INTENTIONAL TRANSFORMATION

Harnessing the Emerging Logic of Accelerated Change

WORLD GOVERNMENT SUMMIT 2019

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Harnessing the Emerging Logic of Accelerated Change
The world has entered a period of deepening complexity and an intensifying pace of change that is placing unprecedented adaptive pressure on governments and societies around the world. In parallel, we are witnessing an explosion of new tools and strategies for driving positive transformation at scale. This fluid, chaotic moment in history is one of tremendous choice, opportunity and consequence for individuals, institutions and societies in which large-scale transformation is both most possible and most urgent.

The thesis of this paper is that, in this period, the causal logics by which transformation can occur are changing and that a new set of policy levers based on these new logics is emerging that make it possible for leaders to accelerate transformative processes intentionally. The purpose of the paper is to introduce leaders and policymakers to these emerging logics and the instruments by which they can be harnessed in practice in the following broad categories:

**Strategic**

Strategic logics derive their transformative power primarily from factors in the external environment and target strategic outcomes of national scale and of significant long-term consequence. They include: Disruptive Strategic Foresight; Harnessing Innovation Flows; and, Strategic Fusion Alliances.

**Connective**

Connective logics derive their transformative power from bridging informational gaps and removing obstacles to productive collaboration. They target the full spectrum of policy domains at all levels of government and include: Reality-Based Policy Precision; Systematic Inclusion; Orchestrated Local Action; and Public Goods Platforms.

**Cognitive**

Cognitive logics derive their transformative power from human agency. In particular, they leverage the stunning advances in cognitive psychology and behavioral economics to both strengthen the capacity of citizens to take intentional action and to minimize the costs of our now well-established cognitive biases. They are relevant to the full spectrum of policy domains at all levels of government and include: Attention Arbitrage; Cognitive Process Leverage; and, Trust.

For each of the logics in these categories, we present a select set of specific policy levers or instruments by which the underlying logic can be put to work in practice to accelerate intentional change. Adaptive capacity consists of the ability to anticipate and respond to change. Transformative capacity, on the other hand, is the institutionalized capability to take intentional action to drive positive, structural change on a large scale and in a compressed timeframe. It is our hope that the strategic concepts presented will be of value to leaders who seek to build transformative capacity and use it to accelerate human progress.

The causal logics by which transformation can occur are changing and a new set of policy levers based on these new logics is emerging that makes it possible for leaders to accelerate transformative processes intentionally.
The world has entered a period of deepening complexity and an intensifying pace of change that is placing unprecedented adaptive pressure on governments and societies around the world. These dynamics include a deep restructuring of the international order, the pervasive rise of political populism, intensifying geo-economic competition and increasingly disruptive climate change. In parallel, not coincidentally, we are witnessing the early stages of an explosion of new tools and strategies for driving positive transformation at scale – from the technologies of the 4th Industrial Revolution to the ever more sophisticated techniques of behavioral science-based policy design.

The combination of intensifying strategic challenges and structural disruption with burgeoning technological and institutional innovation in wholly new solutions and strategies indicates that we have entered a “critical juncture” in our history – a transformative period characterized by fluidity, rapid change and deep, irreducible uncertainty.1 For the purposes of this paper, three characteristics of critical junctures are most important. First, they are periods during which key actors have a greater range of strategic choices, given the rich proliferation of innovations, and are freer to make choices given the sheer flux and uncertainty of the environment. Second, the decisions of key actors have greater influence in shaping long-term outcomes than in more “settled” periods of significant institutional inertia. Finally, critical junctures often result in very divergent trajectories for strategic actors based on the choices they make during them.

Thus, this rare present moment in history is one of tremendous choice, opportunity and consequence for individuals, institutions and societies in which large-scale transformation is both most possible and most urgent. The thesis of this paper is that the causal logics by which transformation can occur in this period are changing and that a set of policy instruments based on these new logics is emerging that make it possible to accelerate transformative processes intentionally.

Crisis, Reaction and Transformation

For the purposes of this paper, we define transformation as intentional, positive and rapid2 change at scale. The universe of examples includes organizations as diverse as Silicon Valley start-ups focused on “blitzscaling” to governments advancing bold, whole-of-society transformation programs. The leaders driving these efforts are demonstrating that rapid large-scale progress is possible. We have seen Singapore go from a fledgling, corrupt and undistinguished port to one of the leading countries of the world by almost any measure. We have seen Ireland go from one of the poorest countries in Western Europe to having the fourth-highest GDP growth within the EU. We have watched South Korea transform its workforce, from 61% agrarian in 1960 to only 4.8% today, aided by significant investment and focus on technology development. Estonia has transformed from a minor post-Soviet state with few landline telephones to the most connected e-government in the world. And we have seen Dubai transform in a matter of 20 years from a regional trading port and minor oil producer to a center of global trade, investment, tourism and innovation. These pioneers have demonstrated that transformation is not just a dream.

We have also witnessed stunningly compressed progress at the level of individual organizations in both the private and public sectors. The rise of companies such as Uber, Airbnb, and Alibaba has shattered previous conceptions of the physics of growth. In the public sector, we have seen ministries and agencies at many levels deliver transformative progress against all odds. In Sweden, the Ministry of Health and Social Affairs reinvented itself in the 1990s, transforming the healthcare system from a slow-moving drain on public resources in which citizens had no choice of provider, to one that today remains affordable for citizens while providing Swedes the best health outcomes in the world, fueled by the private sector. In Finland, rigorous reforms in teacher training and standards of excellence in the profession have propelled the education system to be consistently regarded as among the best in the world. Singapore’s Housing and Development Board, through a large-scale public housing program, pulled approximately 550,000 people out of slums and squatter settlements; today homelessness is virtually eradicated, and Singapore enjoys one of highest rates of home ownership in the world at around 90%.

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1 Multiple sources including: Critical Junctures and Institutional Change, Giovanni Capoccia; Why Nations Fail; Daron Acemoglu; Path Dependence in Historical Sociology, James Mahoney.
2 Change that occurs within a timeframe that is compressed relative to changes of comparable scale and complexity elsewhere.
In some cases, societal transformations have been triggered by crises. For example, many of Sweden’s most transformative government reforms were triggered by the financial crisis it faced in the 1990s. Its aggressive transformation made it remarkably resilient to the great global recession of 2008. In other cases, transformative progress is driven by intentional effort and visionary leadership combined with contextual opportunity as in the cases of Singapore and the United Arab Emirates.

It is increasingly clear today that the intensity of adaptive pressure and the scale and diversity of opportunities for transformation have never been greater. Our analysis of case studies, review of the vast literature on transformation and work around the world for clients suggests that the logic of transformation is changing. The purpose of this paper is to provide an overview of this emerging logic and to introduce a select set of instruments and levers by which it can be harnessed by leaders to drive intentional transformation.
The Emerging Logic of Intentional Transformation

The emerging logic of intentional positive transformation is a function of the largescale forces of change that are fundamentally re-shaping the global operating environment. These forces are altering both the nature and urgency of the need for and the required capabilities of transformation. Each of them is generating a distinct component of the emerging logic of intentional transformation and merits brief consideration individually.

Shifting Geo-Economic Order and the Diffusion of Power

The global geo-economic order has entered a period of deep and unstable transition from the relatively stable international system that had held sway since the end of the Cold War to a new multi-polar structure that is still forming. This is the result of both the rise of new great powers and the increasing centrality of technological innovation as the central front of competition between them. An immediate consequence is the growing fragmentation of the global economic and trading system and increasingly contested access to the frontier of innovation. In parallel, we continue to witness the diffusion of power across a range of other state and non-state actors including powerful corporations and other private sector actors, a growing assortment of NGOs and other civil society organizations and increasingly empowered individuals and the networks through which they aggregate influence. As a result, the rules governing interactions between states and non-state actors have entered and will remain in a state of significant and potentially unstable flux for the foreseeable future. Global institutions will either adapt or competing institutions will arise and longstanding alliance structures will become less fixed – a process that is already all too visible today.

Implications for the Logic of Transformation - New Instruments of Power: This historic pattern is altering the logic of transformation by making state-to-state diplomatic channels and other traditional instruments
of state power less and less effective. It is therefore both requiring and creating space for significant institutional innovation to build new adaptive instruments of power that can operate effectively in a more fragmented, less governed environment. There will be a new premium on whole-of-society engagement and partnership. In addition, the relative power of local governments will rise as the best practice tools and processes of governance become ever more widely accessible. In particular, given the steady increase in urbanization, the role of cities in governance and as engines of transformation will grow.

**Rising Polarization and Political Populism**

Despite the remarkable growth that the prior phase of globalization generated, within many countries it also resulted in dramatic and ultimately destabilizing increases in economic inequality. The resulting frustration has led to a powerful surge in political populism and economic nationalism. Around the world, in countries at virtually all levels of economic development, these cleavages have contributed to social polarization, declining trust of institutions, including but not limited to government, and has also eroded interpersonal trust - or "social capital."

**Implications for the Logic of Transformation - The Trust Imperative:** This pattern is altering the logic of transformation by weakening what is arguably the fundamental requirement of intentional, positive societal transformation: the trust citizens have for one another and for their institutions. As a result, largescale transformation efforts must include work to understand the nature and extent of trust gaps and build innovative approaches to addressing them. Given the power of trust to accelerate cooperative interaction, finding ways to restore, strengthen and activate it represents a significant strategic opportunity for leaders and policymakers.

**Emergence of the Quantified World**

The steady advance of artificial intelligence and machine learning, the steady increase in computing power and the explosion in the availability of data have combined to create an ever more quantified world in which the ability to accurately model current reality and trajectories of change has increased exponentially. Amazon, to cite one among countless examples, is able to model the consumption patterns of its customers in urban environments with such precision that it can stock delivery vehicles efficiently before orders for certain products have been placed.

**Implications for the Logic of Transformation - Policy Precision:** This trend is altering the logic of transformation by making it ever more possible for policymakers to understand and model the system dynamics of complex issue domains with such high resolution that not only can policies be designed and tested with high fidelity, but also policy intervention points offering greatest impact can be targeted with great precision so as to maximize the achievement of intended outcomes.

**Pervasive Spread of Connective Technologies**

By blurring the lines between the physical and digital worlds and enabling new types of interactive platforms, the 4th Industrial Revolution has emerged as among the most significant forces changing the deep structure of the global operating environment. One of its key impacts has been the enablement of unprecedented degrees of coordinated action. The proliferation of increasingly inexpensive sensors and the application of vast computing power has made it possible to orchestrate the movement of people, products and objects of all kinds with stunning sophistication. As Mauricio Zuazua, A.T. Kearney's Lead Partner for the Future of Production, argues, "This is just one aspect of a vastly shifting landscape. It is imperative that government and business leaders take a fresh look at how their countries and corporations will contribute to the world's fast changing value networks..." This radical spread of connective technologies is improving the resilience of global supply chains, enabling seamless
collaboration among first responders in crisis situations and fundamentally altering the future of production.3

Implications for the Logic of Transformation

Orchestrated Collaborative Action: This trend is altering the logic of transformation by making it possible to enable and orchestrate collaborative interactions among citizens, private and civil sector actors and government entities to a degree that was only recently unimaginable. Perhaps most importantly, it is disrupting the traditional tension between the necessity of central control and the impact and speed of local empowerment by enabling low-touch, high-visibility orchestration of locally empowered action.

Transformation of Human Agency

Two broad trends are fundamentally altering the power of individual human beings and our understanding of the human mind. The result is a transformation of human agency, which in this context refers to the ability of individual people to take effective, intentional action. First is the relentless proliferation of technologies that empower individuals not just with knowledge, but with the ability to deepen their engagement in the world in countless ways from social network activation to digital political engagement. In parallel, we are witnessing an unprecedented acceleration of advances in the sciences of mind. This includes breakthroughs in neuroscience, cognitive psychology and behavioral economics as well as increasingly high-resolution understanding of human motivation.

Implications for the Logic of Transformation

Harnessing the Transformative Power of Citizens: This historic trend is altering the logic of transformation by making it possible in any given policy domain to both empower citizens to productively contribute to change and to maximize the alignment of those contributions with shared objectives.

Post-Truth Information Environment

The global information environment has become increasingly crowded and complex as social media have proliferated and a dizzying array of actors now compete aggressively for attention and influence with little effective governance constraining their strategies. This trend features intensifying competition to control the narratives by which individuals and communities interpret the world and make decisions – including political choices – based on those interpretations. As a result, there is less and less consensus on what the truth is any given situation.

Implications for the Logic of Transformation – The Rising Power of Narrative: This rapidly evolving information environment is altering the logic of transformation by making the capabilities of sophisticated communication, including narrative design and dissemination, ever more crucial for driving intentional change and defending against those who would derail it.

Taken together, these rapidly evolving forces shaping the global operating environment are resulting in a new logic of transformation – a new set of causal relationships and mechanisms by which intentional change can be driven. At the highest level, this emerging logic integrates new means for orchestrating productive and precise collaborative action and minimizing counterproductive friction. It centers on the increasing power of human agency, by which citizens can ever more productively contribute to the advancement of the public good. It includes new tools that magnify the power of this agency by enabling the highly efficient orchestration of complex, coordinated action on massive scales. It is also unfortunately characterized, albeit unevenly, by weaker baseline levels of social capital, but also features new innovative approaches.
to strengthening the inter-personal and institutional trust that is of such fundamental importance for driving change. At the strategic level, it features new institutional instruments by which countries can collaboratively create and use power for their mutual benefit in the context of a disrupted international order. From the specific perspective of policy design, this new logic features a greatly enhanced ability to target policy interventions precisely and with maximum effect for a given intended outcome. Finally, the new logic of transformation includes the increasing power and importance of strategic narratives as a central means of aligning collective action in a chaotic informational landscape.

