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# FOREWORD

To the Reader,

The John S. and James L. Knight Foundation was founded on the belief that a well-informed community can best determine its own true interests and is essential to a well-functioning representative democracy.

The Knight brothers were unique in important ways. First, they were fundamentally open to new technology, and they were consistent, early adopters. They recognized that harnessing technological advancement was an essential business strategy.

Second, the Knight brothers organized their business to mutually support both commercial success and the mission of informing communities. They structured the enterprise to do this, with editors reporting to John and the publishers reporting to James. "We believe in profitability," said John in a 1969 speech, "but we do not sacrifice the quality of our newspapers on the altar of the counting house. The 'unpopular' stands taken by newspapers are often the reasons for their preeminence in the field of journalism... [We] are committed to the philosophy that journalism is likewise a public trust, an institution which serves, protects and advances the public welfare."

The brothers formed Knight Foundation, in the words of James L. Knight, to promote excellence in journalism and the success of the communities in which they worked; they were not otherwise prescriptive. Decades after the demise of both brothers, the company was sold but their foundation remains.

In establishing a foundation, the Knight brothers placed a clear emphasis on the ability to adapt with the times. Said John Knight, “[A] truly effective foundation should have freedom to exercise its best judgment as required by the times and conditions under which they live.”

We take these words seriously. Philanthropy is an exercise in judgment, and those of us who work at Knight Foundation today must be able to defend what makes a given judgment “best.” We must be clear about what the “times and conditions” demand of us.

This is a high bar. There are many things we might do as stewards of Knight Foundation that seem reasonable in light of our judgment and the times. But are they “required” by the era in which we live? How can we be sure? And what criteria should we use to show our judgment is “best,” not merely good? This is the responsibility left to us.

Last year, we undertook a process to meet that charge by exploring what the future context might look like. Our goal was not to predict the future but, rather, to have a clearer picture of what could affect our communities and our work today and in the years to come.

For a foundation with its roots in the newspaper business, we recognize the radical power of upheaval and change. And, if there were ever a year that has shown just how unpredictable the future can be, it was 2016.

To make this exercise meaningful and useful, we worked with the firm Decision Strategies International to develop a series of three future scenarios, all seeking to answer the question “How will people be informed and engaged in our democracy in 2026?” We interviewed over 200 leading experts from various sectors and we challenged ourselves over a series of several months to set aside our basic assumptions about the world and the context in which we work.



We are continually tested to apply our “best judgment” to the “times and conditions.” But we share these scenarios with you so that you can help us enrich, expand and clarify our thinking and our work. We hope that we will hear from corners unexpected and unknown to us about what this era—and the future—will require.

We thank you in advance for your comments, disagreements and reflections. Through your responses, you are helping us to do the important work the Knight brothers have asked of us.

Alberto Ibargüen and Sam Gill

A black and white, halftone-style image of the Statue of Liberty's head and crown, positioned on the left side of the page. The background is a dark, textured grey.

# INTRODUCTION

Beginning in late 2015, Knight Foundation began a scenario planning process to imagine how the context around its central work supporting informed and engaged communities could change. We started by asking what the conditions might be for communities in 2026.

This process of interrogation prompted broad conversations across our organization, conversations that were greatly influenced and shaped by friends and colleagues in a wide range of fields. These discussions led us to consider several other important questions that are fundamental to our work:

- What predictable trends and emergent uncertainties will be the key forces that shape the future? How might they affect our areas of interest?
- What capabilities should our organization build or acquire to be successful and resilient in the face of uncertainty? How will we define success?
- How fragile are our current assumptions about the future, and how fragile are the investment strategies informed by these assumptions?
- What indicators should we monitor to better anticipate shifts in the external environment?

Thinking broadly about the future—or, as it turns out, several possible futures—demanded an uncommon degree of institutional soul-searching and forbearance. Concrete answers to questions such as those we posed do not always readily present themselves, and the process of seeking them required reflection on the broader context of our work—and the likelihood of tectonic shifts that could have a significant impact on Knight’s areas of concern: communities, the arts, and journalism.

Our gaze forward ultimately resulted in the development of three scenarios that attempt to position these areas of interest within the uncertainties of the broader world. The remainder of this document describes the process by which we developed this scenarios, and then offers the scenarios themselves for discussion, comment, and reflection.



## **OBJECTIVES AND APPROACH**

We did not undertake this process as an attempt to predict the future. Rather, we sought to develop plausible stories about what alternative futures might look like to facilitate discussion over critical questions on how to best fulfill our mission today and tomorrow.

The scenarios presented here incorporate contributions from over 200 key thought leaders in various industries. We spoke to people close to our grantmaking: leaders of media companies (old and new), museum directors and artists, civic innovators and urban theorists. We also looked far beyond our current areas of focus, speaking to Fortune 500 executives, venture capitalists, leading-edge doctors and medical researchers, and scientists working on emerging fields like machine learning and artificial intelligence, as well as community and religious leaders. Our inquiry was primarily domestic, but we also sought to gain a perspective on the relevant global context.

The three scenarios represent boundaries of potential futures. They are not equally likely, but each is intended to depict a possible, if extreme, future. They are also not meant to be predictive. Instead, they provide guideposts that help us to understand potential futures and inform our work. They are provocative, and deliberately so. In some cases we stretched projections further than many of our experts would bet on.

Because they provide a view from the limited vantage point of the issues we care about, the scenarios are also imperfect and incomplete. Some readers might scrutinize gaps in the list of forces and concepts we developed. Other readers might challenge how we conceived and prioritized potential forces of change. Others still might draw radically different conclusions.

This is exactly the discussion we intend.



## **SCENARIO FRAMEWORK**

From our research and discussions, we identified more than 80 social, technological, economic, environmental and political forces, all of which could affect the ways in which people consume information and engage with society over the next decade. The three scenarios have been built through a consideration of how 20 forces with the greatest potential impact could intersect, as extrapolated from external input and research.<sup>1</sup>

Two change drivers—the economy and technology—provided the overarching structure around which we built the scenarios. Consequentially, these two uncertainties have great potential variability and significance: Their possible interactions and collisions over the next decade yielded scenarios that allowed us to fully explore plausible polarities in outcomes. We then organized the other forces around these two leading drivers and examined various configurations of all 20 forces.

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1. For a list of all the forces we considered, please consult the Appendix.



The resulting constellation of forces was arranged so that each of the three scenarios was internally consistent and fundamentally different from the others.

The three scenarios are:

### **SCENARIO A: A DIVIDED NATION IN MALAISE**

This scenario describes a spiral of gradual decline, with a weak economy and growing socio-economic chasms feeding and mutually reinforcing each other. This is an America building walls and drifting apart, under the leadership of a populist, isolationist government.

### **SCENARIO B: RISING TIDES LIFT MANY**

This scenario depicts a world of adaptation and prosperity. New technologies drive a booming economy, akin to the growth that characterized the second half of the 1990s with the dot-com boom. The absolute standard of living rises for all, even though many relative differences remain.

### **SCENARIO C: THE NEXT INFORMATION REVOLUTION**

This scenario highlights the implications of profound societal shifts due to further automation of work with the help of machine intelligence. A deep social crisis erupts from massive job displacement due to artificial intelligence, big data, machine learning and predictive analytics.





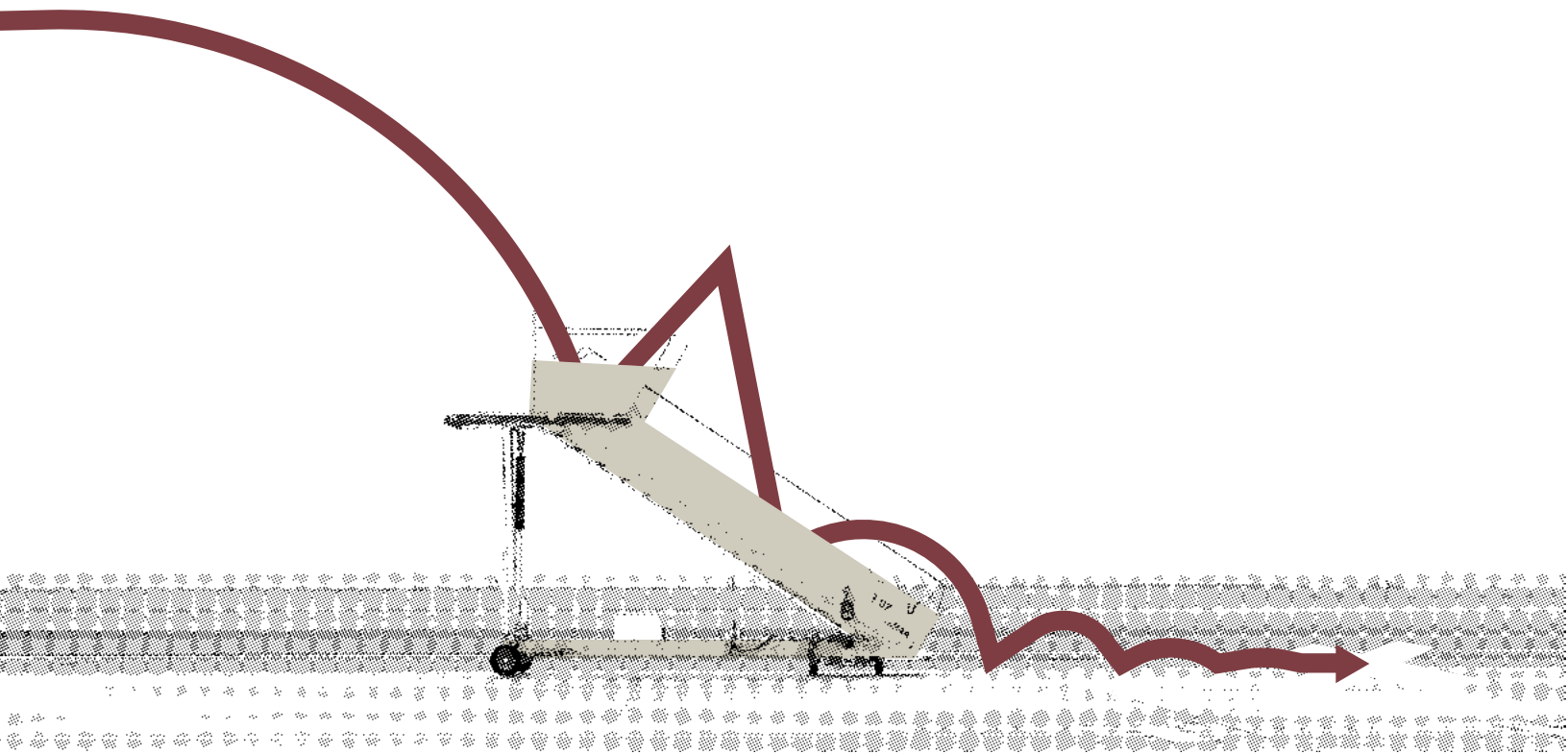
## SCENARIO A

# DIVIDED NATION IN MALAISE

### SUMMARY

This scenario describes a spiral of gradual decline, with a weak economy and growing socio-economic chasms feeding and mutually reinforcing each other. This is an America building walls and drifting apart, under the leadership of a populist, isolationist government. A deep recession leads to increased unemployment and stagnating wages. At the same time, technology's promise—economic and social—goes unfulfilled. Technology adoption rates correspond to socio-economic divides. No longer the great equalizer, technology becomes the great divider. These two forces drive increased social fragmentation, amplified by ideological polarization, residential segregation and weakening economic opportunity.

