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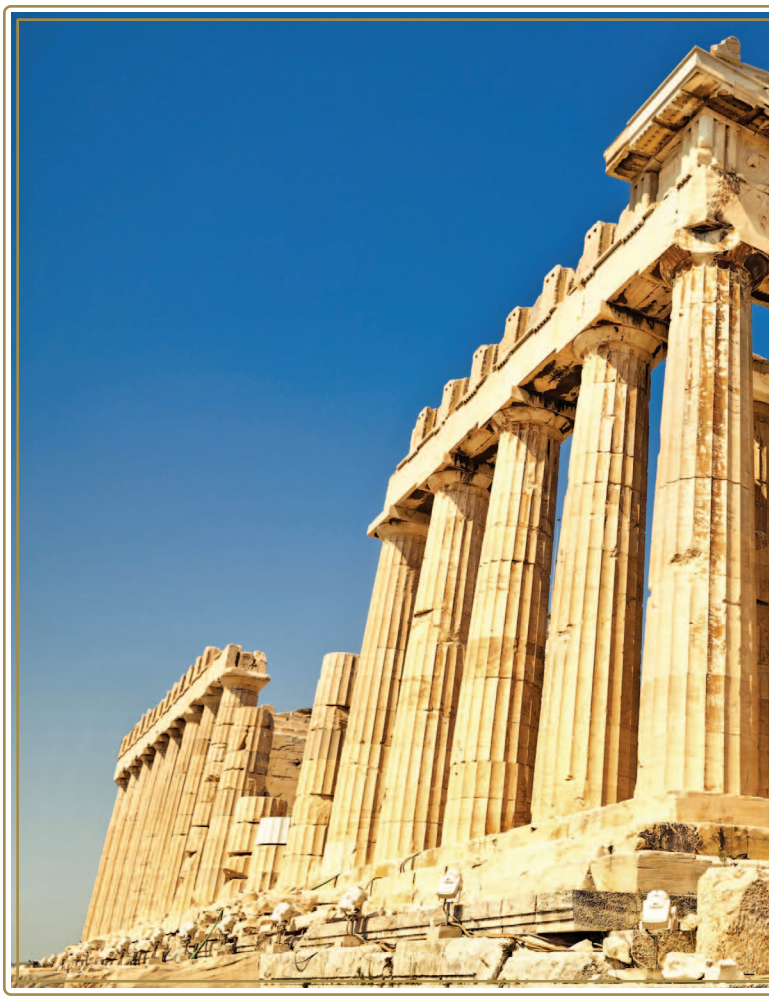

In Search of Democracy 4.0

Is Democracy as We Know It Destined to Die?

There are plenty of indicators of doom: Donald Trump riding roughshod over U.S. constitutional norms; the rise of high-handed strongmen across Europe supported by ethno-centric crowds; free press and free voting under attack by cyber manipulation. Add mass migration threatening borders and national identities; rising wealth inequality; politics gridlocked by strife about rights, benefits, and duties, amidst growing resentment of "global elites" and new would-be citizens; and evolving confusion about the nature of the "common good" [1]–[5].

But others argue that democracy's glass is still half-full. Global levels of freedom-embracing governance are at an all-time high [6], and looking back several decades, there's been substantial (if uneven) spread of democracy to more parts of the world [7]. Yes, autocrats are rising here and there, but so are movements against

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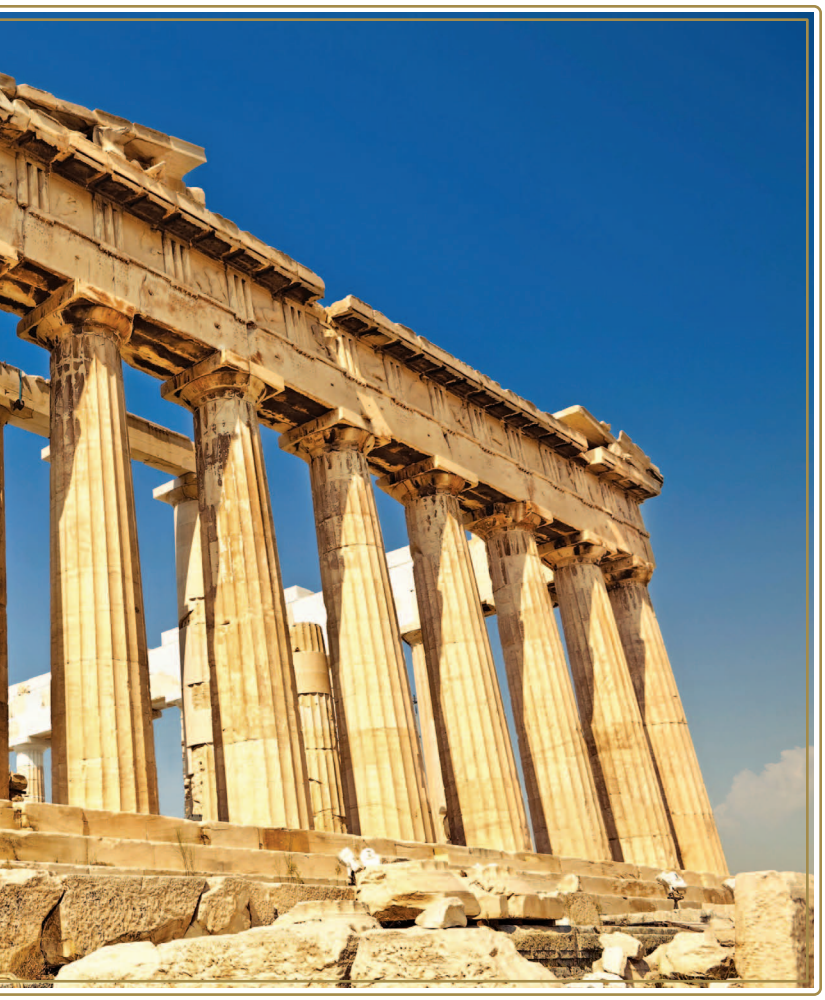