In the pages that follow, we present the specific components (or “logics”) of which this overarching new logic of transformation is composed. For each of them, we also present a selection of specific levers or instruments by which the power of each component “logic” can be applied in practice. They are the result of a series of case studies of large-scale transformations, an extensive literature review, interviews and learning from our work for clients. Their purpose is to provide a non-exhaustive toolset of emerging instruments by which leaders and policymakers can accelerate achievement of their objectives and drive positive, discontinuous progress for their citizens.

They are presented in three broad categories: Strategic, Connective and Cognitive. These categories represent the core structure of this document as follows:

- Part I: STRATEGIC
- Part II: CONNECTIVE
- Part III: COGNITIVE
Toolset Overview

The Emerging Logic of Accelerated Change

- **Disruptive Strategic Foresight**
  - Transformative Forces Analysis
  - Strategic Actor Interaction Modeling
  - Future Environment Monitoring
  - Immersive Foresight

- **Cognitive Process Leverage**
  - Behavioral Inertia Disruption
  - Intrinsic Motivation Leverage
  - Strategic Decision Process Analysis

- **Attention Arbitrage**
  - Time-Based Policy Design
  - Cognitive Burden Clearing
  - Engineered Collaborative Space

- **Public Goods Platforms**
  - Transaction Cost Targeting
  - Radical Resource Utilization
  - Choice Expansion
  - Informational Symmetry
  - Whole-of-Society Data Integration

- **Strategic Fusion Alliances**
  - Strategic Alliance Fusion Center
  - Joint Purpose Partnerships

- **Reality-Based Policy Precision**
  - Predictive Policy Mapping
  - Citizen Sentiment Analysis
  - Global Policy Evidence Coalitions
  - Passive Data Capture

- **Orchestrated Local Action**
  - Frontline Decision
  - Empowerment
  - Frictionless Access
  - Collective Impact Programs

- **Systematic Inclusion**
  - Representative Policy Delivery
  - Local Policy Ownership
  - Systematic Perspective Diversity

- **Trust**
  - Transparent Governance
  - Social Infrastructure Reinforcement
  - Digital Civic Engagement
  - Trust Technology Leverage

- **Harnessing Innovation Flows**
  - Innovation Frontier Access
  - Innovation and Data Alliances
  - Knowledge Attraction and Diffusion

The Unifying Power of Narrative
THE EMERGING LOGICS OF TRANSFORMATION
Strategic logics derive their transformative power primarily from factors in the external environment. They principally target strategic outcomes of national scale and of significant long-term consequence.
At all levels of the public and private sectors, a primary obstacle to rapid intentional change is the powerful inertia of the past in shaping both our mental models of the world and the challenges we face and our approaches to addressing them. This is not surprising. All of our direct experience and all of the evidence we have ever collected occurred in the past. In policy design, for example, this “tyranny of the past” takes many forms. First, many strategic planning and policy design processes consider only incremental changes to a prior version of a given policy or strategy. Annual budgets are a prime example, in which the range of decisions presented to senior leadership is often limited to a percentage increase or decrease driven by near-term fiscal requirements without consideration of the future validity of its underlying structure. Second, many of these design processes rely almost exclusively on benchmarking analysis, which while always a required foundational step, is also often intrinsically backward-looking, focusing on how similar organizations addressed a prior set of challenges and opportunities in the past. In a “settled” historic period of limited change, the costs of exclusive reliance on backward-oriented analyses may be limited, but in the “critical juncture” of accelerated change that we have entered, the blind spots reinforced by such approaches will greatly limit the effectiveness of strategy and policy in accelerating intentional change.

The transformative logic of Disruptive Strategic Foresight hinges on the power of creating high-resolution awareness of the most important ways in which the future will or may be different from the present. It advances transformation by making it possible to make productive use of both change and uncertainty. Since transformation is precisely about driving intentional change into the future, understanding that future is a fundamental requirement for achieving it. The causal logic of Disruptive Strategic Foresight features multiple mechanisms, two of which are as follows. First, by modeling the future operating environment in ways that bound and structure its uncertainty, it allows organizations to maximize the robustness of their strategies and policies for the potential characteristics of that environment. Second, and the point of intersection between foresight and innovation, Disruptive Strategic Foresight both identifies and facilitates the design of new capabilities, technologies and strategies that will be increasingly available and effective in the future so that they can be proactively built into the policy design, for example by leapfrogging a traditional step in a benchmarked developmental sequence – as Kenya did with respect to its telecommunications infrastructure before such leaps were established practices. In these ways, Disruptive Strategic Foresight can accelerate positive change by minimizing failures of imagination, maximizing readiness for potential future conditions and contingencies and harnessing emerging patterns of change in the services of transformation.

Applying Disruptive Strategic Foresight: Specific Levers

There are many methodologies within the broad discipline of strategic foresight that can strengthen the design of strategy and policy. For the specific purpose of transformation – accelerating the achievement of intentional change – several specific levers merit consideration:

Transformative Forces Analysis

This lever consists of a specific form of trends or drivers analysis in which identification and prioritization of trends is based not only traditional analysis of strategic impact and uncertainty, but also includes special focus on forces of change that can be intentionally harnessed in the service of a given outcome. For example, countries in the northern hemisphere seeking economic diversification might identify climate change and increasing protein demand as forces that could be harnessed to develop expanded agricultural production capacity as more of their land becomes arable as a result of global warming. To accelerate transformative progress, they might also identify advances in genetic engineering as a pattern of change in which investment in targeted R&D might yield breakthroughs in development of crops well-suited to the transitional climate conditions they anticipate.

Strategic Actor Interaction Modeling

The function of this lever is to anticipate and make use of transformative forces. Benchmark analysis can be designed to include future-oriented practices by including organizations with demonstrated, institutionalized foresight practices.

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4 Benchmark analysis can be designed to include future-oriented practices by including organizations with demonstrated, institutionalized foresight practices.
of the likely reactions of external strategic actors to a given course of action. Potential strategic actors include both known and potential partners and adversaries from all categories – government entities, private sector actors, NGOs, etc. The focus of the analysis is on key strategic actors with the capabilities, incentives and opportunities to influence the trajectory of the intended course of action. For each these, interaction analysis consists of applying game theoretic modeling and systematic red-teaming to identify most likely responses and potential opportunities for alignment. Based on these findings, the design of the strategy or policy is refined to increase its transformative power by taking full advantage of opportunities for alignment and by ensuring maximal robustness with respect to likely countermeasures by competitors or adversaries.

Future Environment Monitoring
Strategic foresight generates representations of key future uncertainties prioritized based on their strategic importance for a given course of action. Future Environment Monitoring translates the most important of these potential future operating conditions into a set of monitorable and measurable factors so that as conditions evolve, and the trajectories of key trends become clearer, organizations can adapt on an anticipatory basis before the changed landscape is upon them. In addition to tracking changes in pre-identified indicators, Future Environment Monitoring often also features systematic horizon scanning to identify early, “weak” signals of potentially significant strategic change. This process involves integrating human analysis and machine-learning based scanning to identify, assess, prioritize and analyze emergent patterns of change not yet part of the existing monitoring framework. This lever is essential to strengthening the ability of an organization to “sense and respond” to change on an anticipatory basis when leverage to shape outcomes is greatest.

Immersive Foresight
This lever consists of approaches for making the potential future tangible for analysts and stakeholders including citizens, customers and partners. This is accomplished by the development of immersive environments in which they can experience the future in the present. The intent of doing so is to make the future more comprehensible and therefore actionable. Scenario analysis represents the central discipline of foresight and at its core is the immersion of strategy design in detailed representations of potential future environments or “scenarios.” In addition to their formal planning applications, scenarios have been used by various organizations and even countries to support large-scale participatory processes designed to foster dialogue and alignment of key emerging issues. In recent years, there has been a complementary surge of innovation in delivering more radically immersive experiences of the future. These include virtual reality-based simulations in which participants interact with constructed environments and each other. Perhaps most striking is The Museum of the Future in Dubai. What started as a series of temporary immersive exhibits will soon be a first of its kind “incubator for futuristic innovation and design.”

Implementation Considerations
Capturing the transformative power of Disruptive Strategic Foresight requires, first and foremost, leadership support and involvement to ensure that the tools are consistently applied and that the results genuinely shape the design of strategy and policy. Without this strong leadership support, foresight processes are often marginalized by stakeholders invested in maintaining the status quo. Both Singapore and the UAE are leaders in institutionalizing foresight, for example through Singapore’s RAHS Programme and the
UAE’s Ministry of Cabinet Affairs and the Future, which requires all government ministries to build foresight into their work. Finally, applying the logic of Disruptive Strategic Foresight requires acknowledging there are aspects of the future that are irreducibly uncertain and therefore exerting tremendous care in using precise forecasts or predictions of future outcomes. The recent history of prediction, from the rise of Daesh to the Global Financial Crisis, and from the shale revolution to the election of Donald Trump, makes the importance of this requirement very clear.

**Transformative Power**

At the core of the transformative power of *Disruptive Strategic Foresight* is the systematic disruption of backward-looking mental models of the world and the generation of rigorously derived, future-oriented models that expand the range of choices available to decision-makers from national leaders to individual citizens.
HARNESSING INNOVATION FLOWS
Technological innovation has arguably long been the primary driver and accelerant of societal transformation. Although still only in its early stages, the rapid advance of the 4th Industrial Revolution (or “Second Machine Age”) is already demonstrating the pervasive reach of this transformative power across virtually all areas of human life. The examples are everywhere from the disruption of medicine, for example by AI-based diagnostics, genetic engineering and robotic surgery, to the next revolution in production including as a function of advances in 3-D printing and the Internet of Things. Because of the power that it conveys, particularly in the context of the fluid critical juncture in history that we have entered, technology is an increasingly central and intensely contested domain of both economic and security competition among nations and powerful non-state actors.

For leaders seeking to use technological innovation to drive intentional transformation in a global environment increasingly divided by economic nationalism, this competition is creating new challenges tied to geography and sovereignty. The specific characteristics of the unfolding technology revolution are changing the nature and meaning of geographic space, altering our conceptions of territory and the boundaries of and interfaces between nation states. On the one hand, this revolution is erasing physical space, making distance less relevant by dematerializing important aspects of the physical world into data. On the other hand, it is increasing the strategic importance of geography by making it more challenging for states to generate or otherwise access the innovation that is ever more necessary to advance the economic and security interests of their citizens. Thus, to be competitive, states must both engage in global innovation networks and harness global flows of data while simultaneously building and applying innovation capacity at home.

To understand the economic logic of this environment and the mechanisms by which growth can be accelerated within it, the work of Ricardo Hausmann on economic complexity provides an invaluable guide. He and his colleagues at Harvard’s Center for International Development have demonstrated how technology diffuses in the form of tools, codes and implicit knowledge or “know-how.” Of these, know-how is the most difficult to transmit as it relies not only on individual experience, but also on the implicit knowledge of teams. Thus, the transmission of know-how is the primary constraint on the diffusion of innovation in an economy and therefore on its contribution to growth.

Applying Harnessing Innovation Flows: Specific Levers

Given both these “geo-technological” and economic considerations, harnessing the power of technological innovation to intentionally accelerate societal progress requires both securing awareness of and access to the frontiers of innovation and driving the diffusion of know-how throughout the national economy. Specific levers for doing so that merit consideration include, but are not limited to the following:

I. Innovation Frontier Access

There are vast opportunities for transformation that do not require the application of the extremely sophisticated technologies at the global frontier of innovation. However, there will be cases in which the global frontier of innovation, particularly in Artificial Intelligence, may offer uniquely transformative leverage. For that reason, and to ensure national competitiveness and security more generally, maintaining awareness of and channels of access to the global frontier of innovation and the networks through which it operates is vitally important. Much of the near-term transformative power of technology can best be harvested by adopting, adapting and spreading established innovations. For the segments of that frontier in the private sector, where the technology giants continue to advance their lead in a range of critical digital technologies, key mechanisms include institutionalized technology scouting capabilities, targeted investment in key firms, ideally sufficient to ensure Board presence, and rotation of high-potential talent through the academic institutions central to leading innovation clusters.

II. Innovation and Data Alliances

Ensuring awareness of and access to the public sector segments of the global frontier of innovation is as important as it is challenging. The global great powers,
notably the United States and China, are locked in an intense competition for supremacy in Artificial Intelligence, quantum computing and a range of other strategic technologies. These technologies already confer vast strategic advantages in national security and may do so to an even more extreme extent over the next decade depending on the nature of breakthroughs achieved. However, state-to-state innovation alliances do not only pertain to national security. Data is increasingly becoming the currency of greatest economic and strategic value, but economic nationalism, protectionism, weak global institutions and cyber conflict threaten to limit the extent to which data will flow smoothly and reliably across national borders and firm boundaries. To the extent that the world becomes digitally divided, driving transformative economic growth will require portfolios of data alliances that maximize access to innovation networks as well as key markets.