*“This is an America building walls and drifting apart. . .”*



## HOW WE GOT THERE—KEY DRIVERS

### DOMESTIC AND GLOBAL ECONOMY

Between 2016 and 2026, anemic growth in the U.S., fueled by rising unemployment and falling wages, together with stagnation in the eurozone and a substantial slowdown in China produces a global economic downturn. This negative cycle weakens and eventually reverses the post-2008 U.S. recovery as new jobs are of lower quality and security than in the past. The nation falls into a state of economic malaise, not unlike the late 1970s.<sup>2</sup>

While the wealthiest Americans also suffer significant losses in the financial markets, they continue to own the lion's share of wealth. Over time, the promise of mobility begins to evaporate for the lowest earners, as falling incomes make it nearly impossible to save and accrue assets. Negative wage growth also discourages global opportunity seekers,

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2. For example, the Organisation for Economic Cooperation and Development projects modest global growth through 2017, citing weakness in demand, investment, trade, and potential output. See: OECD Economic Outlook, Volume 2016, Issue 1. Available at: <http://www.oecd.org/eco/outlook/economicoutlook.htm>.

Figure 1.1

### Middle Income Americans are no Longer in the Majority...

Adult Population by Income Tier (Millions)

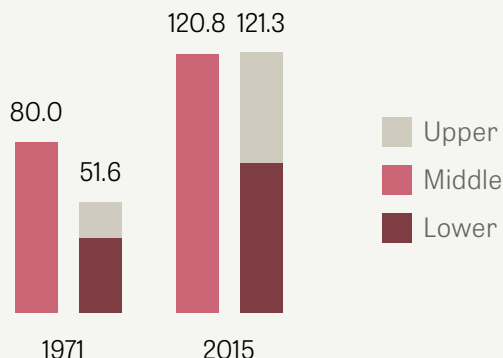
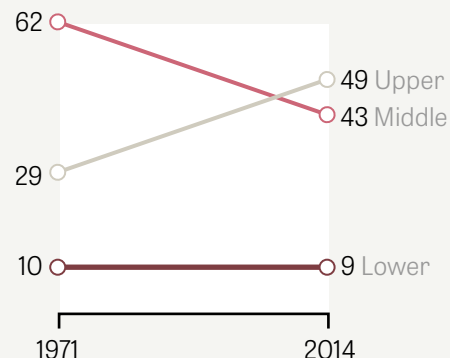


Figure 1.2

### ...And Share of Aggregate Income Held by Middle-Income Households has Plunged

% of U.S. Aggregate Household Income



**Middle class shrinking** The middle class is no longer the economic majority in America, according to a 2015 Pew Research Center report (see Figure 1.1). While middle-class median income has risen over the past several decades, this growth has been significantly outpaced by the median income growth for upper-income households (see Figure 1.2).

*Note: The assignment to income tiers is based on size-adjusted household incomes in the year prior to the survey year. Shares may not add to 100 percent due to rounding.*

Pew Research Center, "The American Middle Class Is Losing Ground" (December 9, 2015). Available at: <http://www.pewsocialtrends.org/2015/12/09/the-american-middle-class-is-losing-ground/>.

and immigration falls close to net zero, resulting in a dearth of new and diverse talent to fuel economic growth. The global context exacerbates this malaise as flagging economic conditions and increased insecurity come together in repeating patterns, dragging many leading nations into a bunker mentality. Europe's major centers—Brussels, Frankfurt, London, Paris—continue to serve as home for a growing immigrant underclass that feels neglected amid limited economic opportunity. This fuels periodic waves of homegrown, low-tech terror attacks in Western Europe, and occasionally in the U.S..

This recurring cycle of violence leads to a permanent state of insecurity and anxiety, as people fear for their physical safety and, at the same time, feel economically precarious and vulnerable. U.S. and European



societies grow more divided, and fear of perceived “outsiders” feeds simmering social tensions and distrust.

Politicians in leading economies react by pulling inward, undermining commitments to free trade and multilateral cooperation. Other European states follow the UK in leaving the eurozone, and states began to erect “walls” via import and export restrictions on labor, goods, and money. Trade agreements unravel, borders go on lockdown, and all but a few states retreat from global affairs.<sup>3</sup>

State-to-state conflict morphs into cyberattacks intended to create and exploit an economic edge. This further divides the globe, as many governments have built “cyber moats” to insulate their economies from digital interlopers. Yet, this approach restricts global data and information flows, worsening economic weakness.

## **TECHNOLOGY**

Despite global economic lethargy, major technological advances push forward, including: “smart” technology to improve consumer convenience, automation in transport (self-driving cars), enhanced telecommunications and connectivity, augmented reality, improved automation and machine learning tools for myriad industrial sectors, and such medical breakthroughs as automated diagnostics, improved therapeutics, and advances in organ and tissue regeneration.

But, increasingly, these advances are inequitably distributed across society due to cost and to stagnating incomes for middle and lower earners. At every stage, the growing ranks of those at the bottom of the socio-economic ladder have less access to breakthrough technology. As a result of growing automation, these segments of society suffer disproportionately from labor displacement.

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3. Some of these global forces throughout these scenarios took inspiration from the discussion outlines of the upcoming sixth edition of the National Intelligence Council's “Global Trends Report.” The council has chosen a 15-year timeframe. For more information, see: <https://nicglobaltrends.tumblr.com/>.

In the years leading up to 2026, divides in access to—and adoption of—technology begin radically shaping the divergent experiences of rich and poor. Many poorer citizens lack functional access to the “smart” technology that is transforming life for those who can afford it. And the affordability crisis among lower-income populations allows technology companies to exert a strong influence over content by offering subsidized mobile devices. These devices provide for cheap internet access, but at the cost of privileging limited content offerings controlled by major technology companies.

Access to these devices means acquiescing to pervasive private data collection and identity tracking. Each day, companies create multiple personas and correlate them in massive databases to track, entice, and manipulate individuals. These data increasingly inform everything from credit scores to insurance rates, further dividing experiences and opportunities based on socio-economic status. Everyone is swept into the “nudge” economy, but people at the margins are the most vulnerable. Those providing services—from goods to insurance—move to risk-based pricing, which results in adverse selection, further disadvantaging low-income and vulnerable people in the marketplace.

## **IMPACTS ON CORE AREAS OF CONCERN**

### **COMMUNITIES**

The economic malaise has exacted a significant toll on communities. Widening socio-economic divides due to stagnant incomes spur increasing economic segregation in communities, such that different neighborhoods and areas—even in close proximity—now experience vast differences in quality of life. Those who can afford to do so move to gated communities that allow them to live a life fully separate from those less well-off. In relatively poorer communities, violence and crime rise in proportion with growing social isolation and crumbling infrastructure and services.

Demographic shifts exacerbate these divides. As the U.S. moves toward majority-minority composition, community fragmentation and the worst economic effects largely fall along ethnic and racial lines, engendering further animosity and distrust within communities. The critical institutions that once promoted cohesion and stability diminish significantly. Religious affiliation continues to decline, especially among the young, and few civil society organizations have the resources to step in and fill the void left by religious and community associations.

The economic slowdown also strains local finances. The cities hardest hit, where the regional economy actually shrinks, get caught in waves of Detroit- or Puerto Rico-like bankruptcies and restructuring. In the worst-off communities, basic services decline in consistency and quality—garbage sits for days uncollected, and street lights are left off in neighborhoods. Worsening conditions lead to an outflow of citizens who are able to abandon struggling regions for those that are relatively more prosperous.

*“We’re going to see more and more of what happened in Flint, Michigan; it’s time to pay the piper because infrastructure has never been sexy... [Y]ou will see reactive investments in breakdowns, but you won’t see thoughtful planning or replacement, or next-generation upgrades.”*

**TERRY MAZANY**

PRESIDENT AND CEO,  
THE CHICAGO COMMUNITY TRUST

*“With fairly high unemployment and great dissatisfaction with the political system and economy, we’d lack economic mobility. There would be two real threats: one is crime would go up, and the second is a greater risk of civil disorder.”*

**RON HASKINS**

SENIOR FELLOW AND CABOT FAMILY CHAIR IN  
ECONOMIC STUDIES, BROOKINGS INSTITUTION

Government retreats from its role as a basic service provider in these communities, and those who can afford to fill the gap do so. Wealthier enclaves invest in their own infrastructure, including private police forces in affluent areas that are proximate to civil unrest. Major corporations create new versions of “company towns” that offer housing, basic services and community amenities to

their employees, but they then become effectively walled off from the broader community.

The decline in economic security for those in middle- and lower-income brackets causes many individuals to lose faith in the ability of public and private institutions to serve people and communities. This spurs new forms of civic engagement. The most frustrated are polarized and loud, making local politics divisive and combative. As communities become further segregated along racial, cultural and economic lines, there are periodic outbursts of significant social unrest.

Those who remain hopeful turn away from traditional institutions, which they do not believe can deliver. Younger people, in particular, create new and vibrant movements—many of them online—the connect people across shared beliefs, interests and concerns.

Such virtual communities have a positive effect on civic engagement in some areas. But they also contribute to a decline in public sector institutions: as older workers retire, a new generation does not step in to work in downsized bureaucracies perceived as inflexible, stodgy, and largely irrelevant. This age chasm becomes a source of significant conflict, as generations grow to resent each other and compete for diminishing resources and influence.