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them. Surveys show that significant majorities in democratic nations remain broadly positive about their representative systems (8). In the United States, though trust in government is declining, polling suggests 86 percent still endorse representative democracy (9). Meanwhile, green shoots of reform are sprouting: experiments in more participative civic engagement (referenda, electronic polling, citizen deliberative assemblies, open-style budgeting, sortition for certain officials) (10); there is rising advocacy to resist corruption and disengagement, the influence of big money in politics, gerrymandered election districting, and public and private conflicts of interest (2, p. 33).

Imagining the Means of Renewal

So what can we say about democracy's future? Making specific projections about complex human systems is foolhardy — but we offer a middle course between pessimists and optimists. Neither the flourishing nor the demise of democracy is inevitable. Democracy is not doomed but most versions of it today are indeed struggling to do what citizens expect it to do, and be what it is supposed to be.

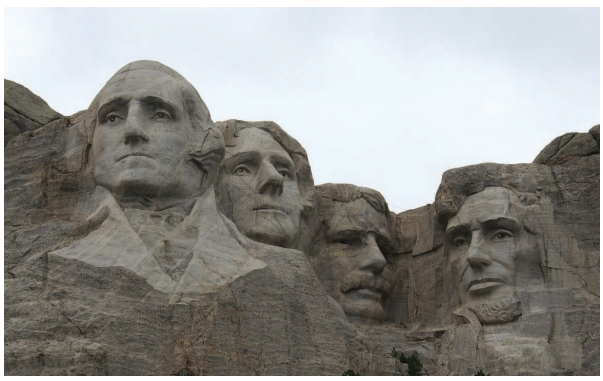
History suggests that, as an enduring human construct, democracy has a good chance of persisting, but not necessarily in its familiar guise: We will show that democracy cycled through several phases of evolutionary adaptation; it could be on the brink of another reinvention.

Instead of debating "life or death?" we ask: given what we know from history, if democracy were to survive into the future, how might that happen and what might the new incarnation look like? Since human systems rise and fall through decisions and actions taken by humans, we also ask: what can leaders do to help shape democracy's next phase?

Analogizing the Thought Experiment

We frame our analysis with an analogy: democracy can be thought of as a sort of software for human self-governance that has been advancing — and can continue to advance — if its "engineers" improve its future "releases."

Consider how software is developed and commercialized. A concept, which addresses certain problems, is turned into code; if successful, the code creates new value for a group of users. As users engage with the technology, they provide feedback to the developers, who then iteratively rewrite the code to make the software better. In the best cases, energetic developers improve the innovative but "buggy" "Release 1.0," stabilizing it and expanding its market acceptance with new enhancements.



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To keep ahead, the new versions of the software must also beat back competitors trying to capitalize on Release 1.0's innovation. If the developers succeed, they'll keep shipping new releases — 2.0, 3.0, and so on — each better handling the demands of the growing market, and staying ahead of competitive offerings.

Yet the core purpose and essential nature of the software remains the same: there's a commonality to the class of problems that each release addresses. Take, as an example, the Excel spreadsheet — after devising the core functionality, Microsoft has issued multiple releases, steadily making it better, and beating back competitors. Though many new features have been added through the years, Excel remains a widely used financial management tool, solving an enduring class of problems — how to analyze and manipulate the numbers of running a business.

Now consider democracy's progress with this frame. Instead of seeing the complex history of human systems of self-governance as a series of isolated revolutions (as many historians do), imagine democracy instead as an enduring conceptual construct, a continuum of different "releases," evolving through cycles of innovation and development, periodic challenge by competitors' offerings, and then reemergence driven by further innovation. As we'll sketch, each of the major releases changed and improved earlier versions — but always around a consistent essential core, and always evolving to meet an enduring set of problems: how can people govern themselves, operating freely, and in some way as equals, without answering to a "boss?"