Knowledge Attraction and Diffusion

Given that, as Hausmann demonstrates, it is the slow movement of implicit knowledge (or “know-how”) that most constrains the growth impact of innovation, leaders seeking to accelerate growth must find ways to bring that know-how in. Doing so involves creating competitively attractive FDI opportunities to induce firms to localize relevant technical operations. Part of this effort should include a widely conveyed willingness to collaborate on regulation of new technologies to make experimentation more efficient for leading firms. Key to the transformative value of these efforts is retaining teams with relevant collective knowledge long enough for them to not only drive progress directly, but also to cultivate coherent local teams and the process for sustaining and growing them over time. This effort must also include designing immigration policies that facilitate the attraction of relevant individual talent on a globally competitive basis. Finally, just as important as attracting firms, team and individuals with relevant knowledge is maximizing the speed and extent of the diffusion of that knowledge through investment in connective infrastructure, development of platform-based collaboration networks and activation of vocational learning programs.

Implementation Considerations

Activating the transformative power of Harnessing Innovation Flows to accelerate progress in any given domain requires first establishing clarity regarding the intended transformative outcome and systematic identification of the established and emerging innovations that could realistically make a decisive impact. Based on that assessment, the appropriate channel for accessing and applying the innovation can be selected and used. From a longer-term perspective, sustainably playing a meaningful role in global innovation networks and ensuring the flow of innovation through the national economy requires establishing one or more areas of globally competitive innovation capacity. The capability to generate differentiated, non-commoditized economic value in select areas is a requirement for participating in collaborative international innovation efforts. Establishing competitive innovation capacity of this kind can be most productively achieved by building on existing strengths and expanding into what Hausmann calls the “adjacent possible” – areas into which existing knowledge can be readily extended.

Transformative Power

To the extent that a society is both connected to global flows of innovation and the networks that give rise to them and is generating and diffusing competitive, value-creating innovation domestically, its ability to accelerate progress across all domains, from healthcare, education and commerce to environmental protection, national security and beyond, will be greatly and sustainably strengthened. In an increasingly technology-centered world, countries that can neither generate innovation domestically nor effectively acquire it externally will be at grave risk of decline.
Strategic Fusion Alliances
The institutions and strategies of statecraft are in the midst of a period of deep structural change. The traditional instruments of power (diplomatic, intelligence, military and economic) are being disrupted by technology, new dynamics of globalization and the proliferating range of non-state actors that is increasingly influential in international affairs. Multi-national corporations, multi-lateral institutions, global publics, NGOs and a diverse range of transnational networks now often wield decisive power in domains that were once the sole province of governments. As Moisés Naím writes in The End of Power: “In the twenty-first century power is easier to get, harder to use—and easier to lose. From boardrooms and combat zones to cyberspace, battles for power are as intense as ever, but they are yielding diminishing returns.” In this increasingly complex, interconnected and competitive strategic operating environment, traditional government-to-government diplomatic channels are no longer sufficient for achieving the kinds of international collaboration required to advance shared interests and achieve strategic objectives. New approaches are required for aggregating power from diverse sources and focusing it to accelerate achievement of specific outcomes.

A vital means of accelerating the achievement of strategic national objectives is through new, whole-of-society value-maximizing alliances with other countries. Such integrated, orchestrated and committed collaborations leverage the power of shared interests, complementary capabilities and resources between countries across all sectors (government, private sector and civil society) to drive transformative results more rapidly than either country could achieve independently or through only narrow traditional diplomatic channels. The transformative logic of these new forms of whole-of-society international collaborations is a function of the power of concentrated effort. By integrating the capabilities and aligning the efforts of diverse internal stakeholders and external actors with complementary capabilities, strategic partnerships make it possible to maximize the force applied to the achievement of a given specific objective. to maximize the force applied to the achievement of a given specific objective.

Applying Strategic Fusion Alliances: Specific Levers

The transformative power of the logic of Strategic Fusion Alliances and collaboration of this type can be harnessed in a variety of specific ways, all of which require the core capability of systematically identifying mutually beneficial strategic collaboration opportunities in which aligned interests and complementary capabilities can potentially be converted into orchestrated collaboration that accelerates progress toward specific outcomes. Specific levers include, but are not limited to the following:

**Strategic Alliance Fusion Center**

This lever consists of institutionalizing the ability to identify, prioritize and orchestrate complex international strategic engagements so that the underlying logic by which collaboration can accelerate progress can be activated consistently, efficiently and to greater effect over time. It requires developing several core processes and systems. Such a center must have processes for identifying countries with greatest potential for joint value creation in terms of aligned interests, unique capabilities and resources, specific national strategic objectives, etc. It also must be able to create and maintain a high-resolution map of its domestic capabilities and requirements across all government ministries as well as the private and civil sectors. This institutional capability can yield a diverse range of international collaboration models, including comprehensive strategic alliances. One example of such a multi-dimensional relationship is that between Australia and Singapore which features whole-of-nation engagement including trade, defense and other ministers as well as various special envoys and includes agreement on a specific long-term joint plan.

**Joint Purpose Engagements**

Another means of applying the logic of Strategic Fusion Alliances is to conduct a series of outcome-specific engagements which can serve as policy experiments that establish a foundation of experience for subsequently establishing a fully institutionalized capability. The
starting point for such initiatives is identification of a specific policy outcome the achievement of which could be significantly accelerated through collaboration with an international partner. A prime example of this sort of cooperation is the space partnership between the United States and Russia, including in support of the International Space Station. Although that collaboration has a long history, it is an example of a Joint Purpose Engagement that leverages aligned interests and complementary capabilities to advance strategic objectives of both sides.

Implementation Considerations

To harness the transformative potential of Strategic Fusion Alliances countries must establish and empower institutionalized mechanisms for doing so. For example, a Strategic Alliances Fusion Center as outlined above must have the authority, budget and operational machinery to orchestrate (often on an integrated basis with the foreign ministry) the execution of the engagements, including the ability to track and measure its contribution to accelerating achievement of intended outcomes. Unified control is essential because it is the only means of ensuring that in the negotiation of the alliances, the full potential value of all relevant national resources is brought to the table to maximize the final value of the engagement. To the extent that engagements of this type are uncoordinated and consist of a multiplicity of small sector or actor-specific arrangements only, the full potential value of the relationship is likely to be diluted.

Transformative Power

The logic underlying the transformative power of Strategic Fusion Alliances of this type hinges on the persistent reality of unexploited alignments of interest that is well-known to experienced diplomats and global business leaders. That is, both within most countries and in many other potential partner countries, there are significant untapped reserves of mutual interests, incentives, complementary capabilities and resources which, if aligned and focused on a clear outcome, could significantly accelerate progress. The transformative potential of these engagements is a function of not only their ambition and scale, but the effectiveness of their orchestration. There are also significant ancillary benefits of institutionalizing such a capability. Dynamic, multi-party strategic alliances generate powerful network effects in terms of increased information flow and expanded exposure to opportunities both within the scope of a given objective and in adjacent domains. Also, over time, successful collaborations with strategic actors build trust, inter-dependence and – as a result – greater alignment of long-term strategic interests with benefits far beyond the near-term intent of the engagement.

Finally, Strategic Fusion Alliances can amplify the value of traditional instruments of statecraft (e.g., defense, diplomacy and intelligence) by combining the attractive pull of connection with the baseline power provided by existing institutions – enabling a transformative shift beyond soft and hard power toward smart power.
HEALTH as a Transformative Policy Domain

The National Strategic Significance of Health Policy

No policy domain or sector of the economy is of more fundamental human and strategic importance or evolving more rapidly than health. From the perspective of national policymakers, this centrality of health is a function of many factors. It is a deeply personal issue directly impacting the lives of individual citizens and those whom they most care about at the level of their most basic, human needs. This intensity of impact is also universal - touching the entire population without exception. This reality and the large, and in many cases growing, portion of government expenditures that healthcare represents make it a top of mind and highly sensitive political issue globally. In the United States, where health expenditures are among the highest in the world, national health expenditure accounted for 17.9% of GDP in 2017, having grown at a rate of 3.0% over the past year. Of the $3.5 trillion spent in healthcare, the largest spender was the federal government, contributing 28.4% of the total. However, rising healthcare expenditures are not limited to the US. From Saudi Arabia, where national health expenditure rose from 4.4% of GDP in 2010 to 5.8% of GDP in 2015, to the UK, where the same metric rose from 8.5% of GDP in 2010 to 9.88% in 2015, nations around the globe are spending an increasing share of income on healthcare, and the upward trajectory is only increasing. Global healthcare spending is projected to rise at annual rate of 4.1% between 2017-2021, up from 1.3% over the preceding 5 years. In addition, the health sector is at the center of a diverse set of demographic and technological trends that are altering its fundamental structure. Taken together, these characteristics make health policy a double-edged sword for government. On the one hand, they make the costs of flawed policy for societal well-being exceptionally high. On the other hand, they make health a uniquely promising policy domain for driving transformative societal progress at the national level.

The Transformation Underway within the Health Sector

There has been enormous progress in global health trends over the last several decades. The mortality rate of children under five has been reduced from 93 per 1,000 live births in 1990 to 41 per 1,000 live births in 2016, antiretroviral therapy has driven a 48% decline in HIV-related deaths from a peak of 1.9 million in 2005 to 1 million in 2016, and tuberculosis incidence declined 14% from 2000 to 2016, from 17.3 new and relapse cases per 100,000 individuals to 140 per 100,000. However, challenges persist and the transformation of the health sector is characterized by an accelerating pace of change and increasing complexity at the intersection of secular trends including the advance of science and technology, shifting demographic patterns, and the fiscal pressures facing governments around the world. In that context, Mohamed Berrada, who leads A.T. Kearney’s Health Practice emphasizes several fundamental and interrelated forces that are driving the transformation of the health policy landscape:

From Cure to Prevention

Historically, the focus of most health systems was on curing the sick. The model was very much oriented by supply rather than demand, resulting in a focus on building hospitals, training doctors and investing in specialized care. Although the needs of the population have changed, many health systems did not adapt until the old model became financially unsustainable. Today we are seeing a fundamental shift in thinking, methods, and technologies that is enabling proactive health management rather than reactive attempts to cure illness, in line with the changing needs of the modern citizen. As health systems have developed the ability to treat acute crises and prevent communicable diseases, the focus has shifted to preventing chronic diseases (many of which are associated with modern sedentary lifestyles and food consumption patterns) which the World Health Organization estimates now account for 50% of the global burden of disease. The continued monitoring and care that chronic diseases require has driven the emergence of holistic approaches focused on cultivating healthy lifestyles, consistent monitoring, early diagnoses, and targeted treatment that can prevent minor ailments from developing into critical conditions. Increasingly, the orienting objective is to keep patients out of the hospital both before they are ever admitted and by minimizing return visits through effective post-treatment community care. Key to this shift has been altering the incentive system such that providers are paid based on the health of patients, or alternatively paid a flat rate for patients subscribed, whether or not they receive any treatment.

Expanding Reach and Inclusion

The focus on expanding the reach of the healthcare system is no longer centered on building more hospitals and training more doctors, but instead is being redefined by the ability of individuals to access the right care at the right time. Precise, rapid triage and referral systems optimize the location of treatment. Common cases are treated in primary care close to home, while rare, complex cases are attended to in specialized hospitals that are well-suited to patient needs even if they are located in another region of the country. In addition, National Healthcare Systems across the world are working to make high-cost therapies equally available for the entire population through development of National Treatment Standards and subsidizing regions based on their needs. This approach enables access to required care for the population, including in rural areas. Taken together, these measures are emerging as solutions to the “postcode lottery” in which superior care is more available those in capital cities and industrialized regions than those living in rural regions.

Digitally Enabled Self-Care

As citizens become increasingly aware of the impact that lifestyle choices have on their health, they are looking for ways to address their own health challenges and monitor their health status themselves. New technologies that enable individuals to monitor their own health conditions, from fitness trackers to condition-specific mechanisms such as continuous glucose monitors, are aiding the transition to preventative care. As the affordability of these devices increases, more citizens are gaining access to the tools that can enable them to take charge of their own health. In addition, the advent of high-quality digital and virtual communication tools in the health sector serves to close the gap between rural and urban provision of care. With these technologies, preventative care becomes ever-more accessible for the individual. As a result, the roles of doctors and nurses will necessarily change. The specialized knowledge of doctors can become better leveraged, while the need for nurses becomes even more critical in cases of continuing and long-term monitoring and care. The increasingly important role of healthcare policymakers is to facilitate the growth and affordability of such solutions, while ensuring their efficacy, efficiency and proper use.

Accelerating Scientific and Technological Advance

The application of next-generation technologies and scientific

Strengthening the Social Contract

Effective healthcare is a powerful means of strengthening citizen trust in the competency and legitimacy of government. By strengthening the social contract in this way, health policy can enhance the political capital of the government to drive change elsewhere. Given the intimate personal depth and universal pervasiveness of its impact, health policy has unique potential to drive legitimacy in these ways.

The Core of the Social Safety Net

Access to affordable, high quality healthcare represents a core dimension of a social safety net. When it is in place, it also can contribute to activating entrepreneurship and the risk taking that it entails.

Opening Fiscal Space

By shifting the model of healthcare delivery from curative to preventive medicine, health policy reform can have a potentially massive positive budgetary impact. The Center for Disease Control points out that chronic conditions, which are responsible for 7 in 10 American deaths and account for 75% of national health spending, are largely preventable or treated most cost effectively with early detection.

Talent Attraction

In a global environment characterized by an intensifying competition for highly skilled talent, effective healthcare is a core requirement for attracting people and investment.