## **ARTS**

Economic pressures have depleted both household budgets and public coffers alike. Many would-be patrons of the arts, particularly in the middle and working classes, find themselves with less time and financial resources to devote to cultural experiences and annual support so crucial to many arts organizations' bottom lines.

Similarly, communities find themselves faced with choosing between providing basic services and cultural investments and assets. As state and local budgets are slashed, arts and cultural education fall more and more to the wayside, while major arts and culture institutions are thrown into crisis. Many regional museums, symphonies, and theaters simply shutter. Even brand-name institutions are threatened, forced to reduce services and offerings while raising prices, further excluding all but the



affluent.

Those institutions that survive become fully dependent on wealthy patrons, and these patrons in turn exert ever more influence over artistic content. Because so much of society is now excluded from cultural life, programming choices are perceived by most alternately as dated and irrelevant or inscrutable and elitist. Arts excellence is defined by what is perceived as “safe” or interesting to a select set of decision-makers, which often does not include or represent the full diversity of the community.

But bleak societal conditions provide inspiration for a new generation of emergent artists at the fringe. Counter-cultural artistic movements grow and, indeed, thrive during this period. These young artists often lack formal training, but having grown up in the age of image-based platforms like Instagram and Snapchat and widespread access to global musical trends through Spotify, they possess an almost innate aesthetic sensibility. Their often experimental work explores the perceived economic, social, and environmental injustices plaguing a society that has grown apart. With little financial support, it is hard to make a living, but the cultural relevance and legibility of their work enables artists to find niche audiences, both locally and virtually, in these challenging times.

## JOURNALISM

The global recession is the last straw for many local and regional news organizations. After a wave of closures, only select major national outlets remain. This carnage occurs as audiences continue to fragment across media channels. The “news” becomes the province of a small cadre of vertically integrated, content-aggregating conglomerates that carefully curate information to reach niche audiences at the lowest cost, optimizing revenue.

The business model of these media giants—all of them major internet content platforms—feeds audiences personalized

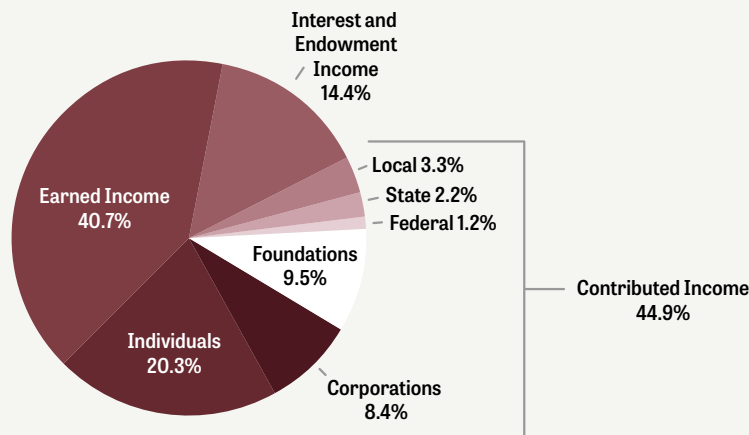
*“I worry about the death of the daily local paper a lot.”*

**GABRIEL METCALF**

PRESIDENT AND CEO, SAN FRANCISCO  
BAY AREA PLANNING AND URBAN  
RESEARCH ASSOCIATION (SPUR)

### Revenue Sources of Not-for-Profit Performing Arts Groups and Museums in the U.S.

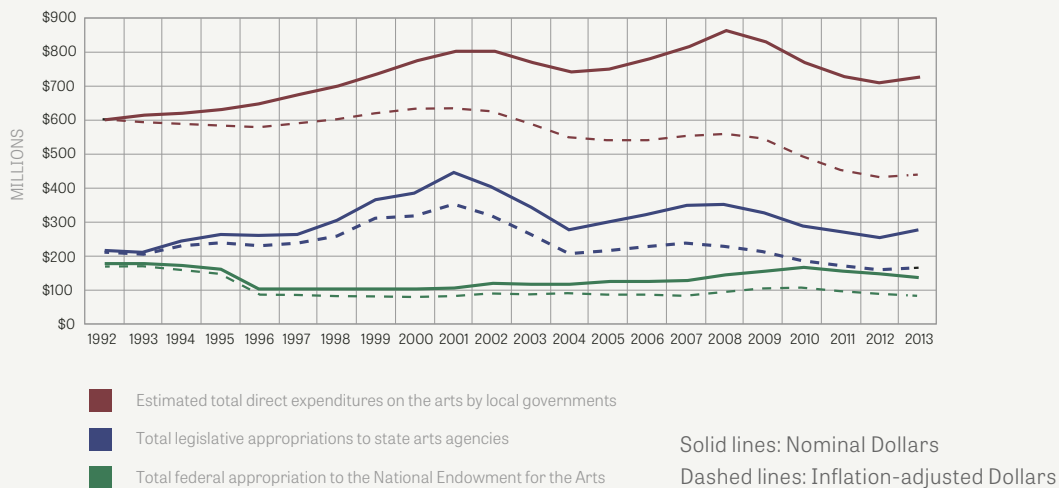
Figure 1.3



Estimates are based on an analysis of 2006-2010 data from the Urban Institute's National Center for Charitable Statistics (NCCS) and U.S. Census Bureau's Economic Census. Various other data sources were also used where estimates were missing or for validation

### Federal, State, and Local Government Arts Funding, Nominal and Inflation-Adjusted Dollars, 1992-2013

Figure 1.4



**Arts Funding Declining** When adjusted for inflation, public funding for the arts has decreased by over 30 percent since 1992, according to Grantmakers in the Arts. State and local funding patterns have largely mirrored the economic situation, while funding by the National Endowment for the Arts has remained relatively flat since its budget was cut in the mid-1990s (see Figure 1.4). About 45 percent of the funding for arts institutions comes from government and private sector contributions, while the remaining 55 percent can be attributed to earned income (ticket sales, subscriptions, etc.) and investment interest, according to the NEA.

See "How the United States Funds the Arts." National Endowment for the Arts (November 2012). Available at: <https://www.arts.gov/sites/default/files/how-the-us-funds-the-arts.pdf>.

content, which, in an era of deep social divides and ideological polarization, means further politicization and segmentation within smaller and smaller echo chambers, reinforcing narrow views and interests.

Without an economic model that can support traditional newsgathering, reporting deteriorates into a numbing ubiquity of “breaking news” and “soft news” (such as entertainment) over high-quality investigation, storytelling and explanation. These ascendant content aggregators also rely heavily on native advertising (content purchased by advertisers that masquerades as independent news), further muddying distinctions between verifiable facts and opinion.

*“There is a serious lack of thinking about news organizations as healthy digital businesses. One obvious example is how the industry has just been very slow to react to the evolution of distribution of news and information.”*

**TIM GRIGGS**

LOCAL / NATIONAL PARTNERSHIPS COORDINATOR, CENTER FOR COOPERATIVE MEDIA,  
MONTCLAIR STATE UNIVERSITY

INNOVATOR IN RESIDENCE, KNIGHT CENTER FOR JOURNALISM IN THE AMERICAS, UNIVERSITY  
OF TEXAS AT AUSTIN SCHOOL OF JOURNALISM



## SCENARIO B

# RISING TIDE LIFTS MANY

### SUMMARY

This scenario depicts a world of adaptation and prosperity. New technologies drive a booming economy, akin to the growth that characterized the second half of the 1990s with the dot-com boom. The absolute standard of living rises for all, even though many relative differences remain. This era of economic success provides a sense of security, although some of this is an illusion. The changing demands of a new economy, shaped by a vast and accelerating diffusion of next-generation technologies, require nations, communities and individuals to adapt to new realities. Those that embrace the changes thrive; those that do not lose relative ground. The period is bittersweet, with improvements for many despite increasing pressure to adapt and retool.

*“The changing demands of a new economy, shaped by a vast and accelerating diffusion of next-generation technologies, require nations, communities and individuals to adapt to new realities.”*





## HOW WE GOT THERE—KEY DRIVERS

### DOMESTIC AND GLOBAL ECONOMY

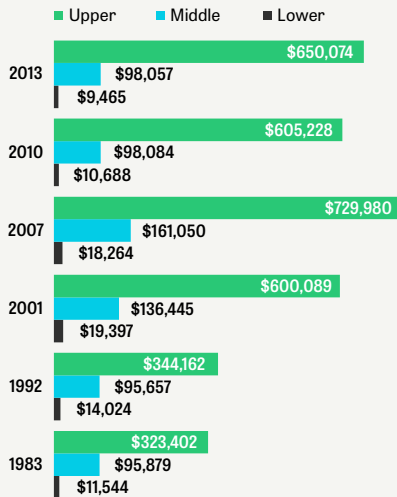
In the years leading up to 2026, a technology-driven economy leads to greater output and economic growth, with rising incomes across all levels of earners. Thanks to strong financial and real estate markets, the gains of widespread growth disproportionately benefit those at the top of the income and wealth ladder. Even as incomes rise, the absolute gap between the richest and those in the middle widens. But the trickle-down effect is real in economic terms, just as during the second part of the 1990s, when a groundswell of economic growth raised prospects for many.

As people's sense of well-being is highly dependent on their relative position in society (rather than absolute income or wealth), the good times do not fully blunt discontent for many in the middle and bottom of society. Although significantly diffused by the relative prosperity, issues of fairness, a rigged game, and the limits of supply-side economics and trickle-down effects continue to simmer beneath the surface.



**Median Net Worth of Families, by Income Tier and in 2014 Dollars**

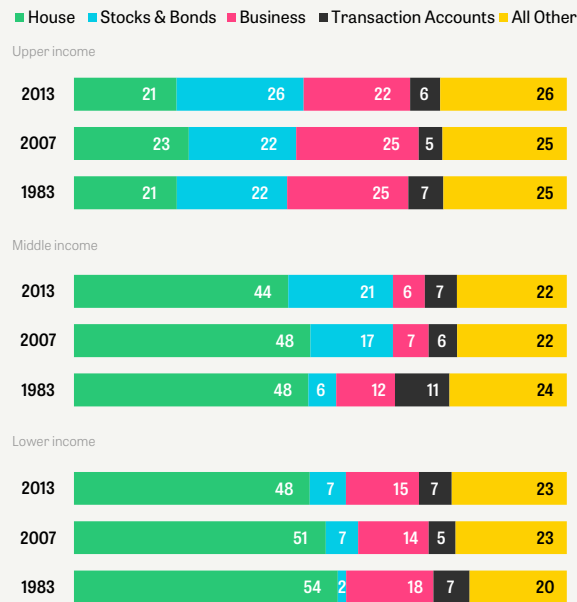
**Figure 2.1**



Note: Net worth is the difference between the value of assets owned by a family and the liabilities it holds. Families are assigned to income tiers based on their size-adjusted income. Net worth is not adjusted for family size.