A Preliminary Summary of the Essence

Before turning to democracy's "major historical releases," we seek to capture its essence: What is democracy in the most fundamental sense? What must it continue to be, even as it continues evolving and adapting?

To define democracy's core, we turn to the Greek philosopher Aristotle (primarily his *Ethics* and *Politics*) [11]. Aristotle did not invent democracy, but he was the first thinker to step back from the specific democratic practices of his time and to develop a paradigm of active, civic self-government. We must, of course, necessarily abstract his ideas from the particularities of his time and place, which included male-only citizenship and an economy based partly on slave labor.

Aristotle's model builds on basic premises about human society: Living in a cooperative group provides far greater security and human affirmation than living alone. We are, Aristotle insists, "social animals." Yet whenever groups form, fundamental decisions about organization must be made: will group members share in decisions about acting collectively? Or will most us, motivated by efficiency or fear, instead agree to follow a supreme ruler or small set of rulers?

Aristotle saw that if members of a group do choose to share decisions, there must be general agreement on critical elements: the civic community, the meaning of citizenship, and civic rules and norms: "*politeia*." These three elements are the essence of every democratic system.

Community, Citizens, and *Politeia*

In *Politics* (book 3) Aristotle concluded that the state is a "*community* of *citizens*" organized according to a "*politeia*." For Aristotle, "community" meant a defined body of persons, inhabiting a territory, sharing certain values, and pursuing certain common goals. Among democracy's core values is the conviction that citizens must be free to voice their opinions and to associate with others as they wish. They must be roughly equal in their access to public forums and in their chance to influence public decisions. And they must treat one another with dignity, respecting one another and recognizing one another's presence in public spaces. These civic values (freedom, equality, dignity) are imperative because citizens must participate in public affairs and decision making. Citizens enjoy certain privileges but also take on substantial responsibilities: citizens who shirk their duties (in public service or defense) can expect to be called out by their fellows. "*Politeia*" (often translated as "constitution") is not limited just to written rules. It also includes the social and cultural norms of public behavior of the community: "How we do things around here… and why."

Through their *politeia*, citizens of a democratic community aim at three basic ends. First is security from external threats and internal threats to the person, property, and dignity of members. Second is welfare: citizens must be able to live at a level of economic well-being sufficient to have ample opportunity to pursue projects that matter to them. While each of those ends may be pursued by people living under autocracies, the third end, self-government by citizens, is distinctively democratic: Democracy means the rejection of autocracy, the refusal to be mere subjects of a supreme ruler or a small junta of rulers.

The citizens of a democracy are collective rulers. They govern their community by their own decisions, distributing official duties in ways that are consistent with norms of political liberty, civic equality, and dignity. A democratic *politeia* consists of both the formal rules and the informal behavioral norms that make citizenship into an active practice, in Aristotle's terms: "ruling (as citizens) and being ruled over (by other citizens) in turns." To do that well, and to meet internal and external challenges, citizens must also be capable of

practical reasoning. They must be willing to bear the costs of governing themselves. Aristotle thought that democratic citizens should and would do that.

For Aristotle, collective self-government by citizens was the best form of government because, as he asserted for the first time in western history, it was the best way for humans to achieve their natural potential: living, not only as social animals, but as "the most political of animals." It meant living *well* through exercising the fundamental human capacities of speech and reason.

Summarizing the Core Challenges

This Aristotelian model of collective self-government by citizens, aiming at the three ends of "security, welfare, and no boss," and embracing the values of freedom, equality, and dignity defines the essential core of any democratic system — no matter how simple and small or how extensive and complex.

With this in hand, we turn to the challenges that any such system will inevitably face. Our hypothesis, testable through democracy's long history, is that democracies fail when they cannot accommodate, integrate or push back against an existential *challenge of scale*. But when democracy rises anew (in a new "release" — as it has done since prehistory), it does so by innovating or creating new accommodation for scale challenges.

We identify three kinds of scale challenges that democracies face:

