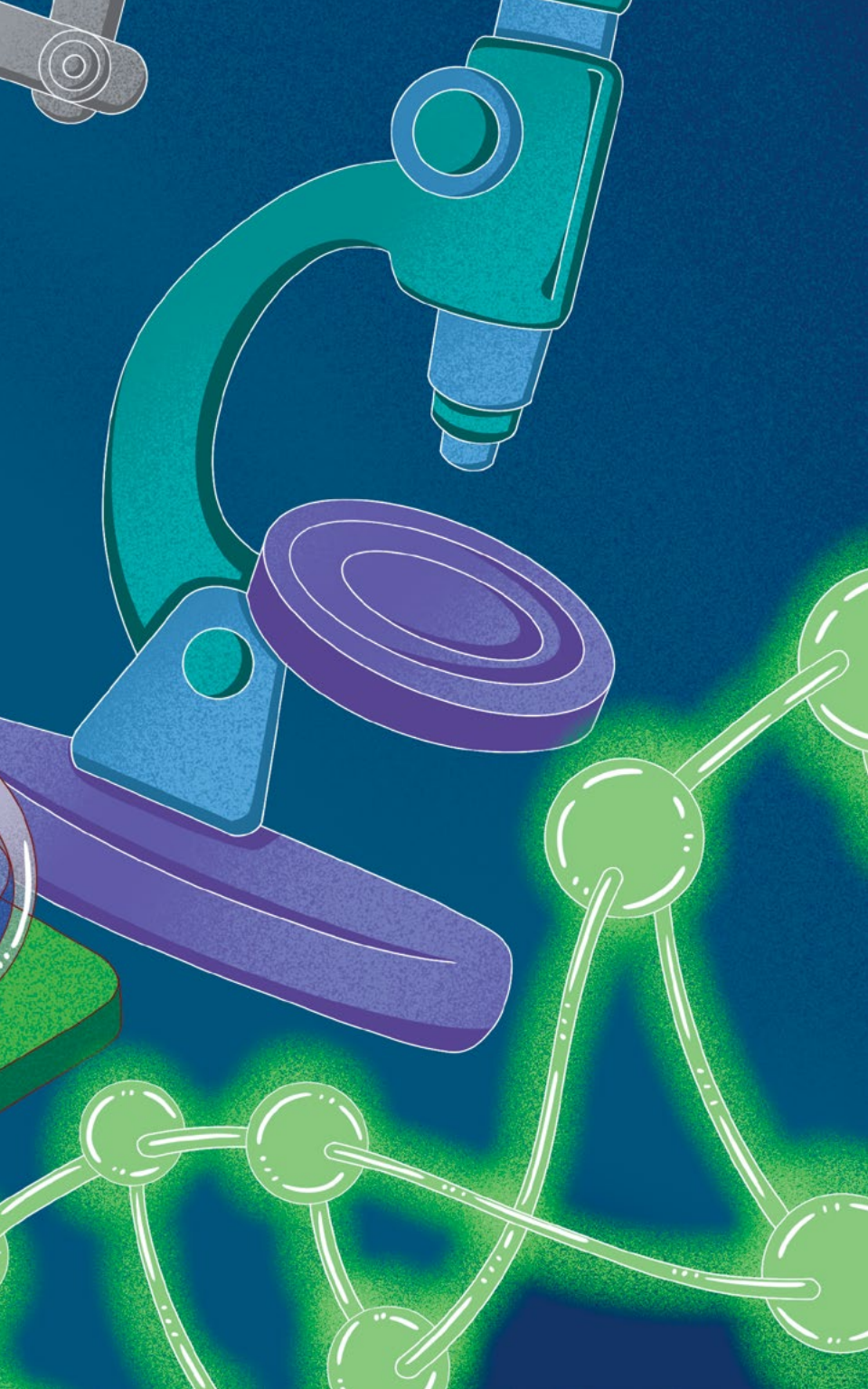
In our experience, most debates end with the players selecting the middle option, which is written as a status quo choice in all 20 summits. One of the biggest challenges with consensus-based processes like the ones in *Experimental Automata* is that deviating from the status quo requires a lot of individual support from other players under very strict time pressures. Since players regularly head to different summits where most people around the table will be new to them, there is little time to build the trust needed to select the most disruptive policies. In some but not all cases, the status quo option is the worst of the trio offered — a reminder that the middle option (like the middle seat on a plane) is more often surrendering than leading.

