FUTURE SHOCKS

As the world becomes more complex and interconnected, easily managed incremental change is giving way to the instability of feedback loops, threshold effects and cascading disruptions. Sudden and dramatic breakdowns—future shocks—become more likely. In the pages that follow, we present 10 such potential future shocks. Some are more speculative than others; some extrapolate from risks that have already begun to crystallize. These are not predictions. They are food for thought and action—what are the possible future shocks that could fundamentally disrupt or destabilize your world, and what can you do to prevent them?

Grim Reaping

Simultaneous breadbasket failures threaten sufficiency of global food supply

In a world of growing environmental strains our increasingly complex food system is becoming more vulnerable to sudden supply shocks. The interaction of disruptors such as extreme weather, political instability or crop diseases could result in a simultaneous blow to output in key food-producing regions, triggering global shortages and price spikes. The risk of a systemic breakdown could be further elevated by wider fragilities, including reduced crop diversity, competition for water from other sectors and geopolitical tensions.

Widespread fear—let alone death on a large scale—could lead to devastating spillover effects. Social fractures would intensify in affected and at-risk countries. Political and economic crises would be likely. So too would a surge in smuggling, both of food and people. Against such a volatile backdrop, cross-border tensions could worsen sharply, hampering existing humanitarian response networks, frustrating efforts to develop regional and global mitigation strategies and increasing the possibility of interstate conflict.

Even on optimistic climate-change trajectories food-supply risks will remain elevated. Steps are needed to improve sustainability and resilience throughout the food system. Among the changes that could help are increasing crop diversity, establishing stress tests of "choke points" and other national and regional vulnerabilities, reducing waste along supply chains, reaffirming humanitarian principles and commitments and establishing early warning indicators.
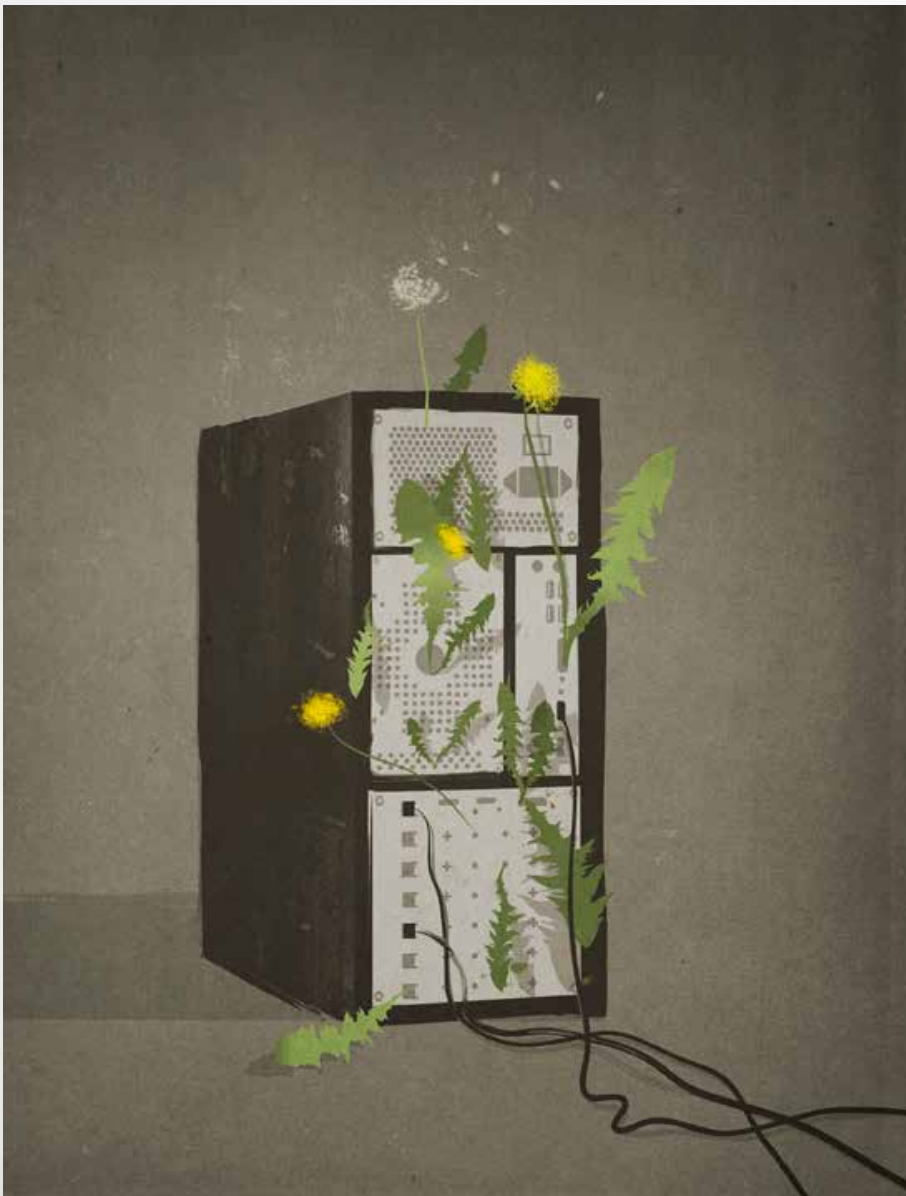
A Tangled Web