1) *An overwhelming external threat to the community's autonomy:* Historically, democracies have always had to battle non-democratic forces (hostile states, alliances of states, malicious networks). When such threats reach a certain scale — for example, an enemy wielding vastly larger military forces, or new technologies (nuclear arms; cyber and biochemical warfare in modern times) — democracies must mobilize to defend themselves. The defense may require faster decision making and more concentrated collective effort than open debate, deliberation, and respect for individual freedom allows. In the face of powerful threatening neighbors, democracies may adapt: streamlining their problem solving, decision making, and mobilization of resources; or they may compromise their valued by adopting more autocratic approaches to governance. When they fail to address the threat, democracies fail.
2) *An overwhelming internal threat to the rules and values of the civic community.* The culture of democracy depends on norms and practices that guarantee freedom, equality, and dignity for all. Those norms and practices are sustained by vigorous competition for leadership positions. If certain leaders or factions achieve a near monopoly of influence, vote-share, or control of decision making adequate to suppress competition and dissent, the system may fail. In modern times, internal scale threats are exacerbated by excessive money flowing into politics and manipulation of information ("fake news"; encouragement of "mob hate speech") that hinders the truthful and civil exchange of ideas on which democracy thrives. Modern democracies have embraced "checks and balances" to mitigate excessive concentration of political power (including support for a free press) — but not always successfully.
3) *An overwhelming internal effort to extend democracy to masses of new, would-be citizens*. Democracies have historically existed in bounded territories and with defined criteria for citizenship. At the same time, the inclusive logic of democracy tends to extend citizenship to more of the territory's residents over time, or even reach beyond its earlier borders; in a technologically-networked world, the means to do that is all the more available. But when a democracy tries to add significantly to the citizen body, or unfairly differentiates the privileges and responsibilities of membership among different populations, it takes on a different kind of "challenge of scale."

Adding many new members increases complexity for democratic deliberation and decision making by offering to immigrants, or perhaps "virtual citizens," with different languages and values, the essential prerogatives of belonging to the community. If a democratic community seeks to extend its governance across a much larger population, it must innovate ways to include them. It may devise systems of representation, an approach taken by modern democracies, which have extended citizenship to a much wider population than any city-state of Aristotle's time. Or it might create an architecture of different privileges and responsibilities, for people of different statuses or location, as the Republic-era Romans did in extending their sphere beyond central Italy. The European Union represents another such experiment, as do various conceptual models currently being advanced about "global democracy." Such solutions for a greater "scale of citizenship" increase complexity and pressure on the system, making it harder for members to participate as politically active, mutually responsible members of a community with a shared *politeia.*

Democracy's Long History

Looking back through the centuries, we can see how democracy has reinvented itself. Over time, this distinctive form of human social organization has found ways, in different contexts and under different conditions, to meet challenges of scale, learning how to operate more

effectively and meaningfully for its members, while still preserving the Aristotelian essence of *community, citizenship, and politeia*. Democratic states have failed. But over the long course, failures led to new incarnations built upon the fundamental core the Greek philosopher first defined. Looking back at this history may help us imagine what a future phase of democracy might be.

Democracy's Continuum of "Releases"

We divide the evolutionary story of democracy into three phases. During each phase self-government was a major feature of human social organization across a substantial part of the inhabited world. Following our software analogy, we'll describe Democracy 1.0, 2.0, and 3.0, as a continuous "system" that changed substantially over time while still maintaining its essential core throughout. We'll also see how new "technologies" were instrumental in the development of the different phases.

Democracy 3.0 includes the several forms of representative democracy visible today. Working back, the prior "release" of Democracy 2.0 was the direct form of citizen government that emerged in the Greek world of the first millennium BCE and that survived (always evolving) into the age of the Roman Empire. This was the democracy known to Aristotle. Democracy 1.0 was the small-scale self-governance among earliest known human foraging communities, in the millennia before the advent of agriculture and urbanization. Each era has been intensively studied; our sketch follows broadly accepted interpretations of general outlines.

Democracy 1.0 and 2.0 eventually collapsed, due to the scale challenges described above. Each collapse was followed by a long "Intermediate Period," during which historians have detected features of self-government at local levels in various societies. Thinking about how democracy emerged, retreated, and reappeared in the past reminds us that democracy is not a uniquely modern invention. And it helps to dispel the fear that, if it does not persist in its current incarnation, democracy must once and forever die. By looking at what changed and what stayed the same through democracy's long heritage, we can begin to imagine some features of a future Democracy 4.0.

Democracy 1.0: Foragers

Democracy 1.0 appears to be coterminous with arrival of biologically modern humans, some 200 000 years ago. Habits of acting according to values of freedom, equality, and dignity apparently arose along with the highly adaptive physical characteristics of genetically modern humans — including large brains and the physiology for speech. Though there's no direct evidence for Paleolithic political systems, anthropologists make educated guesses by retrojecting from more recent foraging societies in, for example, southern Africa and Australia. That approach informs what follows (12).

The prehistoric foraging communities were small, probably only a few dozen individuals. But anthropological meta-studies suggest they were nonetheless in some sense "democratic," reflecting rough equality among at least adult males. These communities rejected the "Alpha male" hierarchical dominance observed among other primates. Leadership roles were typically task-based and situational, rather than permanently invested in one all-powerful individual. When strongmen tried to assert dominance, other members opposed them, by verbal and gestural expressions, and ultimately even social ostracism or murder.