One exception to the yen for the status quo has been among younger tech founders and engineers from Silicon Valley, who often quickly write off the status quo choice and proceed to debate the two more extreme options for most of the scene. We've never seen geoengineering selected in Scene 4's Cambridge summit when players are drawn from the policy world, but that option got universal support with a Silicon Valley crowd. Even with incentives, our fundamental dispositions to innovation and the future can reign supreme.

Finally, in the game, biology, pharma, agtech, and healthcare systems are tightly interconnected. These worlds are very far apart

in real life, but the fundamental science and the AI models that take advantage of it are quite linked together across these domains. It's well past time for more cross-pollination.

A Note on the Name: *Experimental Automata* takes its name from cellular automata, most widely known with Conway's "Game of Life," a complex two-dimensional system that emerges from simple rules. Automata themselves are a basic unit of theoretical computer science.



Contact

Contact Us

For questions or comments related to *Riskgaming* or this scenario, please email riskgaming@luxcapital.com.

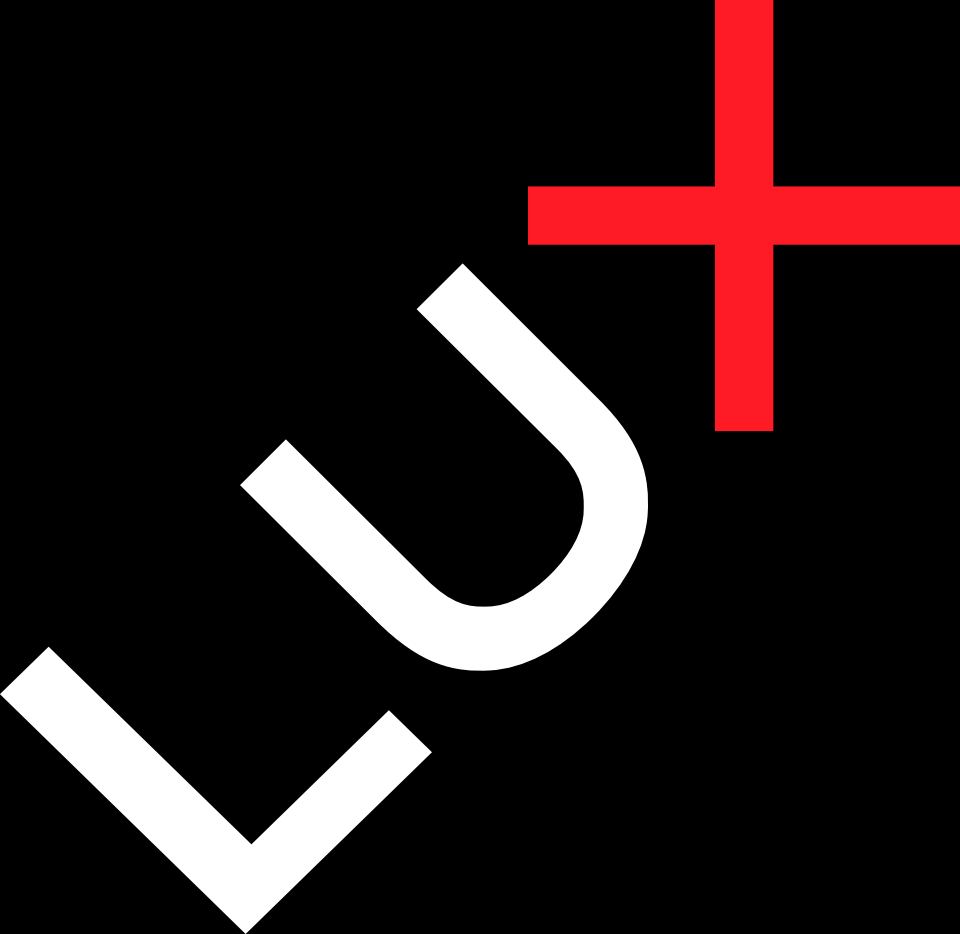
For press inquiries, please email comms@luxcapital.com.

New York

920 BROADWAY 11TH FLOOR
NEW YORK, NY 10010
[P] 646.475.4385

Silicon Valley

1600 EL CAMINO REAL, STE 290
MENLO PARK, CA 94025
[P] 646.475.4385



New York
920 BROADWAY 11TH FLOOR
NEW YORK, NY 10010

Silicon Valley
1600 EL CAMINO REAL, STE 290
MENLO PARK, CA 94025