Artificial intelligence "weeds" proliferate, choking off the performance of the internet
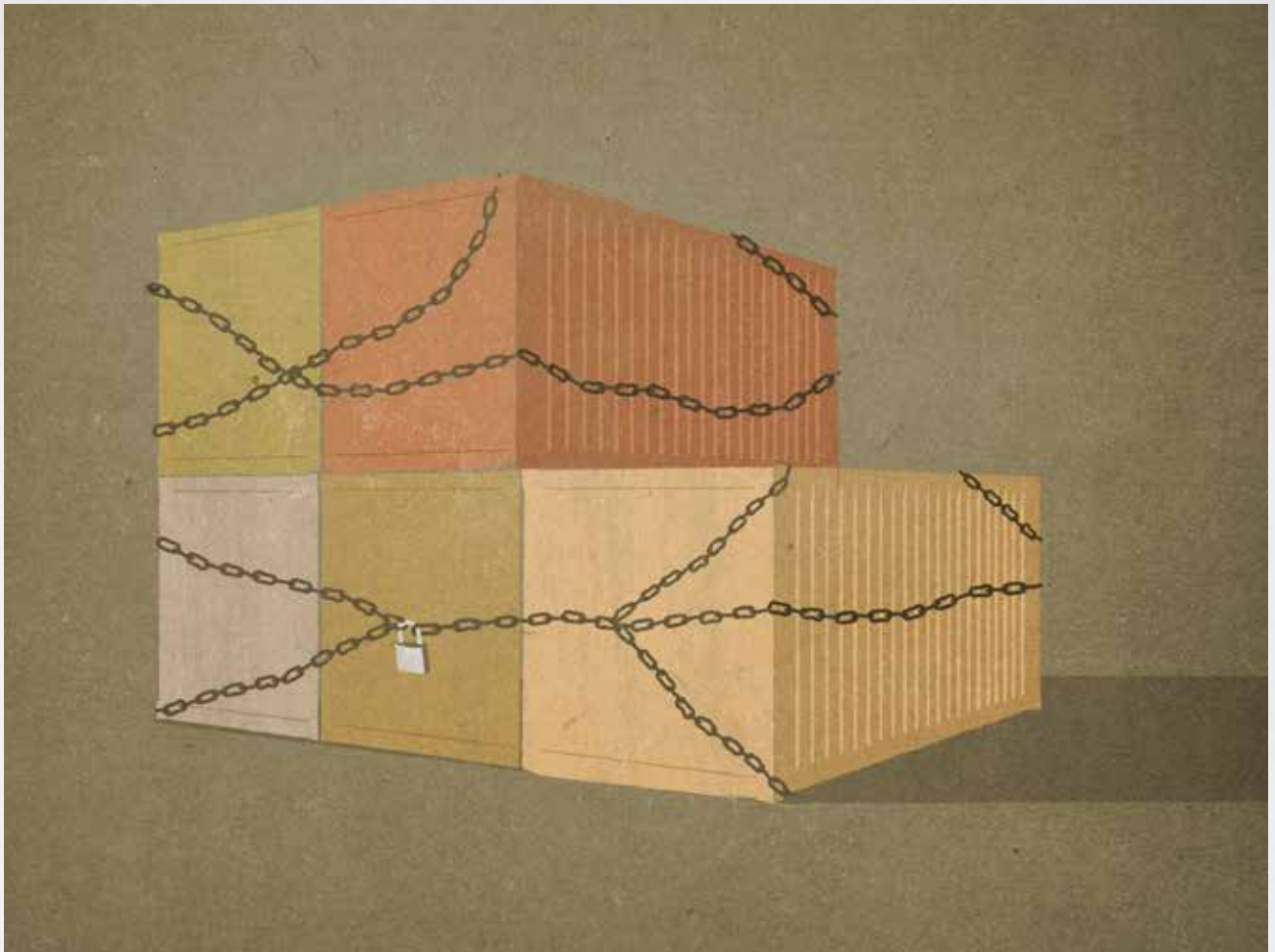
What if the adverse impact of artificial intelligence (AI) involves not a super-intelligence that takes control from humans but "AI weeds"—low-level algorithms that slowly choke off the internet? Algorithms are already proliferating. As they increase in sophistication—as we become more reliant on code that writes code, for example—explosive growth becomes more likely. A divergence could open between the code we have created and our capacity to track and control it.