**% Distribution of Assets Owned, by Income Tier**

**Figure 2.2**



Note: This chart shows the percentage distribution of the mean value of assets of families, including families that own no assets. Stocks and bonds include indirect holdings in mutual funds, pension accounts, and so on. Transaction accounts include money market accounts, checking accounts, savings accounts, call accounts and certificates of deposit. "All other" includes other assets, such as vehicles, secondary properties, personal property and the cash value of life insurance. Families are assigned to income tiers based on their size-adjusted income.

**Wealth trends show increasing concentration at the top** From 1983 to 2013, only

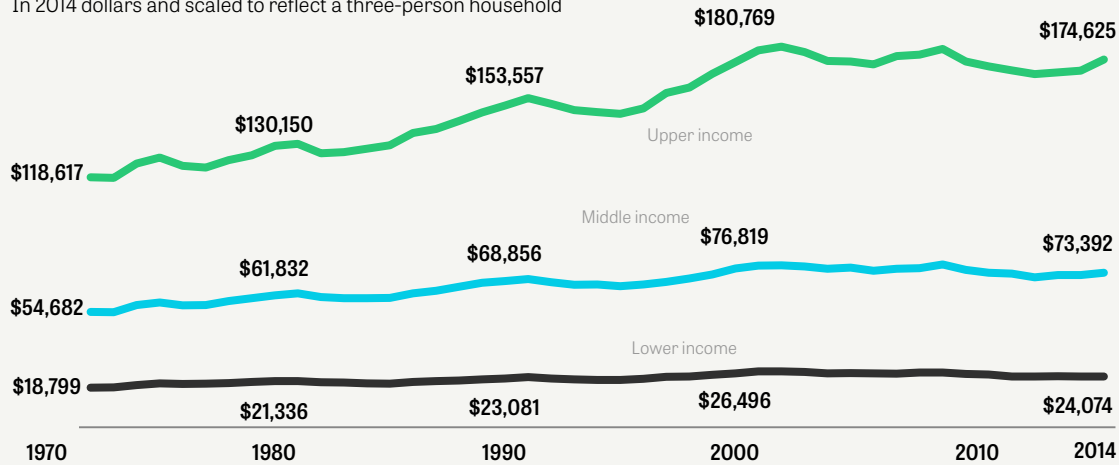
upper-income households realized significant gains in wealth (assets minus debts), according to Pew Research. The wealth of middle- and lower-income households has remained virtually unchanged during that same period (see Figure 2.1). Families in the top wealth tiers also have more diverse sources of wealth, including sizeable holdings of stock and bonds, while for most middle-income families an owned home is by far their most significant asset (see Figure 2.2).

Pew Research Center. "The American Middle Class is Losing Ground," (December 9, 2015). Available at: <http://www.pewsocialtrends.org/2015/12/09/5-wealth-gap-between-middle-income-and-upper-income-families-reaches-record-high/>

Massive technological advancement and disruption—particularly advances in communications—reshape industries and the comparative advantage of nations. The information revolution continues to spawn new devices, which tend to be faster, cheaper, more secure and highly connected. Countries in the lead of this revolution, notably the United States, South Korea, Estonia and much of Western Europe, especially benefit because they can build on a strong foundation and extend their

**The Gap is Getting Bigger Between Upper-income Households vs. Middle- and Lower-income Households**  
 In 2014 dollars and scaled to reflect a three-person household

**Figure 2.3**



Note: Households are assigned to income tiers based on their size-adjusted income in the calendar year prior to the survey year.

**The income gap is widening** While household incomes in all tiers have seen gains since 1970, the income gap is growing. Income increases among high-income households continue to outpace those of middle- and lower-income households. By 2014, the share of U.S. aggregate household income held by upper-income households reached 49%, its highest level since 1970 (see Figure 2.3). From 2000 to 2014, however, incomes of all households have trended downward.

Pew Research Center. "The American Middle Class is Losing Ground," (December 9, 2015). Available at: <http://www.pewsocialtrends.org/2015/12/09/4-middle-class-incomes-fall-further-behind-upper-tier-incomes/>

reach into making cities smart, transportation fast and electricity sensitive to consumer preferences.

Yet many governments are overwhelmed by the technological tsunami; only the best and the brightest are able to adapt quickly. As government lags, multinational, technology-driven firms grow exponentially more powerful and influential, while weaker governments outsource many of their modernization initiatives in response to impatient citizens who are reminded daily, through ubiquitous media, that their nations are falling behind.

In this environment, geographic borders, flows of people and goods, and "walls" become less relevant. The information revolution reduces the power of sovereign nations while harmonizing people's expectations

around the globe about getting the latest and greatest for themselves. The main corporate power brokers use information to win the hearts and minds of consumers, while vastly enhancing their economic and social power.

Bolstered by U.S. economic stability and growth, countries that are open and able to tap global flows in technology and data thrive. Europe begins this transition, and nations with robust connectivity surge. Similarly, Africa's economies that "leapfrogged" to digital services through mobile become major hubs of the global economy. In China, political authoritarianism slowly gives way as the economic realities of a digitally driven world make it increasingly difficult to resist broad political and societal reform.

Winning countries and companies recognize early on that economic elites increasingly see the world in terms of interconnected global hubs (rather than unitary domestic regions). They shape their trade and economic policies to facilitate transnational relationships and data flows. This leads to a more open global web, as pressures to Balkanize governance, either in the name of data protection or national control, lose out to the widespread hunger for economic advancement.

Nations that retreat inward during the intervening years fall behind and become vulnerable to unrest from within. In some states, tech-enabled populist movements bring about democratic reform. In others, non-state actors exploit the weakening relevance of formal governmental institutions to foment violent insurgencies. Apart from China, this dynamic is especially potent in the Middle East and North Africa, which is gripped by a "Second Arab Spring," this time extending to even centralized and insulated states such as Saudi Arabia. Russia also experiences significant unrest as political authoritarianism is unable to cope with digital insurgencies and dissent. In failed states, ISIS-like non-state insurgencies persist because they are able to use information more effectively than weak or nonexistent governing institutions, which are mired in corruption and incompetence.<sup>5</sup>

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5. Some of these global forces throughout these scenarios took inspiration from the discussion outlines of the upcoming sixth edition of the National Intelligence Council's "Global Trends Report." They have chosen a 15 year timeframe. For more information, see: <https://nicglobaltrends.tumblr.com/>.

**Global data flows are accelerating rapidly** According to a recent McKinsey report, in the past decade, the volume of global data transmissions has grown by 4,500% while traditional flows of trade and finance have dropped off by 14%.

McKinsey & Company, "Digital Globalization: The new era of global flows." (February 2016). Available at: <http://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/digital-globalization-the-new-era-of-global-flows>.

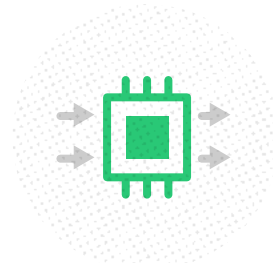
## TECHNOLOGY

Technology is the key growth driver over this period. Advances in artificial intelligence, machine learning, and sensors reach an inflection point and begin to widely reshape industries and sectors with accelerating speed. This digital evolution continues to fuse with the life sciences to take medicine to new heights, from new drugs thanks to genomics, proteomics, and synthetic biology to vastly improved medical records, hospital efficiency and error reduction.

As a result, economic output and living standards increase, but the pace of technological innovation and adoption also eats into a large number of low- and medium-skill jobs through automation. Still, the traditional middle and working classes are able to grow their earnings, but only by hustling in an economy dominated by part-time, gig-based, and contractor arrangements.

Despite a precarious and uncertain labor market, many regard the situation as fair, buoyed by improved purchasing power through lower technology costs and widespread benefits portability. Merely a decade earlier, small- and medium-sized enterprises struggled to offer employee benefits such as health care and retirement. Now that responsibility rests with efficient, affordable marketplaces that offer a range of portable benefits to working Americans at all income levels. Although this does not match the economic security of Western Europe decades ago, limited benefits and income support are more evenly distributed across society.

Rising incomes and lowering technology costs also work hand-in-hand to help people of all income and wealth levels plug in. Internet access is freely available through devices distributed by leading technology



companies, which are hoping to reap benefits from subscription services and reach for advertisers. Because these players control the access point to the internet, they also exert enormous influence over content distribution. Consumers become more dependent on those that hold both the information conduits (the pipes) and the content flowing through them.

Data collection becomes increasingly important and is often integral to the business models of the major players. Consumers have little hope of understanding—let alone controlling or owning—data collection through increasingly sophisticated technologies. The consolidation of data ownership in the hands of the few also has the perverse effect of reducing data security. Consumers continue to be surprised by major data breaches, and wonder why cybersecurity remains such a challenge. The reasons range from terrorism and state-sponsored espionage to criminal enterprises and rogue isolated hackers having fun.

The enormous economic power of companies and governments, coupled with rising momentum for reform of data collection rules and better cybersecurity standards, proves insufficient to protect those connected to the open internet. This is the price of an interconnected society, which continues to bestow benefits that most deem well worth the cost.