Labor Force Transition

Finally, shifting to next generation health policy can contribute significantly to job creation even in the context of the 4th Industrial Revolution and its disruption of many traditional job categories. As specialized doctors utilize their skillsets in appropriately narrow fields, the role of nurses will increase to engage with the consistent and long-term health management that preventive care demands. Meanwhile, the nexus of health and technology opens entirely new realms of medical professions in the development and application of new diagnoses technologies and targeted treatment tools.

Most importantly, the transformation of health policy outlined here can contribute to broader societal transformation by fueling its primary engine: the empowered agency of individual citizens. The transformation of the healthcare system from curative to preventive care meet the strictest standards.

Health Policy as an Instrument of National Transformation

Health policy can contribute profoundly to national transformation through a range of channels, including but not limited to the following:

Driving Wellbeing and Productivity

The Center for Disease Control recently reported that the productivity losses related to personal and family health problems cost US employers collectively $225.8 billion annually, thus healthcare has an immediate and direct impact on the individual and national economic conditions.

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PART II: CONNECTIVE

Connective logics derive their transformative power from bridging informational gaps and removing obstacles to productive collaboration. They target the full spectrum of policy domains at all levels of government.
To maximize the effectiveness of any strategy or policy, no attribute is more important than the precision with which its interventions target the most salient realities of the issue or system that it is seeking to influence. Achieving this level of surgical precision in policy design requires first creating a high-fidelity representation of the system in which the intended outcome will unfold. While perfect maps of reality are unattainable, proceeding with policy interventions in the absence of critically important information risks not only failure to achieve the desired result, but also the generation of negative second order effects. Modern warfare makes this painfully clear. Even the most precise munitions are only as valuable as the intelligence that determines their targeting. In many cases, the information necessary for effective policy design is available, but not captured or if captured, not integrated and accessible across organizational boundaries in ways that yield meaningful insight. In an evaluation of the critical weaknesses of American national security in 2001, the 9/11 Commission concluded, “the systemic resistance to information sharing” was a root cause of the catastrophic policy failure. The challenges of data availability and integration across government are well-documented and a key focus of the literature on evidence-based policy, the emphasis of which is on using statistical analysis of outcomes to evaluate existing policies. Within econometrics, the “credibility revolution” has made it ever more possible to determine the causal effects of policies that have already been implemented. This vital work continues to demonstrate significant value; however, the frontier of innovation in analytically-based policy analysis is now moving beyond impact analysis into forward-looking, data-driven policy design.

The rapidly increasing transformative power of anticipatory, analytically sophisticated policy design is a function of several accelerating trends. First, the advance of the 4th Industrial Revolution is resulting in an increasingly quantified world in which there is an unprecedented, and growing, availability of new sources of data, information and knowledge regarding the full spectrum of policy domains. Second, the expanding power of machine learning is making it possible to use this abundance of data to generate and test hypotheses regarding causally meaningful relationships and optimal policy targeting at a vastly accelerated rate. The power of these techniques has been fueled by improving computational techniques and resources, and the increasing availability of off-the-shelf Supervised Machine Learning (SML) software. Given this increasing availability of information and the growing sophistication of tools for capturing and using it, it is now possible to achieve remarkably high degrees of precision in many areas such as prediction of high-yield intervention points in criminal justice and forecasts of economic well-being using mobile data, satellite imagery and even Google Street View feeds. This type of data-driven predictive insight can yield transformative impact as most visibly demonstrated first, for example, in the political realm by the Obama campaign’s use of high resolution data to target political messages at the block level and more recently in the controversial political targeting analysis of Cambridge Analytica during the 2016 US Presidential campaign. This logic of maximizing the precision of policy interventions by enhancing the richness of relevant information about the issue accelerates achievement of objectives by focusing action and minimizing unintended and counter-productive or countervailing second-order effects. Micro-targeting increases intentional impact and reduces both resistance and waste. It allows policy planners to cut through the noise of complex issue domains and focus their interventions on the “signals” most likely to yield the intended outcome.

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Applying Reality-Based Policy Precision: Specific Levers

Specific levers include, but are not limited to the following:

**Predictive Policy Mapping**

The core means of applying the logic of *Reality-Based Policy Precision* involves first creating a high-resolution, integrated informational map of the issue being addressed and then applying SML algorithms to it, focused on targeting intervention points most likely to yield significant contribution to the intended outcome. For example, a team of Italian economists examining a tax rebate policy designed to boost household income have demonstrated how machine learning yielded significantly improved targeting of recipients based on consumption constraints relative to the coarse targeting rule previously applied. The emerging state of the art will feature information maps that integrate data from operational entities in the field, from other government entities at the national, regional, and local levels, private sector sources, as well as relevant academic studies. The goal is not information integration for its own sake, but rather to maximally enable analysts to use SML to triangulate the reality of a given issue and uncover non-obvious relationships that may create policy intervention opportunities. Early examples include the US National Counter Terrorism Center (NCTC) that maintains a continuously improved data map based on diverse inputs including from all intelligence agencies in the United States, replacing many prior disparate, narrowly focused entities. An emerging opportunity for applying machine learning to multi-disciplinary data maps is at the intersection of education and labor policy where predictive patterns of private sector skill demand and historical data regarding student academic records and employability can be used in the design of curricula and vocational programs to maximize probability of future employment.

**Citizen Sentiment Analysis**

In addition to their demonstrated value for illuminating causal relationships between objective factors, advances in the application of machine learning to large data sets are also significantly improving the ability of private and public sector entities (as well as political campaigns as previously discussed) to proactively gauge citizen preferences. These techniques make it possible to bring empirical precision to subjective sentiment as means of both aligning policy design with citizen preferences and communicating policy intent in ways that - to the extent appropriate - can help galvanize support. This is increasingly possible given the expanding set of pathways by which preference information can be transmitted from citizens to policymakers, either directly through government platforms or indirectly through collection and analysis tools that utilize existing, citizen-provided, public information. For example, in New York City, the NYPD has partnered with Brooklyn startup Elucd to collect information on citizen opinions regarding safety and overall satisfaction with the police. Through surveys deployed via smartphone apps, social media, and landline telephones, the sentiment data are used to create a heat map that illustrates which areas are experiencing discontent with the NYPD, a map which often does not align with expectations based on traditional metrics of crime rate or violence. Dubai’s Happiness Meter is a similar sensor for resident and visitor satisfaction with the government at a larger scale. Government offices, websites, and even the metro all host a small, straightforward poll station for individuals to voluntarily report satisfaction levels with their experience.

**Global Policy Evidence Coalitions**

The value of the econometric techniques of evidence-based policy analysis to determine the ex-post effectiveness of a given policy is already well-established and a crucial capability for improving the effectiveness of the policy portfolio over time. There is an emerging opportunity to greatly increase the transformative power of this lever by creating policy data partnerships across traditionally separate government bodies and internationally to enable analysis of the effectiveness of broader policy archetypes across a wide range of operating environments.

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Building the capacity to apply these levers of Reality-Based Policy Precision requires a sustained, multi-tier effort over time. First, it relies upon effective data capture and integration across organizational and sectoral divides. Information sharing of this kind involves both cultural and legal change, the difficulty of which should not be underestimated. Second, it requires investment in the technologies of data fusion and visualization, and machine learning, although evidence suggests that even very affordable SML software can be highly effective. Third, regardless of the sophistication of the technologies implemented, the value of this capability hinges centrally on the skills of the people that apply it to conduct analysis and policy design. Finally, it is vitally important to note that these levers, notably including Passive Data Capture, require stringent and transparent governance to ensure protection of citizen privacy and thereby ensuring the trust of citizens in their government, which is the foundational requirement of its effectiveness.

Passive Data Capture

The power of these data-driven policy design levers hinges on the availability of large, high-resolution data sets – including in real time where appropriate. The growing pervasiveness of the 4th Industrial Revolution is making it increasingly possible to capture policy-relevant data without any citizen effort. For policy planners, a key frontier of innovation is building data collection into policy design from its earliest stages. For example, building sensors into complex infrastructural systems can enable sophisticated monitoring of key functions. In San Francisco, smart water meters enabled more accurate and more frequent reads of water use. Before installing the smart meters, the city collected data on water use every two months, now the data is recorded every few hours, and citizens are alerted to any abnormal usage levels that last three consecutive days. Smart Card data from transportation systems has informed low-cost, high impact bus network redesign in a number of major cities, including New York City, Houston, and Singapore. Another opportunity of Passive Data Capture is emerging from the growing prevalence in government of platform-based service provision models. Governments can capitalize upon these new direct interfaces with citizens, gleaning information through simple observation and broad scanning for patterns and emerging trends. These new approaches to scanning and synthesizing existing public information across all platforms may enable transformative improvements in government performance, for example in emergency service delivery. Dataminr, which refers to itself as a “Real-time Information Discovery Company,” uses AI and machine learning to comb social media in order to detect, classify, and determine the significance of high-impact events and information to provide early warning to its clients, including governments, to improve response time. The marriage of such real-time information with prioritized high-yield intervention points based on predicative policy analysis can greatly strengthen emergency response.

Implementation Considerations

Building the capacity to apply these levers of Reality-Based Policy Precision requires a sustained, multi-tier effort.
SYSTEMATIC INCLUSION

In a world that is extraordinarily and increasingly complex, convening diverse perspectives to address a complicated issue increases the chance of achieving the desired outcome. Systematic Inclusion maximizes innovation and decreases vulnerability by avoiding blind spots. Numerous studies have shown the value of diversity – racial, gender, and even cognitive and experiential – in decision-making and problem-solving. One US study of mock juries found that diverse juries deliberated longer and made fewer factual errors than all-white mock juries.\(^{14}\) A study from the business world found that ethnically and racially diverse teams were 58% more likely than homogenous teams to correctly price stocks and avoid overpricing and trader errors,\(^{15}\) while another study of thousands of firms in 47 countries found that presence of female directors correlated with higher firm performance.\(^{16}\) Meanwhile, cautionary tales about failure to include diverse perspectives are everywhere, and they are systemic. Amazon recently announced that it was scrapping an AI program designed to hire diverse candidates because the program abjectly failed specifically because of the company’s historical lack of diversity: the existing hiring data was so overwhelmingly male that the program learned to identify specifically male traits as markers of success; resumes that included women’s colleges or leadership roles in women’s organizations were downgraded in the system.\(^{17}\)

Systematic Inclusion in governance is not merely about the emotional or moral requirements. It is a critical component of long-term institutional resilience. The necessity of Systematic Inclusion is brought about by a component of long-term institutional resilience. Emotional or moral requirements. It is a critical correlated with higher firm performance. \(^{16}\) Meanwhile, cautionary tales about failure to include diverse perspectives are everywhere, and they are systemic. Amazon recently announced that it was scrapping an AI program designed to hire diverse candidates because the program abjectly failed specifically because of the company’s historical lack of diversity: the existing hiring data was so overwhelmingly male that the program learned to identify specifically male traits as markers of success; resumes that included women’s colleges or leadership roles in women’s organizations were downgraded in the system.\(^{17}\)

Specific levers include, but are not limited to the following: Representative Policy Delivery In designing a system that focuses on and fosters Systematic Inclusion, a fundamental lever is for an organization to build a workforce that reflects those it serves. Whether by public mandate or through a for-profit business model, an organization that is representative of the people it serves is well positioned to fulfill its function through better understanding of the community’s evolving needs and expectations. This is perhaps shown most dramatically in the composition of police forces. In the UK, police forces that set high targets to increase ethnic minority officers in the force between 2000 and 2010 demonstrated that every 1.5% increase in minority officers was associated with an 11% decrease in the number of substantiated complaints per officer.\(^{18}\) Furthermore, increasing diversity in police departments in the US has been shown to incentivize communities to take ownership in policing.\(^{19}\) In the GCC, where there are large expat populations in every country, public and private institutions that finds innovative ways of mirroring the constituencies they serve will be better positioned to deliver to their mission. Looking forward to the future, the challenge of Representative Policy Delivery will exceed simply racial and ethno-national inclusion. Institutions will also need to mirror the community in terms of income, background and educational levels, and the needs of those societies change in correspondence to the rapid development they experience.

Local Policy Ownership In execution of policy-planning, gaining local stakeholder buy-in is a critical enabler for long-term policy success for multiple reasons. First, local stakeholders, whose populations. What is transformative about Systematic Inclusion is that it places citizens at the center of building solutions, becoming a means to help people help themselves. By increasing agency in the life of the individual, Systematic Inclusion rebuilds the social fabric, while also reducing unproductive resistance. Systematic Inclusion is thus a smart, cost-effective way to de-risk the future. It involves making practical analytic use of diversity of perspective and maximizing the sustainability of policy program by bringing those subject to the policy into its design and delivery.
needs are at the center of the policy in question, are an invaluable source of information and input. Second, new policies that have not taken local input into account are likely to viewed, at least initially, with apprehension and skepticism, if not outright hostility. Building consensus around a given policy prepares the community for policy roll-out, easing implementation. Third, if done successfully, Local Policy Ownership increases community investment in the outcomes of a policy, heightening chances of success since implementation of social policies is often contingent on societal engagement. In most contexts of change, inherent inertia, fear of change and vested interests are impediments to true reform. By embedding policy in community engagement and gaining buy-in from those impacted, policy makers ensure sustainable, implementable policy design. The emerging challenge in Local Policy Ownership lies in the difficulty of forming a consensus in highly polarized environments that are marked by increased distrusts and disillusionment. This is most markedly manifested by the failure of three consecutive French presidents to implement badly needed reforms after strong community backlash.