The anthropological research suggests that in the prehistorical, pre-agricultural foraging era, most humans governed themselves "democratically" deciding as a group, for example, when and where to move the camp; how to settle disputes between members; how to respond to external threats from other communities. Decisions were made following discussion, by seeking consensus, by the will of the majority if necessary. These human communities were also, when compared to earlier hominids, highly innovative in devising new tools and highly adaptive to seizing expansive ecological niches in new environments, from the tropics to the Arctic. By bringing more people, with different skills, experiences, and information, into the process of adaptive problem solving, Democracy 1.0 seemingly contributed to mankind's capacity to evolve culturally — and thus to adapt to new challenges more quickly than had been possible through biological evolution alone. Democracy arguably had a major role in our becoming the dominant large mammal species on the face of the earth.

Technological Revolution and Cooperative Social Behaviors

Language (articulated in speech) constituted a critical new "technology" that enabled the self-governance of the first small communities. Language was an essential tool for problem-solving in these groups, the putting together of multiple minds to find new and better survival solutions. We also imagine (again through analogy with more recent foraging societies), that language was leveraged by development of new social technologies — organizing discussion with basic rules, the transfer of a "talking stick", or similar, normative practices of group exchange. Over time, language and evolving rules for its effective use in problem solving enabled members of the community to further advance their technical skills, and become even more adept a developing new tools and cooperative strategies.

As Aristotle himself recognized, reason and language were fundamental human differentiators; knowledge-driven cooperative decision making was not available to competitor species. But as the innovations of language and social technologies spread, certain communities applied them to solving problems of food processing and storage, sparking what became an agricultural revolution. Successful innovators could then build larger-scale organizations with mechanisms for utilizing resources and labor. And this ultimately led to adopting more hierarchical approaches to social order.

First Intermediate Period

As pastoralism and agricultural production spread, surpluses of food and related forms of wealth were accumulated by certain communities, allowing for greater social scale and concentrated power based on control of property and distribution. The new developments encouraged specialization of occupations and the evolution of different social roles. As communities grew bigger and more complex, their capacity for expansion increased and conflicts arose. Bellicose, expansionist cities, states, and empires made war on each other and ultimately overwhelmed or absorbed small foraging communities (13).

In these larger societies, self-governing practices of foraging communities were impractical, and democracy withered. No longer did members of the communities know one another. The growth of scale and complexity rendered group decision making ineffectual, nor could members resist the tendency of "would-be Alphas" to dominate. Structure and hierarchy replaced small and informal organization: Top down leaders demanded compliance, wielding power by their ability to redistribute resources, and later, with the invention of writing, to manage accounts and create systems of taxation and other systems of control. Monarchic leaders strengthened their power based on their supposed links to deities and ancestral heritages, by their ability to mobilize labor, and by organizing defense and infrastructure. By the 4th millennium BCE, hierarchy was ascendant and a first "intermediate period" had dawned in parts of Asia and Africa.

Egalitarian practices did not entirely disappear. For example, ancient Mesopotamian texts include hints of distributed decision making: local councils that might sometimes push back against autocratic rulers. But the general trend from the fourth through the second millennium BCE was the consolidation of highly sophisticated, urbanized, and literate cultures across Eurasia and northern Africa, built around palaces, kings, and their retainers. Rulers amassed and recorded royal income and expenditures on clay tablets or papyrus, and raised well-organized armies and navies to maintain order and fight rival kingdoms.

For reasons still debated (probably a combination of climate change, disease, migrations, and earthquakes), in Greece this kind of civilization collapsed around 1100 BCE. The collapse made Democracy 2.0 possible. Greek communities shrunk dramatically as the palace-based autocracies, their bureaucracies, and literacy disappeared. Agriculture and pastoralism continued at much smaller scale, while iron technology improved. The Greek world did not regain its former population level for some 300 years (14).

During this Greek "dark age," the norms of small-scale self-government were rediscovered; out of necessity, democracy was relearned from the bottom up. Most of the rest of the civilized world continued to be ruled by autocrats, but when Democracy 2.0 began to take root in the Greek world, it unleashed a political transformation.

Democracy 2.0

Democracy 2.0 is a complex story (15). It begins with a recovering population, improved and cheaper iron tools for farming, industry, and war, and the spread of Mediterranean trade. We highlight the birth of a new — or "a renewed" — technology: alphabetic writing.

By about 750 BCE Greeks in several emerging city-states had borrowed an all-consonant alphabet from neighboring Phoenicians and added vowels. This technological innovation was revolutionary because the addition of vowels allowed writing to directly represent a *spoken* language. Compared to earlier (Egyptian hieroglyphic, Mesopotamian cuneiform) forms of writing, alphabetic writing was easy to learn. This meant that the "scribal monopoly" of palace bureaucrats and priests was broken. Alphabetic writing allowed communities to document the rules and citizens to consult them. When rules were publicly viewed and discussed, institutions of social knowledge and decision making were likewise brought into the center of the community, promoting civic participation and undermining autocratic authority. Alphabetic writing, along with other enabling technologies (described below) made possible "people power" (the etymological meaning of "democracy).