*“For people who care about democracy, you should run when people say big data or at the very least reach for your revolver. It’s a very, very dangerous idea, and it’s now the central paradigm animating content businesses and journalistic businesses.”*

**ETHAN ZUCKERMAN**

DIRECTOR, CENTER FOR CIVIC MEDIA

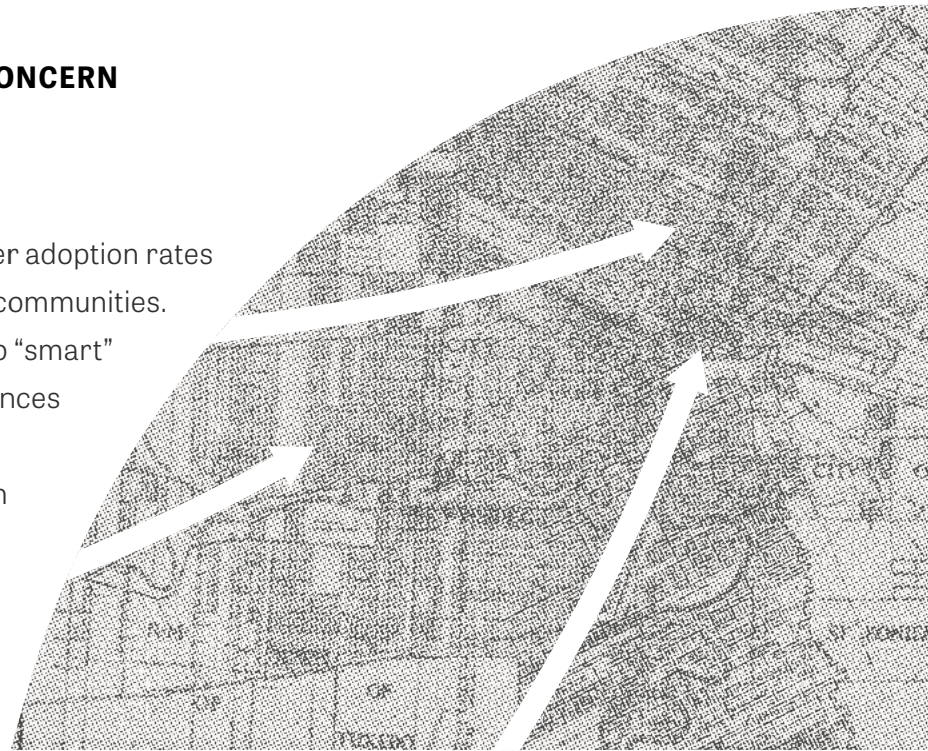
ASSOCIATE PROFESSOR OF THE PRACTICE IN MEDIA ARTS & SCIENCES,  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY



## IMPACTS ON CORE AREAS OF CONCERN

### COMMUNITIES

Lowering technology costs and wider adoption rates have transformed day-to-day life in communities. Because most people have access to “smart” devices, they can enjoy the conveniences afforded by mobility, ubiquitous connectivity, and tools that can learn and anticipate their preferences and needs. Implementation of new technology-enabled transit options that complement traditional public transit, such as autonomous cars, have made society more mobile and independent than ever.



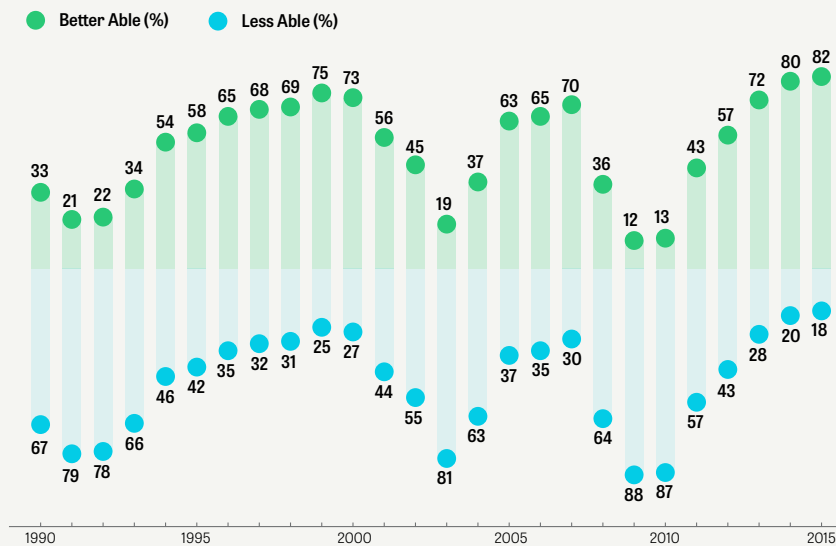
Although rising incomes broaden the tax base, many cities face fiscal stress from large pension and health care burdens. The country’s mid-to large-sized cities have begun to divide into winners and losers. Cities under greater fiscal stress are falling behind the curve in the adoption of smart technology and improved amenities, such as transport. As a result, these cities prove less attractive to younger, talented workers, and major corporations leave for greener pastures. Such communities in high corporate income tax states fare the worst. The “winner” cities have parlayed rising tax revenues into more connected, livable, and attractive communities. Increasingly, they are becoming magnets for human capital and corporate growth. This trend is especially pronounced in low-tax states.

Government is also ceding interactions with residents to private corporations. This has led to two types of public services: those offered by private entities and enabled by seamless connectivity and on-demand services models, and those that take place within the confines of a traditional government that is seen as hopelessly anachronistic.

This trend affects patterns of civic engagement. As formal and

**82% of City Finance Officers Are Optimistic About Meeting Fiscal Needs**

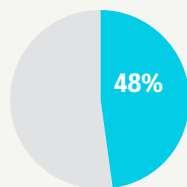
**Figure 2.6**



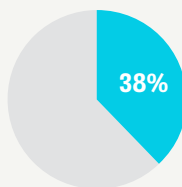
**Most Negative Impacts**

**Figure 2.7**

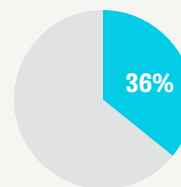
Infrastructure Demands



Pension Costs



Healthcare Costs



**Municipal budgets a mixed picture, though perceptions improving** While municipal budgets have shown modest improvement, and city finance officers are optimistic that these gains will continue, according to the National League of Cities 2015 annual report, city budgets have still not recovered the revenue declines brought about by the great recession. Infrastructure demands have had the most negative impact on budgets, followed by pension and healthcare costs.

Reproduced courtesy of the National League of Cities. See National League of Cities Center for City Solutions and Applied Research, "City Fiscal Conditions 2015," (2015) Available at: <http://www.nlc.org/find-city-solutions/city-solutions-and-applied-research/finance/city-fiscal-conditions>.

traditional institutions grow increasingly irrelevant, people turn away from them. At the same time, people armed with new ways to connect both face-to-face and virtually are organizing into small and sometimes temporary interest groups to address community issues—often seeking substitutions for government activity in lieu of advocating for a government response.

This duality of “winners and losers”—across communities and within communities—strains social bonds. With improved economic security, most people are content with the state of kitchen-table concerns. But the gaps in experience also give rise to festering resentments. The wealthier have better access to health care, education and other basic services; they are living longer, making more money and enjoying more mobility. This raises expectations for everyone, yet those earning less feel they have to work harder than ever to reap the gains of economic growth.

Because patterns of opportunity and wealth accumulation follow historical patterns, the losers in economic landscape disproportionately represent people of color and rural communities unable to adapt to the technology-driven economy.

As a result, political disaffection due to economic inequality periodically boils to the surface, sometimes violently. In economic hubs that attract a large influx of immigrants, protest and violence occasionally break out. And, in regions that lose jobs to digital outsourcing and “remote work” (sometimes to other countries, sometimes to other parts of the U.S.), the unemployed and indigent protest major employers and lobby government for increased support.

**Talent driving corporate location** People used to move to where the jobs were, but now it is the jobs that are moving, as companies seek to establish offices in areas with greater talent. In a recent survey released by real estate services firm CBRE Group, more than half of corporate real estate executives chose talent availability as the number one consideration of companies looking to move or expand, while more traditional considerations, such as real estate prices and the quality of local infrastructure, ranked lower.

Lauren Weber, “Companies Flock to Cities With Top Talent,” *The Wall Street Journal* (April 12, 2016). Available at: <http://www.wsj.com/articles/companies-flock-to-cities-with-top-talent-1460482766>.

**Twitter connects Spanish town** Since 2011, the Andalusian town of Jun has used Twitter as a platform for connecting its residents with public services. Following the lead of their tech-savvy mayor, all of Jun’s public servants and over half of its citizens have Twitter accounts, allowing residents to engage and communicate concerns directly to government officials. According to the New York Times, the shift to communications through Twitter is fostering a “digital democracy,” and saving the town on average \$380,000 per year.

Mark Scott, “The Spanish Town That Runs on Twitter,” *The New York Times* (June 7, 2016). Available at: <http://www.nytimes.com/2016/06/09/technology/the-spanish-town-that-runs-on-twitter.html>.

## ARTS

This period of relative prosperity allows more and more patrons to participate in America’s cultural life, and potential audiences are larger and, in many ways, more informed than ever. In communities around the country, audiences are more representative of the increasing diversity of society, driving demand for arts experiences. But with more content than ever being pushed to them, audiences are also fickle, with growing demands for their attention from the mobile and “smart” devices that provide an organizational structure for much of their lives.<sup>6</sup> There is, nevertheless, great potential for artists and institutions. The challenge for both is to adapt to maintain their relevance in such a saturated ecosystem.

This is a period of digitally driven disruption. As happened in the past with film, electronic and radio technology, and computers, new structural forms of the arts are emerging rapidly. For example, virtual performance companies are formed that pick performers from vast and distributed populations and stream into immersive devices across the globe. Because technology has lowered the cost to disseminate content and aggregate audiences, some small institutions and individual artists also adapt their business model. They form temporary collectives and ride widespread benefits portability to lower the costs of doing business.

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6. See Mary Meeker, “2016 Internet Trends Report,” Kleiner Perkins Caulfield & Byers (June 1, 2016). Available at: <http://www.kpcb.com/blog/2016-internet-trends-report>.



Legacy institutions that anticipated shifts in technology are able to exploit them. When they had access to capital, these leading-edge organizations reinvented themselves. They now deliver content differently and make it easier to engage with the arts by enhancing in-person and remote experiences and creating a more inclusive feel.

Other institutions, particularly regional arts organizations that rely heavily on an aging member base, have not kept up. Some tried to transform themselves and failed. Others are stuck in a bunker mentality, resisting the winds of change. This segment of the arts in communities is failing, afflicted by a wave of closures.