The tragedy of the commons means we often let chronic problems with dispersed responsibilities fester. Think of plastic in the ocean. A trend towards reduced internet efficiency would undermine service delivery in countless businesses. It could hobble the Internet of Things. It would frustrate users. If the problem became significant enough, it could prompt some governments to wall off parts of the internet. If malicious actors found ways to proliferate or weaponize the AI weeds, they could do extensive damage.

As the global demands placed on the internet increase in scale and sophistication, digital hygiene is likely to become a more pressing concern for end-users. The development of overarching norms, regulations and governance structures for AI will be crucial: without a robust and enforceable regulatory framework, there is a risk that humans will in effect be crowded out from the internet by the proliferation of AI.

The Death of Trade

Bilateral trade wars cascade and multilateral dispute resolution institutions are too weak to respond

Political commitment to globalization has weakened in the wake of the global financial crisis and even minor disputes could trigger an unravelling. Against a backdrop of deepening protectionist sentiment, trade disputes could spread rapidly by triggering adverse impacts and retaliatory moves along global value chains. The same pressures fomenting trade disputes would also undermine the already-weakened institutions designed to resolve them, potentially leading to multilateral rules being openly breached.

A breakdown of the global trade system would roil supply chains and reduce overall economic activity. Adverse impacts such as lower output and employment would be unevenly distributed within and between countries, creating new inequalities and frustrations. If this in turn fuelled more aggressive mercantilism, the risk would increase of proliferating trade-related disputes triggering deeper geopolitical tensions and policies of gunboat diplomacy on trade.