As Greece exited the dark age, fast-growing Greek communities initially faced the problems of scale that had doomed Democracy 1.0. Villages grew into towns and then city-states. Rival states challenged one another for scarce resources. There was a growing need for centralized leadership, formal social order, and more efficiency for setting priorities and military command. Many communities came to be dominated by strongmen the Greeks called (literally) "tyrants."

But conjoined technological and institutional innovations soon weakened this new version of autocracy. Advances in metal-working and ship building drove new

military strategies on land (centered on large armies of well trained, heavy-armed infantrymen) and at sea (sophisticated warships requiring large numbers of highly motivated rowers). This shifted power to the numerous fighting men themselves at the expense of tyrants commanding small mercenary forces. Meanwhile new wealth arose from trade; there were major advances in property law, coinage, and banking. Citizen-warriors and wealthy "new men" alike refused to bow to an autocrat's orders. New forms of literature and art arose, promoting and celebrating civic self-consciousness and the value of everyday life. From the seventh to fifth century BCE Greek communities overthrew tyrants and experimented with new institutions that enabled substantial parts of the population to participate in public affairs.

New technologies facilitated development of democratic institutions — written records of citizens registered in their home villages; architectural design of public spaces for civic assembly; methods for collecting and recording votes; lottery machines to allocate citizens randomly to public duties; posting and archiving laws and communicating public decisions.

A New Political Sensibility

Political leaders operated within the new political sensibility, innovating new organizational forms and processes for large group deliberation and decision making. They proposed constitutional rules that, by enabling citizens to "rule and be ruled over, in turn," allowed self-government to scale up to a community of tens of thousands. The "boss" was now the citizens themselves, who governed themselves in local and state-level political bodies.

In Athens, the largest and best documented case, all free, native, adult males, regardless of wealth or property, were citizens. In the mid fifth century BCE some 50 000 citizens were entitled to attend the legislative assembly, stand for elective or lottery-chosen offices, and serve on juries in People's courts. A citizen Council, chosen annually by lot, managed everyday policy and set the agenda for the Assembly. Binding decisions in that larger body were made through majority votes of several thousand attendees. Expertise was respected, but those addressing mass audiences hewed to norms that rejected domination by any subset of the citizen body and demanded that speakers address themselves to matters of common interest.

Like Democracy 1.0, Democracy 2.0 proved to be adaptive. Victories in wars against the great Persian Empire led to the creation of a grand coalition of Greek states under Athenian leadership — the first example of an empire run by a democracy. Athens-style democracy was widely adopted by other Greek city-states. Though Athens' empire was lost in the Peloponnesian War (431-404 BCE), its democratic institutions were rebuilt and Athens subsequently flourished as a commercial center.

The Second Intermediate Period

Historians debate when classical Greek democracy ended, because many of its elements endured for hundreds of years beyond its fifth and fourth century BCE *floreat*. But it is clear that Democracy 2.0 ultimately failed to the meet challenges of scale. In the mid fourth century, Macedonian kings — Philip II and his son Alexander ("the Great") — adapted Greek technologies and institutions, combining them with their own military innovations to build a empire that engulfed not only Athens but all of Greece and much of western Asia. Many Greek city states retained democratic constitutions and (limited) local independence. But meanwhile, in Italy, a new *politeia* was emerging, one which would put an end to Democracy 2.0 but presaged an eventual Democracy 3.0.

Following its legendary founding by Kings, Rome emerged as a republican city-state in central Italy in the late sixth century BCE. The Romans borrowed and adapted key Greek technologies, including the alphabet. Like Athens, Rome was a community with strong civic self-consciousness. Major decisions were made by assemblies of citizens, employing an early form of indirect representation — an innovation that allowed Rome to expand its citizen body while reducing the citizen's participatory role in government. Rome's system of law protected citizens against mistreatment, but political power was increasingly centralized in a highly influential Senate staffed by wealthy elites.

Rome's republican system was scalable, in ways that Athenian democracy was not. Like the Greeks, the Romans' civic culture enabled effective war-making, but unlike the Greeks, Romans offered legal and eventually civic rights to those they conquered. Rome's citizen population grew rapidly, from thousands, to hundreds of thousands, and eventually to millions. But this innovation carried its own seeds of scale destruction. As citizenship expanded, it thinned out: the ordinary citizen's preferences were less relevant; his opinions less consulted. Citizen assemblies in Rome became progressively unwieldy and unrepresentative; individual participation grew increasingly meaningless. More and more public business was taken over by the Senate.

Meanwhile, ambitious Romans, leading armies of citizens in imperial wars, saw their vast armies as vehicles for their personal goals. Citizen soldiers traded serving the public good for supporting commanders as their patrons. By the first century CE, the republic was dead; Rome was an Empire ruled by more or less benevolent emperors. Over the next three centuries, as external and internal threats multiplied, emperors became more authoritarian (16).