Systematic Perspective Diversity
In driving innovation, convening a wide spectrum of perspectives and insights in the policy design process puts existing resources and how-to optimal use. Intentional inclusion of not only ethnically or linguistically diverse individuals, but of stakeholders who come from different backgrounds and different schools of thought helps a group to more quickly work through stumbling blocks and arrive at the most innovative solution possible. A good example of an eclectic but effective team is that assembled by South Korean President Park in the 1960s. He enlisted the chaebol CEOs of huge companies in a series of monthly meetings to help build the economy. Even though these individuals and their companies had previously displayed parasitic behavior, President Park also recognized them as the only individuals with the necessary knowledge to ignite South Korea’s economy.20 This lever is often crystallized in the public mind by its absence in critical moments, with the inevitable follow-on decision blunders. The lead up to the 2003 US invasion of Iraq is a particularly blatant example of this so-called “echo chamber” effect, where differing views were systematically shutout in favor of a pre-conceived notion.

Implementation Considerations
Enabling the levers of Systematic Inclusion is not a one-time policy decision, but a conscious, long-term mindset that gives rise to over-the-horizon benefits by driving excellence in policy design, legitimacy in delivery and scale in activation. To unlock those benefits, however, policy makers must eliminate structural barriers to inclusion. It is not simply about sending an invitation to air grievances, but about actually giving everyone at the table a voice. In addition, levers described here are strongly interactive with levers of Orchestrated Local Action. For example, local elements of organizations that are representative of the community served should be empowered to act in a locally-appropriate manner to achieve the policy in question. Furthermore, the effort to balance the tension between Local Policy Ownership and momentum in policy design will continue to require mindful awareness on the part of policy makers who must decide whether to invest more time building stakeholder buy-in or risk friction and perhaps failure with top-down policy design. Finally, policy-makers almost never purposely create echo-chambers or exclude specific perspectives. However, it is human tendency to seek confirmation, resulting in bias. It is thus incumbent on the policy maker to recognize this unconscious bias, and to mindfully contain it by actively seeking adverse viewpoints. The most systematic way to protect against such bias, of course, is to build such Systematic Perspective Diversity into the policy-design team.

Transformative Power
The transformative potential of Systematic Inclusion is a function of the power of intellectual diversity, individual agency and personal ownership and the sheer force of scale. By harnessing collective intelligence, it strengthens policy design. By matching delivering teams to the citizens they serve, it buttresses trust and solidarity. Finally, by increasing accessibility it expands the sheer number of participants in economic and social activity.
ORCHESTRATED LOCAL ACTION
If understanding the reality on the ground is a fundamental component of transformation (Reality-Based Policy Precision), then acting upon that information is the next logical step. Orchestrated Local Action recognizes the power in minimizing the gap between information and action, decisions and their effects. By closing this space, it is possible to improve both policy effectiveness and iterative learning, creating more nimble, personalized policies that address the nuances inherent in our increasingly complex world.

Effective local action is not a new phenomenon. The federal system of government in the US is a pre-technological example of the recognition of distributed decision making and empowerment of communities. What makes Orchestrated Local Action newly relevant is the confluence of two distinct trends. First, the ubiquity of high-quality studies and data means local action can be globally informed. Second, the ease of communication between local and central actors, coupled with the proliferation of feedback and effectiveness-monitoring mechanisms, can ensure that local action is embedded within a wider, coherent strategic frame. It is this precise linkage between the local authority to act and innovate in addressing local issues and wider, centrally-orchestrated guidance and learning dissemination that can yield transformative impact.

Applying Orchestrated Local Action: Specific Levers

Specific levers include, but are not limited to the following:

Frontline Decision Empowerment

The fundamental basis of Orchestrated Local Action is that individuals, organizations and communities must be given the agency to act. To put decision-making power in the hands of those on the ground increases the efficiency and enhances the accuracy with which challenges are addressed. Local units of decision making are usually nimble, adapting to changes on the ground in near-real time. Frontline Decision Empowerment enables, at its highest capacity, individual personalization of policy. The effectiveness of Frontline Decision Empowerment is dramatically illustrated by a study published in 2017 measuring the effect of nurse autonomy on 30-day mortality rates for patients – it found that each additional point on the nurse autonomy scale corresponded to approximately 19% drop in 30-day patient mortality. In Finland, where teachers enjoy high levels of community support and national trust, greater teacher autonomy over methods, materials and student assessment has propelled the country into consistently leading world education rankings. Looking forward, increasing personalization will increase the effectiveness of Frontline Decision Empowerment. For example, a deeper understanding and evaluation of individual learning patterns will enable teachers to tailor educational curricula to individual needs. Similarly, health professionals with real-time access to patient history can better tailor treatment to ensure positive outcomes.

Frictionless Access

For many services, tight budgets and the attractive benefits of economies of scale can drive centralization. However, centralized provisioning often entails cutting down on accessibility for individuals. In some sectors this tradeoff between accessibility and cost can dramatically decrease quality of the service, disincentivizing individual utilization, thereby failing the citizen completely. While true in many sectors, this is particularly true in the healthcare and education arenas. For example, the transformation of the healthcare sector in the city of New Orleans from an overburdened, centralized hospital to a neighborhood network of preventative care centers demonstrates the economic and social impacts of Frictionless Access. Low-income residents no longer rely on emergency care as their primary source of medical attention and the resultant financial savings are substantial, from $1,300 per ER visit to $450 per

At its core, the logic of Orchestrated Local Action is about leveraging the power of human intelligence and agency to deal effectively with the immediate issues being faced. It includes giving individuals and local organizations autonomy in delivering services such that responsiveness, adaptive tailoring, and commitment to results are maximized within required centrally determined guidelines. The capacity to successfully carry out Orchestrated Local Action relies upon several basic elements. First, information availability and fidelity are critical prerequisites. Second, having people in local positions that are unafraid of thinking creatively and making decisions is required. This of course, in turn, entails a discussion regarding organizational culture at the local level and how community input is channeled into local action. Finally, information sharing and communication between decentralized networks is key, to disseminate information on best practices and other know-how.

Implementation Considerations

At its core, Orchestrated Local Action is about leveraging the power of human intelligence and agency to deal effectively with the immediate issues being faced. It includes giving individuals and local organizations autonomy in delivering services such that responsiveness, adaptive tailoring, and commitment to results are maximized within required centrally determined guidelines. The capacity to successfully carry out Orchestrated Local Action relies upon several basic elements. First, information availability and fidelity are critical prerequisites. Second, having people in local positions that are unafraid of thinking creatively and making decisions is required. This of course, in turn, entails a discussion regarding organizational culture at the local level and how community input is channeled into local action. Finally, information sharing and communication between decentralized networks is key, to disseminate information on best practices and other know-how.

Transformative Power

The transformative potential of Orchestrated Local Action is a function of results, rapid dissemination of learning and momentum. Orchestrated Local Actions do not remain local. They can move rapidly through the system creating positive externalities within a community and across communities. This approach turns the distributed network associated with a given policy into a national policy experimentation laboratory where innovations can spread rapidly within orchestrated guidelines. The smaller scale of action allows policy to take place on a nimble and more easily-adjusted basis than could any large-scale policy initiative.
PUBLIC GOODS PLATFORMS
PUBLIC GOODS PLATFORMS

The earliest platforms were, at their core, simple spaces to exchange information. Erik Brynjolfsson and Andrew McAfee, co-directors at the MIT Initiative on the Digital Economy, define a platform as a “digital environment characterized by near-zero marginal cost of access, reproduction, and distribution.” The internet, the world wide web, and later the iTunes store all fit this characterization. However, today when most people think of platforms they think of Online to Offline (O2O) platforms—those that are increasingly blending the digital and physical worlds and transforming every aspect of our lives. Uber, Airbnb and Amazon, for example, are online spaces for exchange of physical goods and services, and they have revolutionized how we commute, travel, shop and even eat. Though these O2O platforms listed are all private entities, the logic of platformization is by no means limited to use by the private sector. The logic of Public Goods Platforms offers policymakers new tools for efficient and effective governance by providing a roadmap to designing new digital spaces for unleashing collaborative interactions that bring together individuals, private companies, NGOs and all levels of government. As connective infrastructure spreads, online access becomes ubiquitous and citizens are now born into a world in which digital literacy is developed early in life, governments find themselves not only with new policymaking tools but with new human capacities among the citizenry to capitalize upon those tools.

The emerging logic of Public Goods Platforms allows the government to play its role as a facilitator and regulator more effectively and efficiently. Not only can the state provide its essential services more capably, but when successfully mediating platform spaces, the state can create an ecosystem that optimizes resources, cuts costs, increases private sector innovation, boosts individual agency and ultimately strengthens the social contract.

Estonia, however, is an example of what is possible. The tiny northern European nation boasts that 99% of government services are accessible online, that it takes the 96% of Estonians who file taxes online an average of 3 minutes to do so, and that Digital IDs have saved the nation 2% of GDP.

Specific levers include, but are not limited to the following:

Transaction Cost Targeting
Platforms have dramatically reduced the cost of doing business by revolutionizing the way individuals consume, and nowhere is this more apparent than in the music industry. Individuals no longer travel to the record store or even the nearest big retailer like Target or Walmart to buy CDs. Many do not even buy individual songs anymore through the iTunes store or other online markets. Instead, Spotify, Pandora, and Apple Music are all subscription-based platforms now that provide access to nearly any song, on demand, for the same low cost every month. When we consider this revolution in the context of costly and often clunky government services, nothing could be more attractive than Transaction Cost Targeting through Public Goods Platforms. Luckily, governments can employ the same mode of thinking. E-government is not a new notion, governments can employ the same mode of thinking. E-government is not a new notion, but effective application of the idea remains uncaptured in most nations. Estonia, however, is an example of what is possible. The tiny northern European nation boasts that 99% of government services are accessible online, that it takes the 96% of Estonians who file taxes online an average of 3 minutes to do so, and that Digital IDs have saved the nation 2% of GDP.
approach to online government has nearly eliminated the need for paper-based bureaucracy, making the state extremely effective, yet cost-efficient. The logic of eased transactions between state and citizen can apply at all levels, and between private entities as well.

**Radical Resource Utilization**

*Public Goods Platforms* can also put existing resources to better and more effective use. This is the basic idea of platforms such as Airbnb and Uber and is also captured by companies such as Rent the Runway which, recognizing that most women do not wear designer evening gowns frequently, designed a rental program for high-end dresses that wouldn’t otherwise be worn more than once or twice. Governments at all levels have the opportunity, through platforms, to collaborate with citizens to utilize public resources more effectively, efficiently, or just differently. This can be done several ways. In the case of Living Lots NYC, public city data provides the information base for a living map that identifies vacant, city-owned spaces and provides tools for citizens to organize around building those spaces into goods that serve their communities such as public parks or community gardens. Alternatively, the privately developed ParkMobile app allows users to search for, park in, and pay for metered parking spaces and parking garages using their smartphones, and then receive alerts when time is running out in case they need to extend their time. By teaming up with cities, the app is helping individuals spend less time driving around aimlessly searching for a parking spot and helping reduce the number of parking tickets in major cities throughout the US. Government collaboration with various actors, through platforms, can put individual resources and public resources to best use.

**Choice Expansion**

Classic platforms have resulted in an explosion of choice for consumers. (The variety of socks available on Amazon is truly astonishing.) Governments, through application of platforms and smart collaboration with private entities, have the same ability to dramatically expand choice for citizens in areas that were otherwise cost prohibitive or perhaps just not imagined. For example, in late 2017, Washington D.C.’s District Department of Transportation began a dockless bike pilot program in collaboration with 7 private companies that expanded bicycle access for D.C. residents without their own bicycle or living far away from the parking docks of the existing Capital Bikeshare infrastructure. Dockless bikes are unlocked using a smartphone app, and the cost of a bicycle trip is about the same or even less than a public transportation trip on bus or metro. The pilot is ongoing as the city continues to try to expand ridership in underserved areas of the city. Similar thinking undergirded Sweden’s expansion of choice in education (though not digital) in the 1990s. By embracing educational vouchers, parents gained the ability to send their children to whatever schools they chose rather than being restricted to the state-prescribed school. Today nearly half of Swedish students have opted for a different school than the one they would have otherwise been slated to attend. As these two examples illustrate, whether using paper vouchers or 4g smartphones, platforms and platform thinking can expand space for private providers in otherwise public spheres, resulting in greater variety of choice for the citizen.

**Informational Symmetry**

Radical access to the currency of information changes incentives to encourage collaboration that otherwise would have required an unobtainable level of trust. Indeed, Brynjolfsson and McAfee assert that, “platforms succeed at capturing and creating value in part because they reduce information asymmetries that previously kept some beneficial transactions from happening.” For example, Uber users are comfortable getting in a stranger’s car because the app features a rating system. Nearly all other online exchanges feature ratings systems too—Amazon, eBay and Classpass among them. Governments can utilize the same notion of information and performance transparency to enhance the effectiveness of a sector, or even as a means for monitoring private entities providing otherwise public or traditionally public goods. For example, in Sweden, all hospitals providing

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Implementing Public Goods Platforms on a national scale requires both key physical infrastructures and specific modalities of thought. First, nations must strive for ubiquitous connective infrastructure or risk creating or exacerbating inequalities. When we evaluate nations where large-scale platformization has succeeded, they are typically small, dense, and highly connected. Thus, the initial hurdle in Public Goods Platforms is to invest in connective infrastructure for more rural and large-landmass nations. Second, governments must become comfortable with some measure of iterative failure before success. Most brilliant ideas have gone through multiple reinventions before being an unqualified success, and the truly brilliant ones do not stop there. Which means that finally, the state must recognize that platforms require constant care, they are not simple laws to be enacted and then forgotten. The state must curate a platform-based innovation ecosystem through a transparent, light regulatory footprint that provides clear rules of the road to ensure the safety and privacy of citizens, without stifling private-sector innovation. This is the essential role of platform owner, as asserted by Brynjolfsson and McAfee, who write: “platform owners typically have to curate contributions from outsiders to maintain standards. Chaotic, unsafe, or fraudulent contributions can diminish a platform’s value.” When government is the platform, it has a heightened interest in managing the applications it hosts.