Whatever the settled position on global trade is to be, more deliberation and consensus-building would bolster its legitimacy. A period of de-globalization may be seen by many as a welcome corrective, but rejecting current frameworks in favour of binary nationalistic approaches would cause significant disruption. Securing durable and worldwide support for globalization would be made easier by an increased domestic policy focus on cushioning the impact on individuals and regions affected by transitions in economic activity.
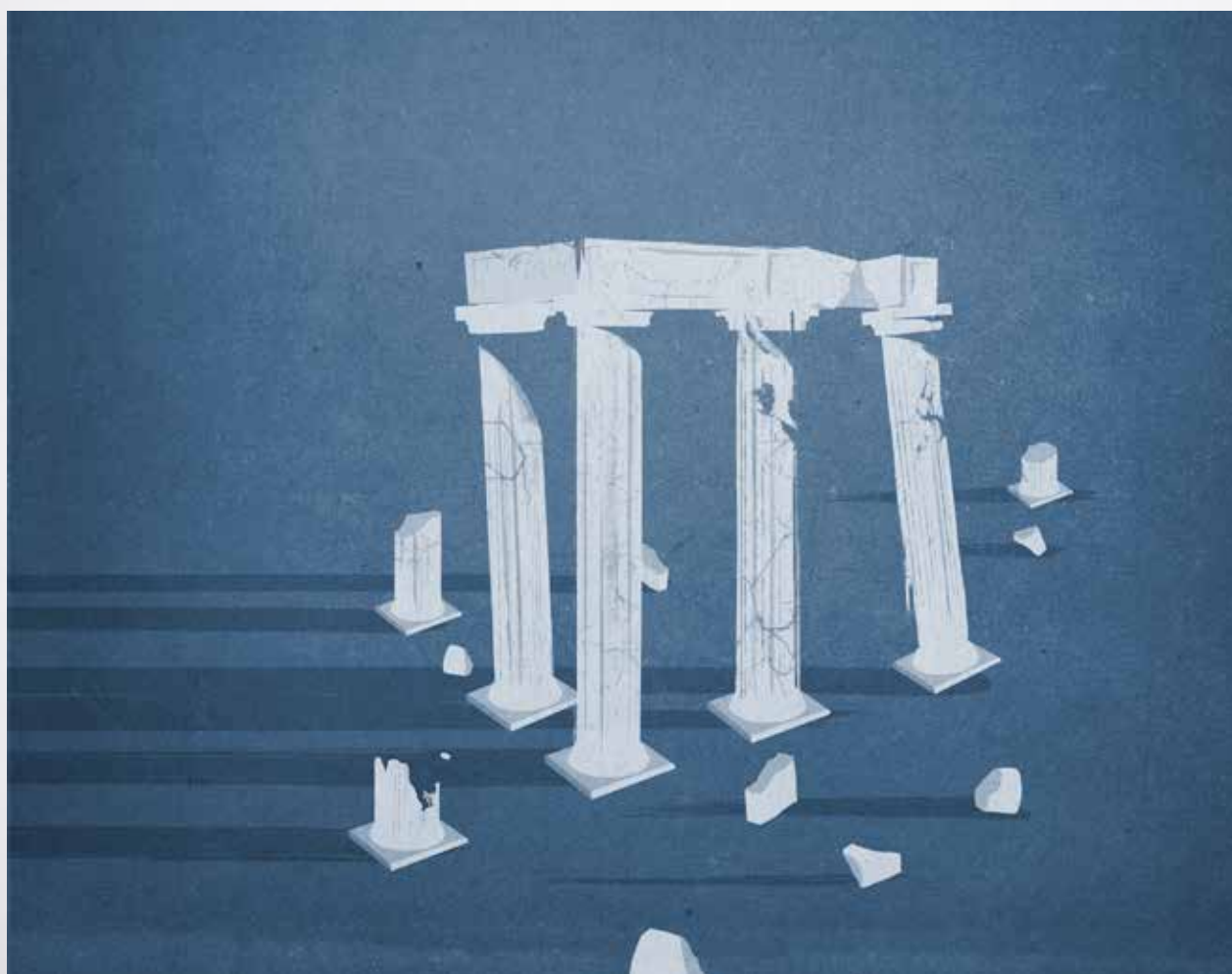
Democracy Buckles

A new wave of populism threatens the social order in one or more mature liberal democracies

Democracy is already showing signs of strain in the face of economic, cultural and technological disruption. Much deeper damage is possible: social and political orders can break down. If an evenly divided country sees polarized positions harden into a winner-takes-all contest, the risk increases of political debate giving way to forms of secession or physical confrontation.