Third Intermediate Period

Rome's growing authoritarianism and eventual decline — hastened by tribal invasions, climate change, and disease — cast into the shadows the surviving democratic elements of the republican system (primarily the legal protections associated with citizenship) (17). The collapse of Rome in the fifth century CE saw a steep decline in population and living standards in what had been the western Empire. Society fragmented into smaller feudal units organized around local lords. However, the memory of Greek democracy and Roman republicanism was kept alive through written texts, and Roman law was integral to the legal systems of medieval kingdoms. By the 12th century, as commerce and economies rebounded, a new generation of commercially prospering local leaders challenged local feudal lords. Local municipalities developed governments with democratic-republican features adopted from the Greco-Roman past.

The free towns of central Italy led this Renaissance, abetted by the rediscovery of the ancient Greek and Roman heritage. Florence and Venice were leaders in experimenting with forms of local citizen government and each sustained a brilliant cultural efflorescence. Yet the scale challenge posed by autocratic powers repeated the now familiar pattern — growing kingdoms of Western Europe eventually crushed the republican experiments of the Italian city-states. Nonetheless, ideas about rights and privileges of citizens continued to percolate through European culture, eventually helping to shape the anti-hierarchical ideology of the Protestant Reformation. Once again, technological innovation played a democratizing role — with the invention of the printing press, ordinary people could learn about new ideas, and join movements to curb autocratic rule. The hierarchies of Church, lord, and King became more vulnerable as dissatisfaction grew with autocratic bosses.

Democracy 3.0

Democracy 3.0 emerged in the context of the revolution of science and political ideas of the Reformation and Enlightenment. Early modern Europe's first full-scale challenge to autocracy began in 17th century England when an increasingly assertive Parliament pushed back against royal absolutism. Demanding the "rights of Englishmen," freedom, and political equality — Republican forces loyal to Parliament overthrew and executed the King. When the Republican army's leader developed a taste for authoritarian leadership, the democratizing movement imploded, and monarchy was restored. Yet the conviction that rulers must not be absolute bosses was persistent and soon led to the "Glorious Revolution" of 1688; thereafter the kings of England agreed, in writing, to respect the rights of their subjects and the authority of an elected Parliament — still a foundation of Britain's political system.

Citizen self-government was further developed by the American Revolution, and the former British colonists' establishment and ratification of the U.S. Constitution in 1789. That document's famous preamble — "We the People of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defense, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity …" enunciated the same basic ends of security, welfare, and rejection of autocracy that animated ancient Athens' community, citizenship, and *politeia*. Though America's Founders did not intend to create a fully participative *politeia*, the values that undergirded the new version of democracy were the same: political freedom, equality, and dignity.

The American Founders were strongly influenced by their reading of Greek and Roman literature. Yet although they embraced the same core ends and values as the ancients, they were wary of "mob democracy." They hoped to create a system that was scalable like the Roman Republic but also insulated from Rome's descent into authoritarianism. Accordingly, The Founders experimented with new institutions that had been only hinted at in the ancient texts: representative government, federalism, and a balance of powers. Democracy was once again reconfigured in a way that preserved its essential core, but suited the conditions of a bigger, more complicated world. That included taking advantage of technologies like moveable type (enabling the mass circulation of publications and political information), as well as more sophisticated procedures for establishing representation (national census, land surveying, property law), collecting and counting votes, and mechanisms for spreading information more quickly over large distances (shipping, river navigation, distributed town meetings).

Like Democracy 2.0, the new system got off to a strong start and quickly evolved. As Britain and America grew in size and wealth, their democratic systems also expanded. By the end of the 19th century, property qualifications for citizenship were eliminated and slavery abolished (thus enfranchising many more); by the early 20th century women were enfranchised; and masses of immigrants were also given a pathway to citizenship.

From the 19th through the 20th century, a growing number of countries rejected autocracy and adopted some version of representative democracy. Individual rights were expanded, protecting persons and property against encroachments of others and of the state. By the late 20th century, with the collapse of the Soviet empire, it seemed that democracy had become inevitable and unshakable: Frances Fukuyama famously declared the "end of history" — the cycle of democracy followed by autocracy seemed to have been broken (18).

Democracy 4.0?

Instead of history's end, we now confront the crisis of democratic confidence with which we began: the sense that something has gone badly wrong with the 21st century version of self-government, and growing fear that there may be no way to fix it. Our historical survey has shown that democracy is endemically threatened by challenges of scale: its own growth, evolving social and cultural complexity, and the rise of new external threats. Is cycling back to autocracy the only answer to our contemporary scale challenges?

Not necessarily. Democracy 2.0 had to be built from scratch, but its legacy provided a foundation for Democracy 3.0. Today we have an even deeper foundation, based on our greater knowledge of the "self-government operating system" and a clearer conception of the Aristotelian kernel of a community, citizenship and *politeia*.