Whole-of-Society Data Integration

Because the most basic currency of Public Goods Platforms is information, every one of the above levers requires some form of democratizing access to information. It is this basic access to information that empowers individuals, developers, and organizations to devise solutions to commonly held problems. However, the radical and truly transformative interpretation of Public Goods Platforms is to build the government itself into a platform, rather than taking a piecemeal approach. The more this is done, the more efficiently and effectively Public Goods Platforms can work, across government entities and into the private sector. While no country has achieved this vision quite yet, two nations have developed whole-of-nation data exchange systems that enhance public sector operations, securely provide private entities access to public data, and create space for citizens and companies to provide services in the public realm. First, Estonia’s X-Tee, the digital nation’s superhighway, facilitates transfer of information from one localized storage system to another, allowing citizens to enter in their information just once, giving rise to the “once only” principle and instantaneous linking between various public entities to facilitate simplification of interactions with the bureaucracy. Second, Singapore’s APEX similarly functions as a whole-of-government platform for sharing information across the government and to external users. Launched in mid-2017, APEX has followed many of the same principles as Estonia’s X-Tee, focusing on simplifying the citizen interface with government bureaucracy and private entities such as banks. The emerging future of Whole-of-Society Data Integration will not only increasingly include private sector entities but will also foster new links between nations. In early 2018, Finland and Estonia linked their information exchange systems to allow individuals to access healthcare seamlessly across borders. Increasing cross-border exchange, coupled with the opportunity for more NGOs, individuals, and private entities to plug into the exchange layer for data access and service delivery, will generate more data, enable identification of more solutions and foster more innovation.

Implementation Considerations

Implementing Public Goods Platforms on a national scale requires both key physical infrastructures and specific modalities of thought. First, nations must strive for ubiquitous connective infrastructure or risk creating or exacerbating inequalities. When we evaluate nations where large-scale platformization has succeeded, they are typically small, dense, and highly connected. Thus, the initial hurdle in Public Goods Platforms is to invest in connective infrastructure for more rural and large-landmass nations. Second, governments must become comfortable with some measure of iterative failure before success. Most brilliant ideas have gone through multiple reinventions before being an unqualified success, and the truly brilliant ones do not stop there. Which means that finally, the state must recognize that platforms require constant care, they are not simple laws to be enacted and then forgotten. The state must curate a platform-based innovation ecosystem through a transparent, light regulatory footprint that provides clear rules of the road to ensure the safety and privacy of citizens, without stifling private-sector innovation. This is the essential role of platform owner, as asserted by Brynjolfsson and McAfee, who write: “platform owners typically have to curate contributions from outsiders to maintain standards. Chaotic, unsafe, or fraudulent contributions can diminish a platform’s value.” When government is the platform, it has a heightened interest in managing the applications it hosts.
Transformative Power

*Public Goods Platforms* provide opportunities to decrease transaction costs and optimize utilization of resources, cutting through an often-unwieldy bureaucracy. Their transformative power is a function of their unique, demonstrated ability to unleash the power of human interactive and entrepreneurial ingenuity at scale. They offer means of increasing welfare by increasing choice, and of forming new trust networks between citizens and institutions. Ultimately, the state can, in curating an ecosystem that capitalizes on the innovation of citizens and the private sector, ensure wide-ranging economic and societal benefits. These levers of *Public Goods Platforms* are the building blocks of a digitally-inspired rebirth of the social contract.
EDUCATION as a Transformative Policy Domain

The National Strategic Significance of Education Policy

Education as a policy domain is characterized by its direct and long-term impact in creating a prosperous economy and vibrant society. It is a whole-of-nation enterprise that concerns not only students and parents, but the all of the stakeholders in the society, which will rely upon the skills students learn today to manage and grow their communities tomorrow. For the individual, no policy realm holds as much reliable promise as a means of altering socio-economic status and life trajectory. The role of education in propelling citizens toward future opportunities has been empirically demonstrated in countless contexts, as each year of education has been shown to increase an individual’s earnings by up to 10%.1 The cumulative effects of this gain then ripple throughout the economy, making education a central component of any development agenda. UNESCO estimates that each additional year of schooling raises average annual GDP growth by 3%.2 Formal education provides countries with a direct lever for driving national strategy and influencing strategic outcomes. The UAE’s National Strategy for Higher Education 2030 is specifically setting out to foster collaboration between higher education institutions and the private sector in order to develop the UAE’s labor market.3 These characteristics make education policy a fundamental national strategic imperative. Not only do individuals and societies benefit from strong investments in education, but failure to deliver in the education system has ramifications that ripple out to negatively impact the economy and social fabric of a nation including by eroding national competitiveness in an ever more knowledge-intensive and technology-disrupted global economic environment.

The Transformation Underway within the Education Sector

Education has been a key feature of the UN’s Development Goals, and a decades-long focus on universal primary education has helped raise the global youth literacy rate from 81% in 1986 to 91% in 2016.4 Now, the 4th UN Sustainable Development Goal has shifted from a target that centered on increasing access to basic education to one focused on raising the global standard of education and lifelong learning. This focus is in line with the broader evolution of global needs in labor markets and the transformation of the education sector itself, which is characterized by both a greater understanding of human development and the proliferation of tools that allow education systems to target best learning practices for individuals. In that context, Alessandro Massa, who heads A.T. Kearney’s Education Practice, and Marco Vasconi, one of A.T. Kearney’s leading education experts, emphasize a number of critical drivers in the transformation of the education policy landscape:

Toward Individualized Learning:

Traditional instruction models have historically been quite rigid focusing mainly on rote memorization and lecture-based learning and targeting the “average student”—thus leaving struggling students behind and failing to challenge high-performing students. This trend stems from the deeply-rooted tendency to oversimplify human behavior, which created the notion that most students could be considered as average and their learning and development paths would be predictable. However, the latest findings from behavioral studies show that there no such thing as an “average” student and students learn in different ways. This led to the demand for an evolution of pedagogy. To fully discover, stimulate and exploit the potential present in every student, the instruction model needs to be tailored to the individual student needs and behavior. For example, students may predominantly have an auditory, visual or tactile learning style. With the knowledge, data, technology and learning tools available today, well-trained teachers, when endowed with the decision-making power to work with students in creating learning plans that are tailored to their most productive learning times, preferred learning styles, and high-engaging topics, are able to personalize learning and achieve better outcomes. While research into personalized learning is still in its early stages, a 2017 RAND report found that students on a personalized education program gained about 3 percentile points in mathematics relative to a comparison group of similar students. Most importantly, low-performing and high-performing students all benefitted, showing promise for a system that could replace under-performing, one-size-fits-all education.5

Expanding Reach and Inclusion

Expanding reach in education has long meant building more schools and training more teachers. While these aspects remain critically important, particularly in developing countries, today informal learning (i.e., that outside of a classroom setting) is increasingly recognized as a primary component of education. Two factors play a critical role in facilitating this type of learning: parent involvement and ed-tech learning tools. Parents need to participate in their children’s education journey and use their experience and knowledge to augment their learning. For example, in South Africa, a simple text message service reminding parents to read with their children on a daily basis showed positive development in the students’ ability to read for meaning. At the same time, new ed-tech learning tools are allowing learning to extend beyond the classroom and empowering students to pursue those topics and learning styles that interest them most. One recent study in the United States found that students who used an online homework intervention program scored higher than a traditional homework control-group, with the greatest gains for students who had been at the bottom end of the achievement scale.6 24-hour access to learning tools allows students to work at their own pace, often in their own homes, and at the hours that suit them best. This is illustrated most clearly by the over 500 million individuals that have signed up for Massive Open Online Courses (MOOCs) to date.7 These online courses and degrees open higher education to so-called non-traditional students for whom the typical hours or cost of university courses previously made a university degree unobtainable. Today more and more universities, including Harvard, MIT and Yale are offering online courses, while others such as Georgia Tech and the University of California, San Diego are offering full, accredited, online degrees.

Toward a Data-driven Curriculum Anticipating and Responding to Future Needs

Currently, there is a severe mismatch between the skills developed by most education systems and the skills needed in the labor market. A 2014 study found that only 28% of employers surveyed in the US considered college graduates to be prepared for working with numbers or statistics.8 The accelerating pace of technological and workplace change means the timeline is short and shortening. By the time students enter the workforce, their skills are often already obsolete. To meet future skills requirements, the curriculum needs to be designed and updated leveraging cross-sector data and foresight into the occupations of the future. This represents a fundamental shift toward a data-driven curriculum that meets the future needs of the labor market and society.

A key challenge in realizing this transformation of education is the required investment in resources—both human capital and connective infrastructure. In Finland, where teachers are given a high level of autonomy in the classroom to develop student-centered learning, teachers must hold a master’s degree and be among the top in their class to qualify for the profession. At the same time, to utilize technology solutions to their full potential requires that all students have access to the tools that enable online learning anywhere and at any time. For many nations, this will require long-term public investment in education and strong collaboration with the private sector to develop the required infrastructure, and effective ed-tech solutions and learning tools. Nevertheless, the potential benefits of intelligent reform in terms of future economic growth and national transformation are too important to ignore.

Education Policy as an Instrument of National Transformation

Education policy can contribute profoundly to national transformation through a range of channels, including:

**Driving Individual Wellbeing and Productivity:**
Studies in the US have shown lifetime earnings of an individual with a college degree are nearly double those of an individual without one, demonstrating the dramatic implications of education on future opportunities.¹

**Driving National Strategic Priorities:**
Governments around the world have long provided scholarships for students studying in strategic areas such as critical foreign languages, technology, and engineering. Strengthening the link between emerging data on the future knowledge requirements of the economy and the content and structure of education programs can accelerate achievement of national strategic priorities.

**Activating Economic Growth and Innovation:**
From high school classrooms to university research institutes, the education system provides the foundation for an innovation ecosystem that increasingly represents the most important engine of national economic competitiveness and prosperity.

**Strengthening the Social Contract:**
Education is a core component of the social contract and a universal human right. When the state delivers on its promise to educate future generations, its legitimacy in the eyes of its citizens rises. This political trust creates leverage for transformation efforts beyond education.

**Inclusive Growth:**
National investments in education are established means of reducing economic inequality; however, capturing these benefits requires ensuring that any systematic systemic inequalities in the education system itself are addressed. Inclusive growth requires inclusive access to education.

**Talent Attraction**
The United States has long benefitted from the reputation of its higher education system as the best in the world. Not only do foreign students generate revenue universities, they also contribute to building diverse innovation capacity the benefits of which ripple throughout society. Among the countless examples, Elon Musk of Tesla, Sundar Pichai of Google, and Fareed Zakaria were all at one point foreign students in American universities.

**Labor Force Transition**
Finally, next generation education is a foundational means of addressing the global challenge of technology-driven labor polarization and adapting to the future of work.

From the long-term perspective, no policy domain is of more fundamental importance for driving transformative societal change than education. It is the key source of the adaptive capacity of the workforce to the continuous disruption of labor markets and an essential engine of the innovation so central to national competitiveness. It is among the most direct and pervasive interfaces between the state and its citizens and therefore an unparalleled platform for building trust.

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¹ Roschelle, Jeremy, Mingyu Feng, Robert F. Murphy, and Craig A. Mason. 2016. “Online Mathematics Homework Increases Student Achievement.” AERA Open.
Cognitive logics derive their transformative power from human agency. In particular, they leverage the stunning advances in cognitive psychology and behavioral economics to both strengthen the capacity of citizens to take intentional action and to minimize the costs of our now well-established cognitive biases. They are relevant to the full spectrum of policy domains at all levels of government.
ATTENTION ARBITRAGE

As our world becomes ever more saturated with digital stimuli, there is an increasing sense that we are facing a crisis of attention that may have profound consequences not only for our individual and societal well-being, but also for our productivity. Economists have begun to hypothesize that the declining growth rates in productivity may be driven in part by the fragmentation of attention.\(^\text{36}\) We are also facing increasingly crowded lives in terms of time.\(^\text{57}\) We can consider the combination of attentional capacity and time together as the “cognitive bandwidth” of individuals, organizations and communities. For leaders seeking to drive transformative change, this cognitive bandwidth, including its patterns and quality, is becoming an ever more critically important variable for designing policy and improving organizational performance.