In these circumstances, a tipping point could be reached. A spiral of violence could begin, particularly if public authorities lost control and then intervened on one side with disproportionate force. In some countries—with widespread ready access to weapons or a history of political violence—armed civil conflict could erupt. In others, the state might impose its will by force, risking long-reverberating consequences: a state of emergency, the curtailment of civil liberties, even the cancellation of elections to protect public order.

The more that can be done to boost the resilience and responsiveness of democratic institutions, the less likely they will be to buckle under pressure. This might require processes of political and constitutional experimentation. It could even mean incorporating ideas from post-conflict politics into everyday democracy. We also need to better understand the democratic fissures currently being caused by the economy, by social media and by changing patterns of national identity.

Precision Extinction

AI-piloted drone ships wipe out a large proportion of global fish stocks

A third of all fish consumed in the world are already caught illegally. AI and drone technologies are increasingly commonplace. Add to these facts the automation of illegal fishing, and the impact on fish stocks could be devastating—particularly in international waters where oversight is weaker. Countless other areas exist where the same logic might unfold: huge short-term incentives might lead to the use of emerging technologies in ways that trigger irreversible long-term damage.

A rapid collapse of fish stocks could engender cascading failures across marine ecosystems. Communities reliant on fishing for their incomes might struggle to survive, leading to fiscal pressures and/or displacement. A sufficiently large surge in the supply of illegal fish might distort global food markets, leading to disruption in the agriculture and food-production sectors. If illegal drone fishing crossed national maritime boundaries and was perceived to be state-sanctioned, retaliatory measures might lead to diplomatic or military tensions.

Targeted schemes such as genetic markers to track fish throughout the supply chain might limit demand for illegally caught fish. So might better vessel observation. But key to progress in this and similar areas of hybrid technological disruption will be new global governance norms and institutions, particularly those designed to protect the global commons and prevent the destructive deployment of emerging technologies.

Into the Abyss

A cascading series of economic/financial crises overwhelm political and policy responses

Against a backdrop of domestic and international political strife—and with economic policy-makers already operating in uncharted territory—the eruption of another global financial crisis could overwhelm political and policy responses. A systemic collapse of the sort that was averted in 2007–2008 could push countries, regions or even the whole world over the edge and into a period of chaos.

If financial systems go down, contemporary economies and societies cannot function. Money would stop circulating. Wages would not be paid. Supply chains would break down. Scarcity would begin to become pervasive, and this would threaten to upend the political and social order. Policy-makers would pull every available lever to restore stability. But what if the prospect of another

financial-sector bailout further enflamed societies rather than calming them? Or what if the financial system's collapse stemmed from a hostile cyberattack, raising fears that more attacks and disruption lie ahead?

More can be done to enhance the resilience of the financial system. Stress-testing methodologies could be strengthened by assigning greater weight to tail events and unexpected consequences. Greater consideration could be given to the growing number of voices calling for radical change of the way the banking system works. But societies might also want to prepare more actively for worst-case scenarios.

Inequality Ingested

Bioengineering and cognition-enhancing drugs widen the gulf between haves and have-nots

Drugs for human enhancement are in their early stages, but scientific advances may well be exponential. In a world of entrenched inequality, many people might choose to disregard potential health risks in order to maintain or elevate their status. Ingestion would be impossible to monitor, and even if bans are put in place black market channels would inevitably emerge.

If the price tag is significant and the benefits are strong, the result would be ever-deeper and more entrenched inequality. This could trigger social instability and conflict between the haves and have-nots. Divergent regulatory responses could lead to productivity disparities across countries and the emergence of "enhancement tourism" flows. If unforeseen consequences—such as serious brain deterioration—emerged in the future it could create a massive public health crisis.