*“In an optimistic future, artists are a core and fundamental part of equitable and healthy communities and economies. In this future, there are new mechanisms that create a direct connection between community members, consumers, and artists that isn’t mediated exclusively by large institutions; where community members know how to find, call on and collaborate with artists; and where everyone more clearly understands the value and impact of these connections.”*

**LAURA ZABEL**

EXECUTIVE DIRECTOR, SPRINGBOARD FOR THE ARTS

## **JOURNALISM**

The news landscape is highly consolidated. Over the preceding decade, trends around the fragmentation of audiences intensified dramatically. Individuals now increasingly seek and encounter highly personalized content that comingles news with other forms of entertainment and information across a growing array of integrated, ubiquitous, on-demand devices. Previous distinctions between “official” content and that produced by disparate individuals have evaporated, so that the information environment for any one person evolves into a continuous stream of content, curated algorithmically in response to personal attributes and micro-behaviors.



Economic growth provides enough runway for some legacy institutions to survive and transform themselves, but they struggle nevertheless to keep up with the rapid pace of innovation hitting the industry in tidal waves. Major news organizations that persist have vertically integrated content production into a handful of major technology platforms that control distribution. These entities now exist as news “divisions” within larger content and information companies.

The “news” still conforms to journalistic practices, but the kinds of stories covered and reported are optimized for commercial viability. In these organizations, newsrooms rapidly accelerate the transition in human capital from traditional “reporters and editors” toward experts in digital content.

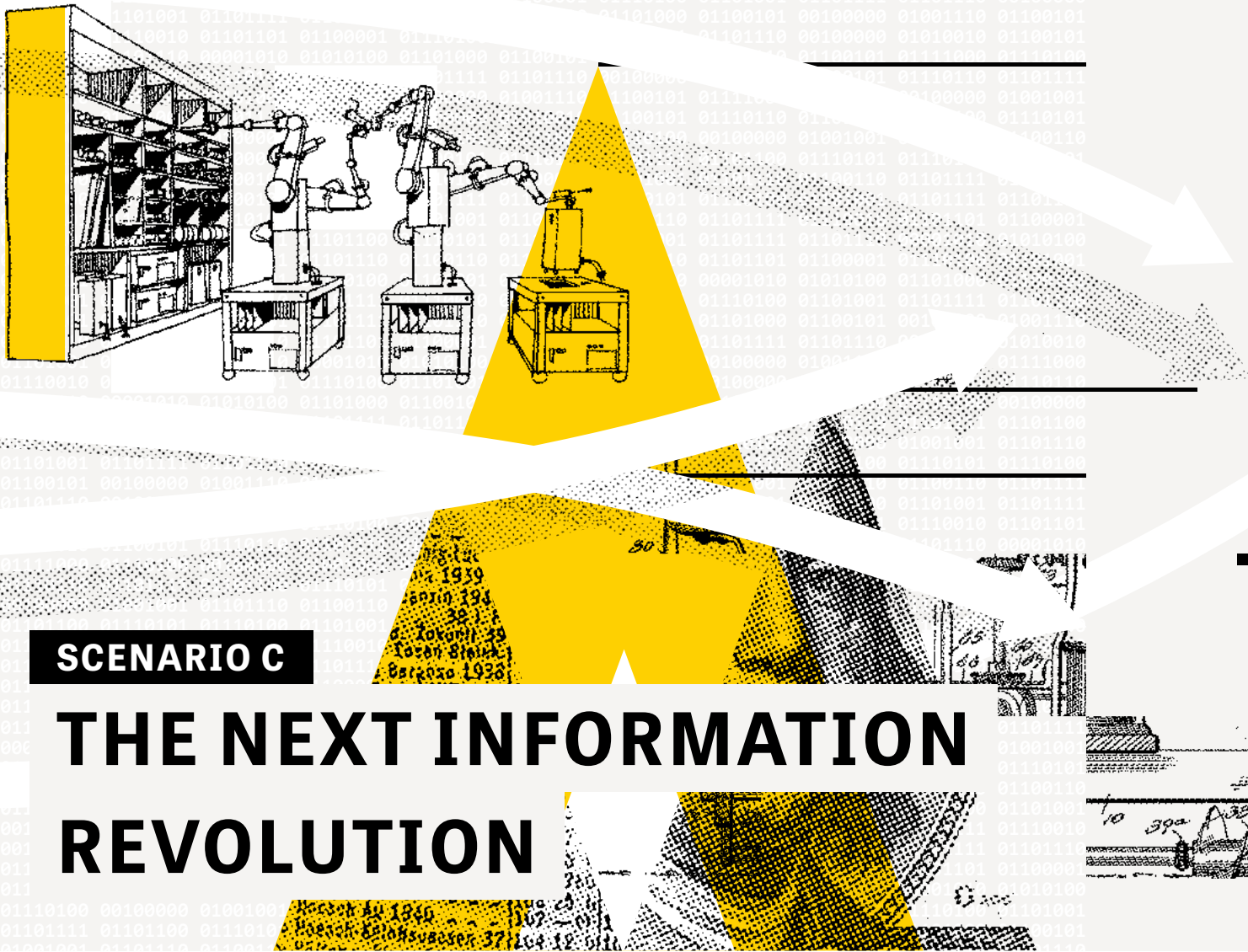
Some forms of in-depth and investigative reporting thrive in this model, particularly through video offerings produced by one or two individuals that can saturate adequately sizeable niche markets of news “super-consumers.” Many other forms of investigative reporting, however, particularly on local issues, just disappear because they simply are not viable.

Locally, the news landscape is in transition. The previous 10 years brought a virtual end to regional newspapers, which could not find a new business model. A few properties still exist in some markets, but the remaining vestiges of the illusion that regional papers could reinvent themselves are disappearing.

Hyperlocal news organizations continue to survive, however, and some are making a turn into a new model of digital information management. As all kinds of community information—about government, weather, traffic, local events and the like—become open in machine-readable formats, small organizations that can manage and make sense of multiple data streams now produce a low-cost model of digital news distribution. These entities—essential local news micro-organizations—curate data streams for sizable local audiences that can support highly targeted local ad content.







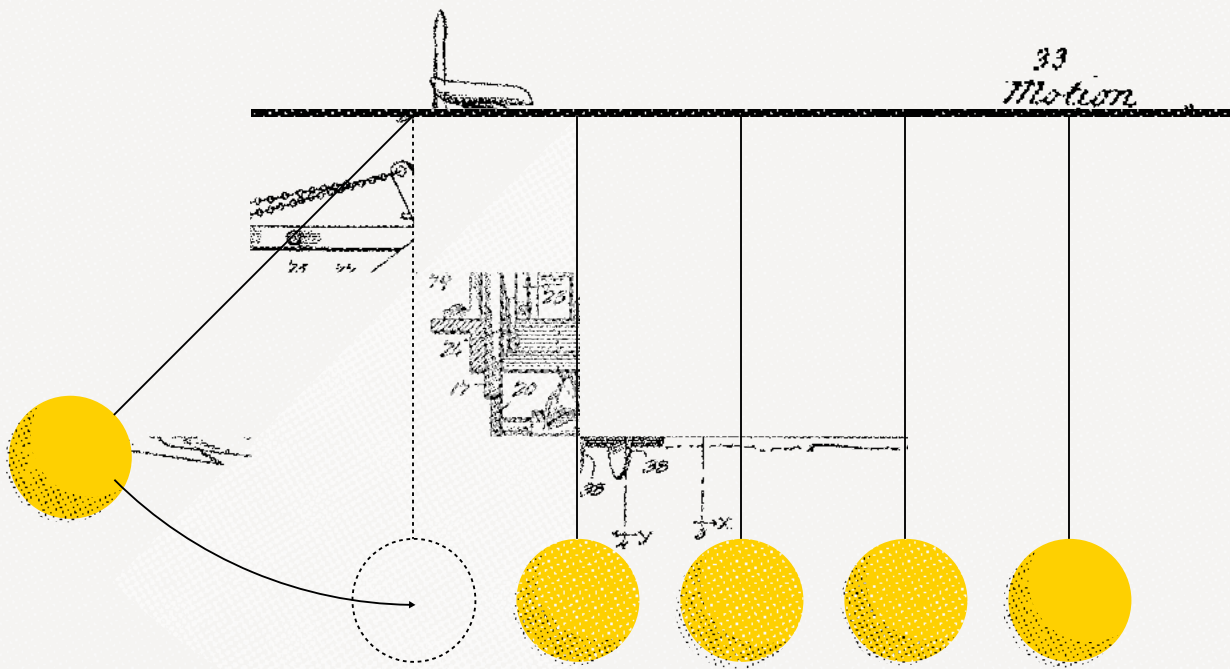
## SCENARIO C

# THE NEXT INFORMATION REVOLUTION

### SUMMARY

This scenario highlights the implications of profound societal shifts due to further automation of work with the help of machine intelligence. A deep social crisis erupts from massive job displacement due to artificial intelligence, big data, machine learning and predictive analytics. This technological disruption leads to a societal compromise aimed at maintaining an implicit social contract: Business and policy elites come together over a significant wage insurance, which acts as a sort of guaranteed minimum income. The worst economic deprivation and its deleterious social effects are overcome due to a safety net emerging for many in society. But significant new questions emerge as the role of work loses its centrality in many people's lives.

*“A deep social crisis erupts from massive job displacement due to artificial intelligence, big data, machine learning and predictive analytics.”*



## HOW WE GOT THERE—KEY DRIVERS

### DOMESTIC AND GLOBAL ECONOMY

Between 2016 and 2026, automation exceeds even very optimistic projections about its transformative impact on the U.S. economy. Changes occurs in two successive waves: The first displaces middle- and even high-skill jobs in myriad sectors, from service, to shipping, to heavy manufacturing. Some surgeons are replaced by robots, pilots do less and less in airplanes, administrative work is outsourced and automated, autonomous transport trucks are common, all kinds of bots populate homes and offices, and many important decisions in business are relegated to machines that can outthink and outlast most humans most of the time.