From the perspective of policy design, how citizens allocate their attention and time directly affects their actions, individual development and contributions to the society of which they are a part. To make this more concrete, consider one particularly obvious example among countless others: grade school students. Factors including curriculum, class and activity schedule, study time and the quality of their attention throughout the day all will directly impact what and how well they learn and thereby the nature of their life trajectory including their career and societal contribution.\(^\text{36}\) These factors are all subject to policy influence as are the corresponding factors in other policy domains, including economic development, health, labor, environmental and many others. For these reasons, there is an emerging opportunity for leaders to drive innovation in how planners analyze, understand and influence through policy interventions the allocation and quality of citizen attention and time in ways that support productive work, societal contribution and transformative progress. This same logic can also be harnessed to improve the performance of their organizations. Innovations in this area are proliferating in the private sector, where organizations are experimenting with various means of reducing distraction to strengthen attention and improve productivity, for example by eliminating email.\(^\text{59}\)

Applying Attention Arbitrage: Specific Levers

The logic of Attention Arbitrage can be applied in a diverse range of ways to accelerate progress in achieving policy outcomes and improve organizational performance. Specific levers include, but are not limited to the following:

**Time-Based Policy Design**

The clearest indicator of the allocation of citizen attention is how they use their time. Time use studies serve this precise purpose by capturing and analyzing data regarding “how individuals spend their time over a specific period.”\(^\text{40}\) For any policy area in which the patterns of citizen action are important drivers of the achievement of intended outcomes, the time structure of their lives is a key design consideration. For example, to extend the example of education policy above, the time and attentional capacity available to parents to invest in their children's learning is another key driver of learning and developmental outcomes.

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designing, for example, benefit programs and labor policy. Applying this lever involves first understanding key intended policy outcomes, determining its temporal requirements on target stakeholders and then capturing time use data to identify interventions that make it possible to meet those requirements. The proliferation of mobile technologies and other sources of data will make it possible to conduct time use analysis in ever more efficient and accurate ways. This in turn will enable governments to design policies that are optimized with respect to the actual lives of the people they are intended to serve.

Cognitive Burden Clearing

Given the growing pressure on the cognitive bandwidth of citizens, governments have both an opportunity and an obligation to drive policy innovations that minimize unproductive cognitive burden. The starting point must be minimizing the time burden of required government interactions. Nowhere have such initiatives been more systematically or effectively implemented than in the small nation of Estonia.

In 2000, Estonia rolled out its e-tax program via its already existing e-governance platform. The e-tax program compiles all information to which the government already has access from all levels and ministries and automatically populates the detailed submission automatically according to transparent rules. The citizen simply reviews the submission online, confirms its accuracy and submits. For the 95% of tax submissions that are filed online each year, the Estonian government estimates that e-tax filing takes only 3–5 minutes. In the future, the advance of the 4th Industrial Revolution and smart cities enabled by 5G will make the reduction of unproductive bureaucratic cognitive burden ever more possible. On a much larger scale, insecurity, worry and the lack of “psychological safety” are key sources of cognitive burden.43 For this reason, functioning social safety nets represent another means of Cognitive Burden Clearing, improving societal well-being and, some studies suggest, driving innovation. Sweden, the country most known for its generous safety net, produces the second highest number of billion-dollar tech companies, so-called “unicorns” in the world behind Silicon Valley. Sweden’s minister for enterprise and innovation argues that Sweden’s entrepreneurial success is directly related to the security individuals feel, stating explicitly that, “taking on a risk is not as daunting in Sweden as it is in the US” thanks to its broad and increasingly fiscally sustainable social safety net.44

Engineered Collaborative Space

The transformative power of cognitive bandwidth, the combination of attentional capacity and available time, applies not only at the level of individual citizens, but also at the level of organizations. In both cases, the flood of interruptions in the form of digital stimuli and the always urgent work requirements of our accelerated world result in a pattern of constant reaction that undermines the capacity for intentional action. For leaders seeking to drive transformative results, it is increasingly critical to ensure that their organization is investing sufficient attention and time on the kinds of collaborative activities necessary for exponential progress. For example, in the absence of institutionalized processes for collaborative strategic planning and foresight, these activities are likely to be crowded out by urgent day-to-day contingencies. This is equally true of innovation processes and institutional structures. By building features into the organization’s operating model that ensure consistent, meaningful bandwidth is invested in intentional collaborative thinking, leaders can systematically improve the ability to anticipate and adapt to change and drive the innovation that is increasingly the core requirement of transformative progress.

Implementation Considerations

There are two key requirements for effectively implementing policy and organizational design strategies that leverage cognitive capacity. The starting point for doing so is to understand in any given setting the extent to which attention and time use represent potential intervention points for accelerating the achievement of intended results. Our analysis suggests that the range of policy and organizational contexts in which this logic applies is extremely broad. Second, a prerequisite for designing effective interventions is to establish a quantified baseline regarding these factors in a given situation. For this reason, time use surveys and attention assessments are critically valuable tools.

Transformative Power

Numerous studies make clear that our attentional capacity as individuals, organizations and societies is under increasing pressure and the rising prevalence of habituated reactive orientations reduces our ability to drive intentional progress. Some studies suggest that these dynamics are in part responsible for the declining growth in productivity globally. Therefore, there is an opportunity for leaders to first analyze and understand this factor in any given domain and then to ensure that this fundamental human and societal capacity is restored in ways that support accelerated achievement of intentional progress.
One of the most conceptually disruptive forces shaping the critical juncture that we have entered is the still-unfolding revolution in our understanding of human decision-making and motivation. Traditional economic theory and policy development have long rested on the foundational assumption of rationality – that is, that human beings can be understood as rational actors seeking to maximize their material self-interest. Over the last two decades, advances in cognitive psychology, behavioral economics, neuroscience and a host of related disciplines have revealed the extent to which human decision-making is influenced by a range of factors other than those considered significant by rational choice theory. The factors revealed by these advances include our natural decision biases and the balance between extrinsic sources of motivation, including financial incentives, and intrinsic sources. For leaders and policymakers seeking to drive transformative change, these discoveries open a new landscape of opportunities to fuel positive motivation and minimize unproductive friction by making it possible to work with, rather than against the conscious and unconscious cognitive processes of the human mind.

Much work in this regard is already well underway. More than 135 countries have deployed policies based on behavioral insights and more than 50 now have central nudge-based initiatives, institutionalized functions or both at the national level. Nevertheless, this revolution is still in its early stages. Over the coming 5-10 years, the exponentially increasing availability of data and advances in machine learning will make it much more possible to conduct highly reliable randomized control trials (RCTs) which will in turn allow for ever more sophisticated and effective applications of behavioral insights to policy design. That is, governments are likely to become ever more effective at shaping citizen behavior. Therefore, to ensure the revolution in behavior-based policy not only yields improved policy outcomes, but also respects and strengthens the individual agency of citizens, it will be vitally important to develop and enforce explicit guidelines for the deployment of these techniques. Nevertheless, the positive potential transformative power of these tools should not be underestimated, particularly given the remarkable results they are already delivering.

Applying the Logic of Cognitive Process Leverage: Specific Levers

The logic of Cognitive Process Leverage can and is already being harnessed in a tremendous diversity of ways globally. For the specific purpose of accelerating the achievement of positive, intentional transformation, the following specific levers merit special consideration:

**Behavioral Inertia Disruption**

Nudge units around the world are focused on a common set of core objectives that feature making government services more user friendly and cost effective, improving policy outcomes and providing support for better choices. Within this scope, there are a subset of opportunities for specifically driving structural change in behavior in ways that can be meaningfully characterized as transformative. These opportunities are a function of the key decision biases that are central to behavioral policy. These include biases that pertain to our imperfect intuitions regarding probability, including anchoring, over-confidence and availability biases. Another category of biases pertains to the ways in which our choices are shaped by how they are presented or framed. These are the biases that are informed by choice architecture. A third bias that has not been subject to the same degree of media attention is particularly relevant to transformation, namely status quo bias. Of all the primary biases, it is this that most sustains inertia and undermines productive change.

A third bias that has not been subject to the same degree of media attention is particularly relevant to transformation, namely status quo bias. Of all the primary biases, it is this that most sustains inertia and undermines productive change.
to another state relative to the potential gains. As a result, the current state seems the preferable option."45 Understanding this bias is particularly important in circumstances in which behavioral change requires effort. Thus, this lever involves intentionally identifying in a given policy domain where status quo bias may be operating and causing counter-productive inertia and then designing targeted interventions. For example, an OECD study indicates how the combination of goal setting and commitment devices can be applied to energy consumption by specifying savings objectives and then "following up on the objective with regular feedback and tips" via a mobile device.46 A version of this approach has been applied in Cape Town, South Africa to reduce the exposure of young people to the risk of violent crime by deploying a planning app to reduce status quo bias. The result was a 50% reduction in the likelihood of experiencing danger including violent crime.47

**Intrinsic Motivation Leverage**

Driving transformative change requires continuously analyzing and mapping the incentives and motivations of citizens in any given policy domain. Extrinsic motivations focused on the material self-interest of citizens, including financial incentives such as tax breaks, subsidies, and direct income support remain key policy instruments to consider. However, the growing body of evidence regarding the power of intrinsic sources of motivation represents an opportunity to find new sources of policy influence. Intrinsic motivations include prosocial factors such as altruism, reciprocity, inequity aversion, civic duty, intellectual passion, etc. as well as less noble motivations including envy, spite, anger and even revenge. Research indicates that leveraging the intrinsic, prosocial dimensions of motivation has benefits even beyond specifically targeted behaviors and "has been associated with increased satisfaction and learning; lower costs for principals attempting to secure good performance in all activities (not just the incentivized tasks); and improvements in self-monitoring, problem-solving, and cognitive processing."48 Significant case studies abound. In Singapore, Lee Kuan Yew instituted a strict meritocracy with rigorous performance reviews in the public sector, and only then rewarded civil servants with high salaries entirely linked to extremely high-performance expectations. By radically re-defining prestige in the workplace, Singapore was able to motivate the best world. In addition to these confirmations of positive effects, there is evidence that the use of extrinsic incentives may in some cases "crowd-out" intrinsic motivations, creating long-term reliance on costly financial transfers to achieve desired results. Thus, for leaders and policymakers seeking to drive positive, intentional change, there is a significant strategic opportunity to understand and harness the power that intrinsic motivation represents to accelerate and improve the sustainability of intended changes in behavior. Doing so requires explicitly and systematically identifying the sources of intrinsic motivation that can be tapped to achieve specific policy outcomes.

**Strategic Decision Process Analysis**

The same unconscious structures that shape citizen behavior also influence the strategic decision processes of government organizations. Given this inescapable reality and the risk it represents, for government entities to become engines of transformative progress they must institutionalize the practice of systematically applying cognitive and behavioral analysis to their own strategic decision and policy design processes. This must include all phases of decision-making from the conduct of foresight, through strategic and budgetary planning and operations and performance measurement. Implementing this practice involves not only establishing required processes and checklists for consistently weeding out distorting decision biases, but also training senior executives and planners in the key concepts and disciplines of behavioral insight. This strengthening of core decision processes should not be limited to behavioral dimensions, but also ensure steps to address other key strategic blind spots including with respect to the changing future operating environment, interactive dynamics with stakeholders, adversaries
Implementation Considerations

Given the power of behavior-based policy design to influence the decisions of citizens, it is vitally important to establish effective governance for and oversight over the process. This must include requiring that each behaviorally-driven policy intervention is delivered in ways that ensure its transparency to the citizens affected by it. In addition, in applying Nudge-based choice architecture, it is important to ensure that choice sets are not narrowed. These practices are essential for ensuring that the application of these techniques does not jeopardize citizen trust of the government organizations that deploy them.

Transformative Power

Understanding and harnessing the techniques of cognitive policy design could not have higher stakes. Consider only one, albeit profoundly important example – climate change. The US Global Change Research Program’s 2017 Volume I of the Fourth National Climate Assessment mandated by Congress concludes as follows: “By about 2030, the human source of uncertainty becomes increasingly important in determining the magnitude and patterns of future global warming. Even though natural variability will continue to occur, most of the difference between present and future climates will be determined by choices that society makes today and over the next few decades. The further out in time we look, the greater the influence of these human choices are on the magnitude of future warming.”

The ability of leaders and policymakers to use our rapidly expanding knowledge of human decision processes to drive positive change in this area and many others represents the most promising means of guiding human behaviors and actions in these dire circumstances without depriving individuals of their freedoms, rights, and ultimately the privilege of living healthy lives on this planet.
TRUST
The extent to which citizens trust one another and trust their institutions are remarkably powerful drivers of the ability of a society to intentionally drive positive change. As Nobel prize-winning economist Kenneth Arrow said “…it can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence.” Over the last 20 years, the academic evidence has steadily become stronger that there is a remarkable diversity of societal benefits correlated with interpersonal trust from improved economic performance and competitiveness to societal resilience to shocks. The analysis has centered on social capital defined as “features of social life—networks, norms and trust—that enable participants to act together more effectively to pursue shared objectives.” More recent work has focused on civic capital defined as “those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities.” In the context of the 4th Industrial Revolution, digital social capital is emerging as a key dimension given the role of virtual interactions in our economic and social lives. Across all its forms and sources, civic capital refers to the beliefs and values that propel cooperation, with the ability to trust in strangers at its core.

Why does this matter? With respect to the central focus of this paper, accelerating the achievement of intentionally transformative progress, a key aspect of the current and emerging operating environment is that government can no longer exclusively dictate and drive transformation. Indeed, government must engage, empower and activate the agency and collective action of its citizens to launch and sustain such a transformation. Doing so requires, as much any other factor, that citizens can both trust and cooperate with each other, and, in turn, with their public institutions. The power of civic capital derives from the sense of responsibility for the common good, and willingness to cooperate with others beyond the immediate, known social network. Trust in public institutions is deeply complementary as it increases the willingness of citizens to support the achievement of outcomes intentionally advanced by those institutions. As documented by the Presidential Committee on Government Innovation & Decentralization in South Korea, “trust in government improves the level of public policy acceptance and reduces administrative costs, while encouraging compliance with laws and regulations.” This is often referred to as political trust which “happens when citizens appraise the government and its institutions, policy-making in general and/or the individual political leaders as promise-keeping, efficient, fair and honest… the judgment of the citizenry that the system and the political incumbents are responsive, and will do what is right even in the absence of constant scrutiny.” A useful way of understanding this power is the concept of social infrastructure, defined as the set of institutions and government policies that result in “…an environment that supports productive activities and encourages capital accumulation, skill acquisition, invention, and technology transfer.” Thus, in combination, civic capital and trust in institutions are fundamental enablers of the achievement of intentional, rapid change—of transformation.