Stronger measures to combat existing inequality might reduce consumption incentives, but that seems doubtful. Early and appropriate regulation of enhancement technologies may be more successful than an outright ban. For example, new workplace equality legislation might require employers to confirm that all staff are compliant with enhancement rules. If these technologies were ever proven to be an unalloyed good—analogous to vaccinations—then the regulatory objective might shift to ensuring universal access.
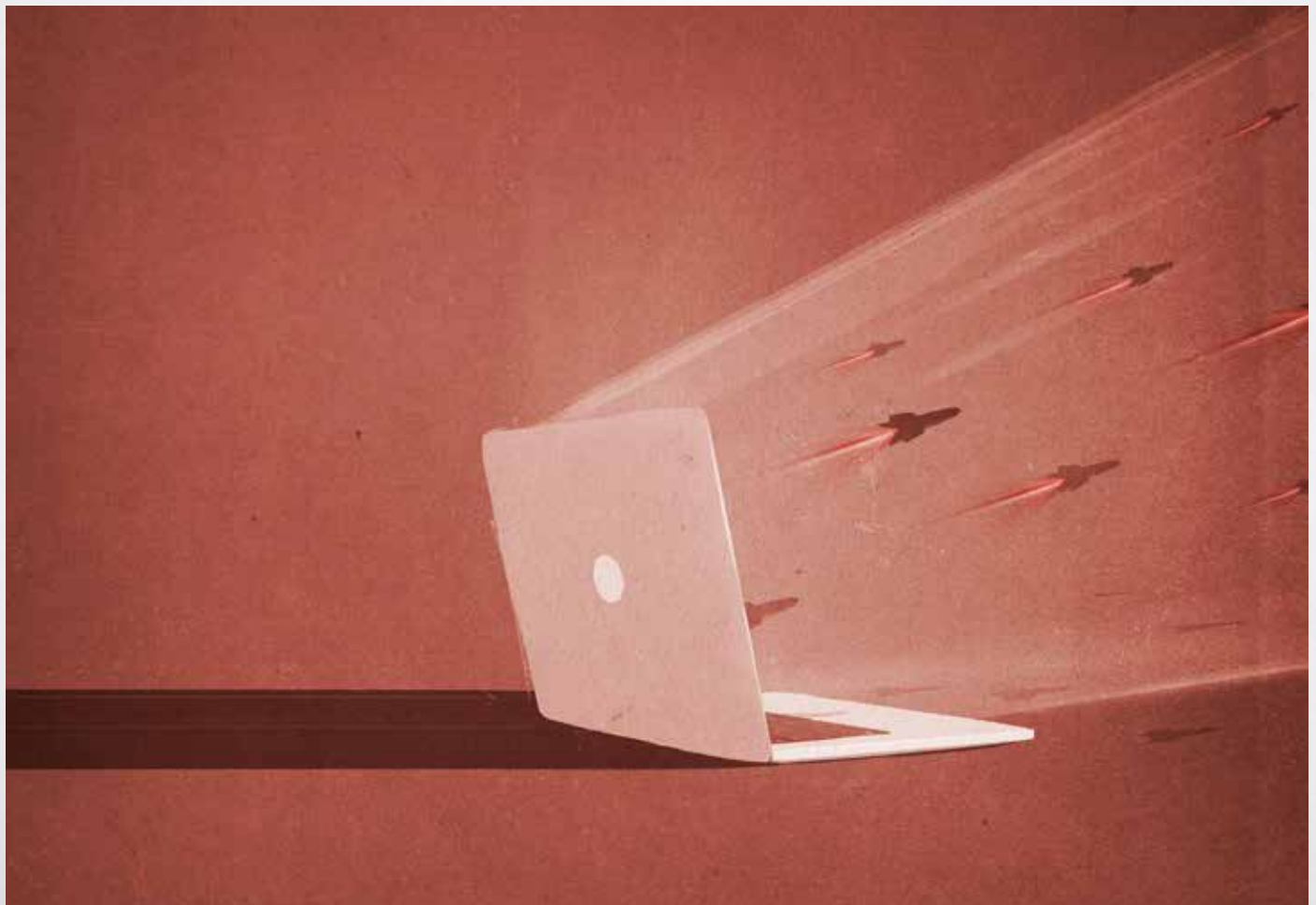
War without Rules