By 2026, a second wave of automation arrives, this time with ramifications for a range of high-skill knowledge jobs. Surprisingly strong improvements in machine learning displace Silicon Valley engineers and Wall Street financial traders alike. In many instances, machines begin learning faster than humans, especially in new complex domains, from interpreting medical images to flying airplanes, thus

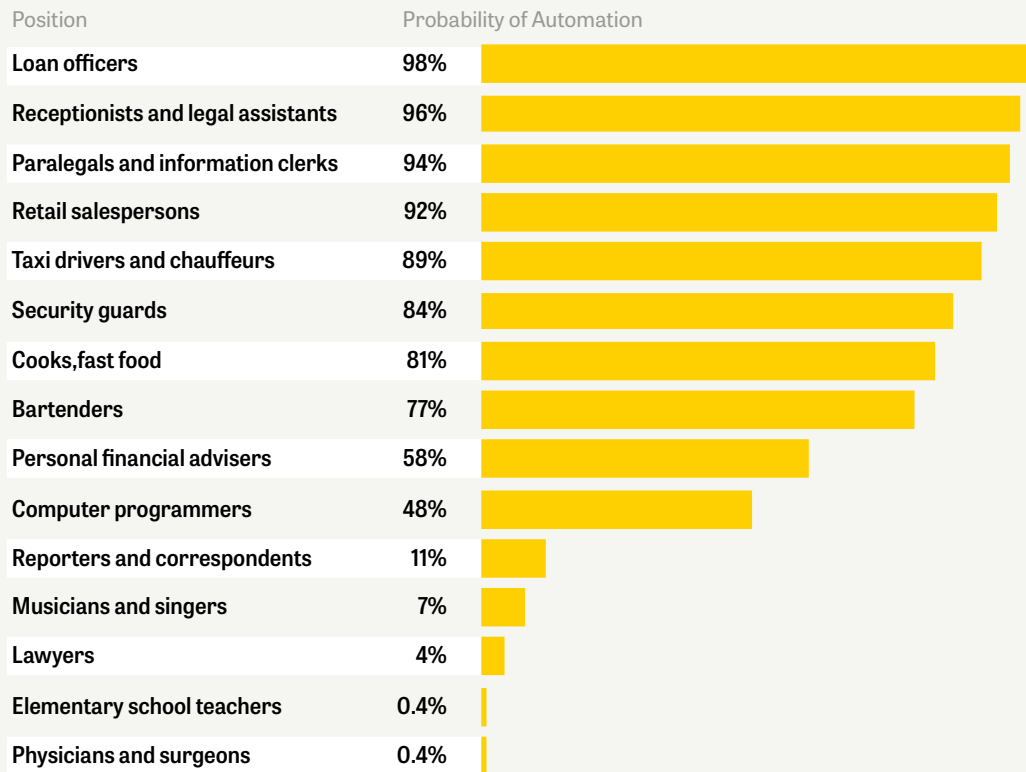


enlarging the gap between humans and machines. In terms of social impact, this transition is akin to the precipitous decline in agricultural jobs, from 41 percent of the workforce in 1900 to 4 percent in 1970, due to mechanization.

### Computerizable Jobs

Figure 3.1

Select occupations ranked according to their probability of becoming automatable.



**Widespread automation could replace many jobs—soon** The impact of automation has the potential to have a significant and widespread impact on the future of the workforce. According to a University of Oxford study estimating the probability of automation of more than 700 occupations, smart computers that learn on the job and mobile robots could replace nearly half of today’s U.S. workers in the next two decades (see Figure 3.1).

Carl Benedikt Frey and Michael A. Osborne, “The Future of Employment: How Susceptible Are Jobs to Computerisation?” Oxford Martin School, University of Oxford (September 2013). Available at: [http://www.oxfordmartin.ox.ac.uk/downloads/academic/The\\_Future\\_of\\_Employment.pdf](http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf).

Although surging productivity contributes to strong corporate profits and significant GDP growth, a social crisis precipitates when a quarter of all American jobs—30 million—are eliminated. Unemployment soars as machines replace much human labor. Fears of social unrest among those left behind—as well as the eventually corrosive effects of lower consumer spending due to diminished incomes—result in a stunning political consensus that was unimaginable even a decade earlier. Silicon Valley, Wall Street, and Washington's political leadership come together in the early 2020s to undertake a significant tax code overhaul for both individuals and businesses, led by a Democratic administration but embraced by Congress. The solution is a substantial wage insurance scheme financed by corporate profits—effectively a guaranteed income. The insurance program requires very few hours of work to maintain a basic standard of living. While radical, the proposal is essentially a highly enhanced version of the Trade Adjustment Assistance expansions of the early 2000s in response to globalization.

*“I think machine learning will liberate the natural propensity of the human being, the human brain to feel happy, to have a good life in society and reduce the sources of unnecessary pain. I think machine learning 10 years from now would have totally eliminated hundreds of sterile tasks.”*

**GEORGES NAHON**

CEO, ORANGE SILICON VALLEY

Incomes thus immediately increase for earners at the lowest rungs of the economic ladder, and economic security is afforded to those in the middle who are rapidly being shut out of the new high-tech economy. This, combined with tax code changes, limits concentration of wealth at the top and produces a new middle stratum in society. This new middle class is not defined by asset acquisition and economic mobility. It is

instead marked, as in Europe's social democracies, by freedom from deprivation or the same necessity to work to maintain a decent standard of living.

### **Interest in a universal basic income has increased dramatically in just the past few years**

The concept of a universal minimum income, or guaranteed income, has been around for decades and has been embraced by economists on both the left and the right. Recently, the idea has come to the fore among economic commentators, and has been given serious political consideration by several countries and municipalities. Finland, for instance, is looking at a basic minimum income as a way of addressing concerns over 10% unemployment. In June 2016, Switzerland voted down a referendum on whether to implement a basic income of 2,500 francs, or about \$2,437 per month, to all Swiss citizens. In the United States, Silicon Valley seed accelerator Y Combinator has funded a pilot study of a basic income in Oakland, California.

See, for instance:

Andy Stern, *Raising the Floor: How a Universal Basic Income Can Renew Our Economy and Rebuild the American Dream*, *PublicAffairs*, (2016).

Maia Unkuri, "Finland Considers Basic Income to Reform Welfare System," *BBC News* (August 20, 2015). Available at: <http://www.bbc.com/news/world-europe-33977636>.

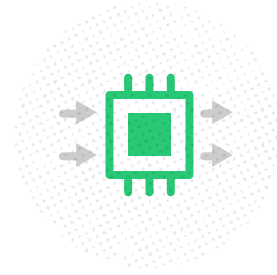
Christine Emba, "Universal Basic Income," *The Washington Post* (September 28, 2015). Available at: <https://www.washingtonpost.com/news/in-theory/wp/2015/09/28/universal-basic-income-a-primer/>.

Kia Kokalitcheva, "Y Combinator Wants to Test a Revolutionary Economic Idea," *Fortune* (May 21, 2016). Available at: <http://fortune.com/2016/05/31/y-combinator-basic-income-oakland/>.

Globally, the race for supremacy in automation and machine learning expands well beyond the realm of economics. It also spawns a new political and military competition among nations on Earth and in space. Major conflicts escalate between the United States and China, in economic, political, technological and military domains, each aided by espionage and cyberattacks. But, as China falls further behind, the two nations settle into a new kind of Cold War. Even though each probes the other's defenses, resilience and cyber capabilities, in the interest of security and global economic stability, both sides agree implicitly not to launch major attacks on defense, infrastructure, or economic systems.

The global economy enters a period of high volatility as other developed and developing nations fall further behind in the transition to this new machine age. This turmoil particularly exacerbates instability in

countries already plagued by endemic political and social inequities, as well as countries that depend heavily on natural resources, such as oil. Continued climate instabilities create further tensions between developed and emerging nations, with particularly harsh impacts on poorer nations, whose famines, floods and political unrests creates downward spirals, hopelessness, terrorism and demands for restitution from their wealthier, polluting nations.



Initially, the global information and machine intelligence revolution is relatively unimpeded as strong U.S. technology companies use their economic leverage to impose open data standards on the world. But, eventually, the world divides into blocs of digital “haves,” which are more open, and “have-nots,” who are closed. This largely restricts the movement of data and world commerce to the “haves.”

## TECHNOLOGY

Explosive technological innovation and wage insurance work in tandem to drive down costs to consumers while increasing purchasing power for many. This engenders an environment in which many technology-enabled services are accessible and affordable—in some form—for most: high-speed broadband, driverless cars within expansive car-share networks, and advanced mass transit funded by government investment. The trend extends to health breakthroughs as well, as improved diagnostics and tech-driven therapeutics begin to extend life spans for all, even for those already in old age.

Mobile and smart technology plays a role in automating and personalizing everything from buying groceries, to transportation, to health care, to personal finance. Smart

*“My pessimistic feeling is that technology is going to progress at such an incredible rate that the laws, policies and human service support systems are going to fall further and further behind. And we’re going to see more people overwhelmed by the power of technology, both for good and for bad.”*

**KELLEY MISATA**

EXECUTIVE DIRECTOR, OPEN INFORMATION SECURITY FOUNDATION

devices anticipate and meet key needs, fundamentally transforming economic relationships as brick-and-mortar transactions vanish. Everywhere, the “smart” environment is wired to learn, remember, and interact.

*“Many of these large-scale systems are being tested out on communities that are already vulnerable.”*

**KATE CRAWFORD**

PRINCIPAL RESEARCHER, MICROSOFT RESEARCH

VISITING PROFESSOR, CENTER FOR CIVIC MEDIA, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SENIOR FELLOW, INFORMATION LAW INSTITUTE, NEW YORK UNIVERSITY

To be able to provide these services, ubiquitous data is the norm. Because major technology firms have become the ultimate economic power brokers, they enforce this norm deliberately and persistently. Consumer protections are effectively off the table as technology and data collection grow too pervasive and omnipresent to regulate.

Other data uses proliferate, from predictive law enforcement to dynamic health insurance rates, but the culture shifts away from underlying anxiety over such practices to basic acquiescence. Government gets into the act as well; cities are blanketed with video cameras, sensors and other devices designed both to make cities safer and more convenient, but also to pacify the population and keep crime and unrest in check.

The only checks on massive corporate and government surveillance are the economic and reputational risks that emerge from major abuses or data breaches. These periodic outbreaks produce just enough controversy to keep companies and government agencies minimally compliant through voluntary standards and self-policing. But the social contract around consumer privacy permanently shifts away from any notion that individuals own their personal data as property.



## IMPACTS ON CORE AREAS OF CONCERN

### COMMUNITIES

With freedom from extreme economic deprivation and a broad economic leveling, many traditional socio-economic distinctions are evaporating. Communities are essentially dividing into three classes: those who accept the wage insurance with minimal work; those who find ways to supplement the insurance through roles and jobs that remain immune from automation (for the time being); and those who play necessary roles within major corporations. As American society grows more diverse, residential segregation becomes more sharply defined by these income divides than by race. Despite some gradual effacing of racial distinction in the middle, the elite who manage the economy continue to disproportionately leave out women and people of color, although gains are being made.