While the power of trust is as old as human society itself, the sources of civic capital and social infrastructure are being disrupted, including by technological change. On the one hand, our increasing immersion in the virtual world seems to be weakening certain aspects of trust. There is empirical evidence that “access to broadband Internet caused a significant decline in forms of offline interaction and civic engagement. Overall, our results suggest that broadband penetration substantially crowded out several aspects of social capital.” On the other hand, the technologies of transparency and trust, particularly blockchain, are creating new means of engaging in forms of impersonal exchange on a trusted basis. In the chaotic context of the present critical juncture, government leaders seeking to accelerate the achievement of positive change must find ways to activate civic capital and strengthen social infrastructure.
Applying Trust: Specific Levers

In its broadest sense, Trust – including civic capital and social infrastructure – is an invaluable asset that is developed over long periods of time. Nevertheless, government leaders seeking to drive accelerated change can both strengthen and harness the transformative power of Trust in a range of ways. Select levers for strengthening social infrastructure in terms of institutional trust include, but are not limited to the following:

Transparent Governance:
Perhaps the most basic action for increasing trust between state and citizen is to allow the citizen access to the state—to see how decisions are made, money is spent, and how outcomes will impact their own lives. Core access to information empowers individuals, as they are able to understand the bodies that govern their lives and, armed with that knowledge, can better advocate for policies and actions that serve their interests and the interests of their communities. Governments around the world are pushing for greater openness and transparency. Sweden, for example, instituted vast structural reforms following its financial crisis, which were carried out in consultation with the citizenry, rebuilding trust in the government. Now, “the system relies on a high degree of fiscal transparency that provides the basis for a well-informed policy debate, thus raising the costs for the government of deviating from its targets.”56 Specific levers in this area constitute “open government” policies, which include budget transparency.57 Nearly 100 governments participate in the Open Government Partnership, which is a platform for open, accountable and responsive government.

Social Infrastructure Reinforcement
While much of interpersonal trust derives from informal institutions and cultural inheritance, formal institutions also play a central, and some would argue decisive, role in cultivating the growth of social capital. In the critical juncture we have entered, and in particular given the rise of political populism, the institutions of trust now must be reinforced and adapted to the digital age. Doing so, however, involves understanding and ensuring their core functions. The foundational requirement is the credible adherence to the rule of law, including the enforcement of contracts,58 that establishes a level playing field for all members of society. Another central driver of citizen trust in government is the competence of government in meeting its mandated obligations. The “competent state” is characterized, and can be advanced, by several key practices including efforts to increase reliability, for example through responsible fiscal management and risk/crisis preparedness, and responsiveness and improved regulation.59 Relatedly, the ethics of public servants is fundamental to good governance, and to citizen trust in government institutions. The OECD has identified the foundations of a comprehensive government ethics policy, including: clear articulation of core values; legislated standards of behavior particularly with respect to conflicts-of-interest and including criminal laws to penalize corruption; continuous communication and training; and monitoring compliance. As Adam Smith aptly said more than 200 years ago, “Commerce and manufactures can seldom flourish long in any state which does not enjoy a regular administration of justice, in which the people do not feel themselves secure in the possession of their property, in which the faith of contracts is not supported by law...”60

Digital Civic Engagement
Traditional concepts of trust and social capital are evolving rapidly in the context of the accelerating technology revolution, and the associated rise in the use of digital technologies to enhance civic engagement and inclusive policy-making. This has led to the emergence of what some have referred to as “digital social capital.” There are several key digital levers for policy-makers seeking to harness the power of Trust to accelerate achievement of intended outcomes. Perhaps most important is blockchain, which is discussed separately below. Reputation-based systems represent another lever for building digital social capital and civic engagement to accelerate progress. The value of reputation-based systems was first demonstrated by eBay, where buyers and sellers rate each other based on transaction experience and has since become extremely widespread in ecommerce. Reputation-based governance “is a way of executing... policies that hinges on the reputation of

the actors involved, by a systematic use of an appropriate digital information system that computes reputation measures and makes them accessible to all.” 61 For transformative initiatives involving the use of digital technologies and platform-based models in particular, reputation-based systems represent a potentially decisive trust-based means of driving adoption and results. The full range of “e-tools” for participatory governance includes systems for information display, service provision, interactive tools, collaboration channels and “self governance.” 62 For example, public participation geographic information systems (PPGIS) involve capturing geospatial information relevant to a given policy issue (e.g., land use, environmental policy, service provision) and making it accessible to relevant stakeholders to improve decision making and participation.

**Trust Technology Leverage**

The transformative power of civic capital at the societal level is a function of the willingness of individuals to trust strangers and engage in impersonal exchange. Distributed ledger technologies including blockchain serve precisely to enable trusted anonymous exchange. They are technologies of trust, based not on shared values, but rather on confidence in a distributed technical architecture. These technologies are increasingly likely to become important components of new forms of social infrastructure complementing, and in some cases potentially replacing, traditional institutions of trust with decentralized networks. There are growing signs of traction. The Stanford Center for Social Innovation recently studied nearly 200 cases in which blockchain is being used to drive social impact for example to address government corruption, the Rohingya crisis in Myanmar and homelessness in large cities. 53 Though still early in their development, the impact of these initiatives is increasingly measurable. It is being used to improve traceability across supply chains, strengthen digital identity management and to automate compliance and enforcement of regulations through smart contracts. 64 The Estonian X-Tee is an advanced example of blockchain applications in government. Dubai, through its Dubai Blockchain Strategy, intends to be “the first city fully powered by blockchain by 2020.” 65 Thus, although these technologies still face important constraints, their potential transformative power is clear. For leaders seeking to accelerate progress in contexts in which trusted anonymous exchange is a key driver, blockchain technologies represent a potentially game changing instrument.

**Implementation Considerations**

The levers above focus, for the most part, on emerging means of advancing civic capital and leveraging it to drive transformative progress. In applying the logic of Trust, it is also vitally important to consider the foundational, well-established factors associated with its realization. In their World Bank study entitled “Building trust: public policy, interpersonal trust and economic development,” Stephen Knack and Paul J. Zak assess the range of policy interventions that can advance levels of trust. These include:

**Communication and Connectivity**

Reducing social distance including by strengthening communication and transportation infrastructure.

**Education**

Investing in education to ensure its accessibility across socio-economic strata and optimizing its content. The latter is also affirmed by Zingales, et. al. with respect to delivery models: “More generally, the style of education, emphasizing joint projects, civic value, and cooperation, can foster the creation of civic capital in the formative years. By contrast, a more competitive, individualistic, and not socially oriented teaching style can reduce the effect of education on civic capital.” 66 Illiteracy, on the other hand, “isolates individuals and reduces their ability to control and understand their environment...” ultimately making them ever more adverse to extended exchanges.

**Inclusive Growth**

Finally, a foundational driver of trust are policies that drive inclusive economic growth and reduce income inequality. In designing, implementing and assessing transformative initiatives, it is vitally important to consider these factors.

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Transformative Power

The transformative power of Trust simply cannot be overstated. It is the one factor without which all others are likely to be of only marginal benefit. Trust broadly understood, to include political trust of government institutions and interpersonal trust (or civic capital), fuels interaction, cooperation and collective action and therefore drives innovation, economic growth and societal progress. If human agency is the engine of transformative progress, Trust or what the ancients called “civic virtue” is the foundation that enables its positive realization.
Activating Transformation
The Unifying Power of Narrative

A central theme that characterizes the new logic of transformation outlined in this report is the power of distributed, bottom-up and self-replicating action. For decades, the governments of powerful countries could realistically drive change through the application of sheer scale. By building large bureaucratic organizations and investing vast financial and human resources, the government could exert its will directly – often unilaterally. At times, this was not only possible, but necessary. As the United States emerged from the Great Depression, the New Deal was instrumental not just in resurrecting growth, but also in transforming the economic capacity of the country. Today, this prior logic of sheer force is rarely possible, effective or sustainable.

Governments now share power with the private sector, civil society and – to an increasing degree – individual citizens. As the potential power of individual citizens increases, governments face an important choice between, on the one hand, investing in sophisticated systems to control this potential power and, on the other hand, to design policies that harness and orchestrate individual agency to achieve shared social objectives.

One of the defining characteristics of the ‘critical juncture’ we have entered is the chaotic, competitive intensity of the information and communications environment. The recent cases of the highly sophisticated use of social media to influence elections and referenda by manipulating how key voter segments perceive and interpret reality represent only the beginning of what will be an ongoing global battle for informational advantage. Information operations are already a well-established and increasing important domain of military activity and source of strategic advantage or disadvantage and in that policy domain and others, narrative plays a fundamental role in “defining the logic of action.”

There is large and growing body of formal analysis of policy narratives and instruments of change. In that context, a narrative is defined as “a story with a temporal sequence of events unfolding in a plot... that culminates in a moral to the story.” Narratives are not only a powerful means of communication, but are also “a method of cognitive organization.” In fact, there is significant empirical evidence that narrative is “a primary means by which individuals organize, process, and convey information.”

Thus, in our complex and highly contested environment, leaders and policymakers seeking to accelerate transformation must understand the power of narratives and design communications strategies in support of their transformation initiatives that harness its power in creative ways. By acknowledging the past and articulating how action in the present can lead to a desired future, narratives help orchestrate distributed, independent action. This orienting logic can be applied even at the national level as demonstrated in Sweden, Brazil and the United States. And increasingly the design of policy narratives can be analytically informed through the application of machine learning to empirically identify key lines of tension and opportunities for alignment across diverse groups of influencers. Such analysis also makes it possible to drive network effects and cascades of action by revealing the most productive potential themes of narrative resonance. Thus, for harnessing the emerging logic of transformative change across all of its strategic, connective and cognitive components, policy narratives represent a vital organizing construct that can “prove more powerful than billions of dollars in aid or bombs and bullets” by shaping beliefs and defining compelling pathways of productive collaborative action.

Sources:

67 How are Patterns of Public Governance Changing in the US and the EU? It’s Complicated, Laurence E. Lynn and Aleksandra Malinowska, Journal of Comparative Policy Analysis, 2018
68 Revising the Battle of the Narrative, John Decker, Small Wars Journal
70 Ibid. page 330
71 Stories about ourselves: How national narratives influence the diffusion of large-scale energy technologies; Elizabeth L. Malone, Nathan E. Hultman, et al, 2017, Energy Research & Social Science
CONCLUSION

TOWARD TRANSFORMATIVE CAPACITY

In this paper, we have argued that the system of causal relationships and mechanisms by which intentional transformation can be driven is itself undergoing deep structural change. This disruption is being driven by a rare intersection of profound geoeconomic, technological and socio-political shifts in the global operating environment. We are still in the early stages of the evolution of this emergent phenomenon, and the set of logics and associated instruments of transformation presented here is therefore necessarily provisional and non-exhaustive. It is in an initial set of approaches to change that our analysis of case studies, literature review and interviews suggest have significant potential power for leaders seeking to drive significant change at any level of society.

There is no single approach to their application. Each logic and instrument can deliver value independently or in combination with others depending nature of both the intended outcome and current characteristics of the system to be changed. Applying these concepts effectively will thus benefit significantly from taking several preliminary analytic steps. The first requirement is clarity regarding the intended outcome of a given transformation. It is vitally important to understand the content and scope of the change being sought. Precision on this fundamental point will inform the selection of specific levers, the most appropriate means of applying them and the larger set of actions required to achieve the desired end state. The second key analytic step is to map the status quo dynamics of the target policy domain as a system. In doing so, what is most important initially is to document the organizational and individual stakeholders that populate and have most power in the system, the relationships between them and their high-level interests and incentives with respect to the intended transformation. This effectively becomes a map of likely patterns of support and resistance that will prove invaluable in designing any potential policy intervention, including but not limited to how to apply the appropriate strategic, connective and cognitive logics outlined in this document. Finally, it is vitally important to assess the future dynamics and resulting potential strategic contexts in which the system may evolve. How will the most important trends that are already unfolding influence the trajectory of the system? How is it likely to evolve over the next 5, 10 or 20 years if it remains on its status quo path? This foresight analysis will help ensure that policy interventions harness the future rather than falling victim to it.

Every day we are confronted with the reality that the historic critical juncture we have entered is characterized by tremendously fluid, rapid change and deep uncertainty. This uncertainty is irreducible because it is a function of the human complexity of a world shaped by the interactions of a vast, diverse range of strategic actors. Like all similar junctures in our history, this one will result in divergent outcomes for countries based on both their adaptive capacity and their transformative capacity. Adaptive capacity consists of the ability to anticipate and respond to change. It includes resilience with respect to unforeseen strategic shocks. Transformative capacity is the ability to take intentional action to drive positive, structural change on a large scale and in a compressed timeframe. It is our hope that the strategic concepts presented here will be of value to leaders who seek to build transformative capacity and use it to accelerate human progress.
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