State-on-state cyberattacks escalate unpredictably owing to a lack of agreed protocols

Offensive cyber capabilities are developing more rapidly than our ability to deal with hostile incidents. This creates a fog of uncertainty in which potential miscalculations could trigger a spiral of retaliatory responses. Imagine that a country's critical infrastructure systems are compromised by a cyberattack, leading to disruption of essential services and loss of life—the pressure to retaliate would build rapidly, potentially setting off an escalatory chain reaction.

Questions of speed and attribution heighten the risk of unpredictable consequences. If an attack is developing more quickly than the targeted state's efforts to identify the attacker, retaliation might be misdirected, drawing new actors into a widening conflict. This would add to the potential for further confusion and escalation, including the resort to conventional military force or the unintended widening of conflict if an active cyberweapon inadvertently spreads through cross-border networks into non-target countries.

In conventional warfare, agreed norms and protocols provide predictability and slow the emergence of crises. If governments accelerated current efforts to establish similar ground rules for cyberwarfare, it would help to prevent conflict erupting by mistake. Familiar concepts such as transparency, proportionality and non-proliferation could be re-codified for cyber purposes. And perhaps classes of cyberweapons could be collectively prohibited, in the same way biological and chemical weapons have been.

Identity Geopolitics

Self-determination around contested borders sparks regional conflict

At a time of global geopolitical uncertainty, the twin forces of national identity and self-determination are growing in disruptive capacity. Already this is leading to violence and constitutional instability, at times spurred on by foreign powers. Examples include states expelling ethnic or religious minorities, national minorities attempting to secede and nation-states extricating themselves from international constraints on their sovereignty.

A deepening of disputes over cultural and political borders would trigger widening clashes, potentially causing regional domino effects as states and sub-state actors mobilize in defence of or opposition to the status quo. This instability would create new trigger-points for interstate conflict, particularly in regions where disputes over self-determination are long-standing and are likely either to be resolved violently rather than consensually or to draw in regional hegemons and/or global powers.

Stronger promotion and protection of equal cultural and political rights within states would help defuse tensions about national identity. So would the fostering of stronger economic and other links between states sharing contested borders. Drawing on successful examples of constitutional innovation—such as multilevel and cross-community forms of governance—might help guide the administration of internally divided polities.

Walled Off

Regulatory, cybersecurity and protectionist concerns lead to the fragmentation of the internet

A proliferation of damaging cross-border cyberattacks might be the most likely trigger for a government-led breakup of the internet into national or regional "walled gardens", but there are many other potential drivers that could lead governments in this direction: economic protectionism, regulatory divergence, censorship and repression, the fraying of national political discourse and the loss of government power relative to global online companies.

Fragmentation of the internet could involve, among other things, interruption of technical internet functions or barriers to the flow of content and transactions. Some might welcome a move towards a less hyper-globalized online world, but many would not: resistance would be likely, as would the rapid growth of illegal workarounds. The pace of technological development would slow and its trajectory would change. Human rights abuses would likely increase as advances in international monitoring were rolled back.

Advances in cybersecurity governance and technology ought to mitigate the risk of worsening cyber disruption and theft that would trigger the imposition of firewalls. Ongoing dialogue between governments and technology companies would help to ensure that internet-based technologies develop in a politically sustainable context of shared values and agreed responsibilities.