Large numbers of displaced populations from overseas, drawn by the relatively high universal standard of living, seek entry to the United States. The native population is still divided over the desirability of significant immigration rates, but the worst resentments are blunted by the minimum income, as fewer people feel as though they are “losing” in the new economy.

The shift away from work as the center of life and identity for many has begun to have significant effects on social and cultural patterns. Time—the mere fact of more of it—is now a significant driver of social and community habits. Some communities grow closer and tighter—virtually and in person. People have the time to connect, and they look more and more to others to add meaning and fulfillment to their lives. Community and volunteer organizations are thriving, and while online communities of interest proliferate, there is a movement to spend more time together in public. Gathering in the public commons is the new “vinyl record” for a digitally native population. Many cities have begun to model themselves after the Copenhagen of today, actively prioritizing the cultivation of public life and communal interaction.



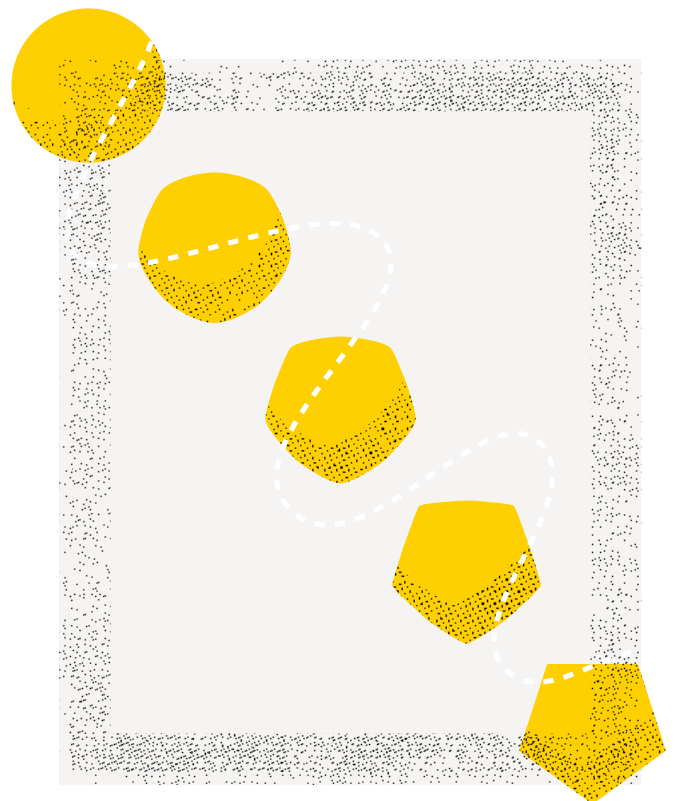
The shifting locus of meaning is also spurring a drive to take the entrepreneurial spirit once valorized in work and apply it to other things. Many Americans—particularly those who are part of the growing cohort that is not religiously affiliated—now seek to create new institutions. Creative startups flourish, and new civic ventures pop up across the country, as many individuals pursue fulfillment without the burden of making ends meet. Government also establishes new service tracks to facilitate this energy, and new ranks join municipal leagues and movements dedicated to civic causes, such as education, maintenance of public space and culture.

Much of the newfound time and energy is directed toward the places where people live, and is enabled by technology and smart devices that allow people to seamlessly weigh in on a range of local issues. The promise of truly direct democracy is closer to reality, but not without new challenges.

Because local politics has become seamless, these opportunities for direct, real-time input obviate the need to get motivated about major elections. Economic frustration is now a less significant catalyst for political engagement, and as elites largely coalesce around the wage insurance, a key area of ideological clash falls away. Middle-class voters who used to drive electoral politics are largely absent in this levelled society, and they opt out of the political system. Nationally, voting rates have plateaued at about one-third of the population.

## ARTS

The arts economy is at the beginning of a dramatic reformation. With more disposable income, new audiences are emerging, composed of many who historically faced barriers to America's cultural life and the institutions that safeguard it. The arts are now assuming a more important role for broader swaths of the population, driving demand for cultural



experiences that educate and inform audiences. A new cultural literacy thrives, and audiences now expect new art and new means of engaging with it.

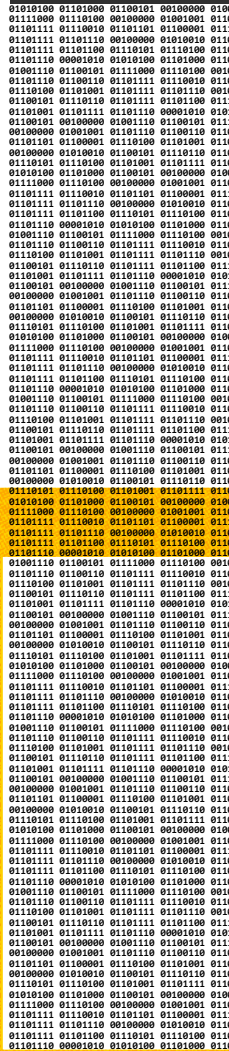
*“I see a great opportunity for arts organizations of all kinds to recognize themselves as civic assets and bring people together who are different from each other.”*

**DEBORAH CULLINAN**

CEO, YERBA BUENA CENTER FOR THE ARTS

This is also a period of explosive growth in individual creativity. As demand for cultural experiences increases, the expansion and diversification of audiences are also driving rapid growth among the ranks of artists. With sustainability and subsistence no longer key drivers of their output, artists have ample time and resources to explore new forms of expression and means of connecting with audiences unmediated by galleries and large institutions. But the number of would-be artists is soaring, as those who would have been hobbyists in the old economy have begun to dedicate more of their energies to creative pursuits. As a result, it is growing more difficult to distinguish between arts as a hobby and community activity and true artistic excellence.

Public funding is focused on initiatives that instrumentalize the arts as hubs of community activity. This is ushering in a new era of artistic populism. As new artists skirt traditional institutions and forge more direct links with their audience, many legacy institutions are tapping into new opportunities that have extensive ramifications for their programming. In the spirit of the new age, they are embracing technology, moving beyond the traditional confines of four walls, and seeking to provide content and relevance to diverse audiences interested in a range of experiences, from the educational, to the creative, to the entertaining. Art museums that do not make this shift risk becoming subsidized warehouses, storing vast collections of art that command little to no audience.



## JOURNALISM

The trend toward economic growth spared a handful of legacy media outlets, but the need to adapt—particularly as complex tasks become automated—is no less acute today. Cushioned by a resurgence in community interest, successful local and regional news organizations have slashed operating costs by automating most of the business functions, and even many reporting functions. “Reporters” in this environment are those who can simply use machines to manage multiple data streams flowing from public and private sources, and who can curate articles written largely by bots.

A new kind of citizen journalism is also emerging, populated by those who plug into complex networks of sensors and big data streams to uncover and verify information in the public interest. Because everyone is online, more and more people now seek to contribute to community and common knowledge about issues.

*“News gathering is being revolutionized by how much people publish and put into the public domain that is not professionally solicited. There is a huge amount of unsolicited material that will grow, if we layer on the amount of data coming from sensors and real-time feeds, and remote and automatic inputs.”*

**EMILY BELL**

FOUNDING DIRECTOR, TOW CENTER FOR DIGITAL JOURNALISM,  
COLUMBIA JOURNALISM SCHOOL

This aggregated community input is aided by significant technological breakthroughs in sorting through unstructured data to better determine truth and credibility. Rather than encouraging a vast mixing of accurate information with unsubstantiated opinion (and even misinformation), technology platforms employ vastly enhanced search and analytical tools that curate and serve content based on its veracity. Algorithms manage, sort and then fast-track content that reflects the “truth.”

# APPENDIX

THE FORCES OF CHANGE CONSIDERED IN VARIOUS CONFIGURATIONS IN THE FOREGOING SCENARIOS INCLUDE:

## ECONOMY

**CONCENTRATION OF WEALTH AND MIDDLE-CLASS PROSPERITY** The size and effect of wealth and income gaps between the wealthiest and those in the middle and bottom.

**THE LABOR FORCE** The growth in “gig” and precarious employment.

**STATE OF THE U.S. AND GLOBAL ECONOMY** The relative health of the U.S. and world economy, and the relative level of volatility.

## TECHNOLOGY

**TECHNOLOGICAL ADVANCES AND ADOPTION** How quickly next-generation technologies—such as artificial intelligence, sensors and wearables—will be deployed, how widely they are adopted, and their impact on life.

**DIGITAL DIVIDES** If and how technology adoption, usage and

functionality will divide along social and economic lines.

**TRANSPORTATION** How localities invest in public transportation, and broad changes to how people move in and between communities.

**APPLIED BIOSCIENCE AND HEALTH CARE** The pace of scientific advancements in health, including in therapeutics, and the breadth of their applications in mainstream care.

**DATA COLLECTION, USAGE AND PROTECTION** How data are collected, owned and used, and the impact on individuals and institutions.

**CYBERSECURITY AND DIGITAL RESILIENCE** The fragility or robustness of digital infrastructure, how it could be tested, and the public and institutional response.

## **SOCIETY**

**SOCIAL CAPITAL, CONNECTIVITY AND ENGAGEMENT** How connected people feel to their communities and to each other.

**CIVIC ENGAGEMENT** How Americans will engage civically, and to what extent. Whether new forms of engagement will supplant formal political participation.

**DEMOGRAPHIC SHIFTS** The effect of significant demographic change in the U.S., including race, immigration, religion and family formation.

**EDUCATION** The status of public education, and the role and institutional landscape of higher education.

**ARTS** Changes to artistic production and presentation, the status of major arts institutions, and audience trends and preferences.

**JOURNALISM AND INFORMATION** The quality and quantity of local, regional and investigative journalism. Changes in audiences, distribution and production of content.

## **POLITICS**

**GLOBAL GEOPOLITICS** Broad geopolitical dynamics and the international security environment, and the resulting influence on the U.S.

**PUBLIC FAITH IN INSTITUTIONS** The level of faith in major public and private institutions, including government, schools, political parties, corporations, and, civic and faith institutions.

**POLITICAL POLARIZATION** The level of polarization of the American electorate and political institutions.

**GOVERNMENT TALENT AND MODERNIZATION** How governments use technology and business process improvement to become more effective and responsive. How government reacts to the aging out of a significant portion of the civil sector.

**MUNICIPAL BUDGETS AND CITY INFRASTRUCTURE** How federal and state governments invest in major infrastructure, and the status of municipal budgets.