We could choose to take advantage of that knowledge. If we are going to leap forward to a new beginning — to Democracy 4.0 — we will have to understand and adapt the kernel to the challenges of a modern, globalized world.

We conclude by postulating four design principles, framing key problems-to-be-solved, and pointing towards some illustrative, emerging innovations that might help shape Release 4.0.

Design Principle #1: Preserve the Aristotelian Core

We begin by restating the "core" principle — for democracy to continue, the essence of what democracy has always been must remain at the center of any next-generation model. It must be visible and palpable to all. Whether it is a newly technologically-enabled version of the "state" or a non-state aggregation of people seeking to govern themselves, the new system must be founded on Aristotle's three elements: 1) a concept of community, of 2) mutually accountable "citizens" who share values of freedom, equality and dignity, and who 3) commit themselves to practices, rules, and norms (a *politeia*) to provide for their collective security, welfare, and effective decision making without a "boss."

Design Principle #2: Identify Scale Challenges to the Core

To be successful, any new release of software must incorporate innovative solutions to problems that emerged during the last version's market experience. Different challenges of scale, as we have described, have repeatedly led to the downfall of democratic regimes. But each subsequent release has found ways to conjoin innovative technology and institutions to improve upon previous approaches. The ancient Greeks devised ingenious procedures that formalized collective decision making among much larger populations than foraging societies were ever able to do. The Romans extended enough of the attributes of democratic citizenship to engage hundreds of thousands of new recruits. English and American revolutionaries in the seventeenth and eighteenth centuries created representative government systems that enfranchised millions, and institutionalized rights of freedom and equality that inspired other nations to reject monarchy.

In every case, the new system reinvented the three Aristotelian elements, blending community, citizenship, and *politeia* to preserve security, welfare, and a people's right to govern themselves.

Today, reconsideration of the three Aristotelian elements provides a useful map of the scale challenges that any future release of democracy must address. For example, let's revisit some of the internal and external forces now pressuring the American political system (visible in many other democratic countries too).

First, community. Rapid social transformation (an aging population, increasing pressure of immigration, changing social norms, and growing interest in individual rights), coupled with global economic change (the knowledge revolution, financialization of business, cross-border investing, growing inequality, outsourcing and decline of organized labor, etc.) have disrupted many of the shared values and sense of common purpose about "being American" [2], [19], [20]. Many of those same forces have similarly disrupted the second element: debates about "who is" and "who should be" a citizen, and indeed what being a citizen means [21]. Voter participation is flagging [22], civic education in schools is a distant memory for most people [23], [24], identity politics increasingly reinforces tribal rather than civic identities [25], and service to the government (whether military or civilian) is increasingly "outsourced" or shunned by a younger generation [26]. The rules and norms that make up the U.S. *politeia* are increasingly fragmented or corrupted by disproportionate influence of wealthy donors and financial interests, gridlocked by partisan maneuvering, choked by growing bureaucratic complexity, and threatened by covert manipulation (via social media and cyber-attacks) by foreign enemies [2].

Design Principle #3: Rethink Approaches and Architectures of Engagement

Many discussions of reviving democracy propose incremental fixes to the current system — limiting corporate influence, revising voting procedures and representative maps to lessen partisan manipulation, increasing citizen referendums to better reflect popular preferences, strengthening borders to minimize illegal immigration, etc. But Democracy 4.0 may well require more radical changes.

New approaches using technology offer a promising avenue. Multiple proposals and experiments have been launched to use different tools and networks (social media, simulations, gamification, etc.) to increase not just voting participation, but also citizen engagement in deliberation and more direct decision making (10), (27).

Democracy 4.0 may also employ completely different "architectures of engagement." This might mean simply creating more direct participation and less representative approaches to decision making (returning, in a new way, to 2.0, as above). But it also could mean rethinking "the unit of analysis," including (as many theorists have postulated) the end of the nation state (28), giving way to more virtual democratic communities of interest, or the rise of large-scale corporate entities which pursue not just commercial enterprise but also provide security, welfare, and participative membership for the critical talent on which they depend (29). More modest scenarios envision the democratic energy and initiative in the U.S. passing from the current "political theater" of the federal government to cities and local regions, perhaps somehow networked, to pursue smaller scale, but pragmatic and personally meaningful self-governance for citizens (30). Federalism could be restructured around separately denominated "red" and "blue" states to provide explicit choices among rules and norms (31).

Design Principle #4: Crisis As An Opportunity For Reinvention

Though history shows democracies collapsing in a crisis of a scale challenge, crisis can be a stimulus for reinvention. Hunter-gatherers recognized the advantages of collective action in the face of threats by wild animals and human predators. Ancient Athenians devised democratic solutions to internal factionalism and repression by tyrants, but also to mobilize a local population of citizens against foreign rivals. The English and American Revolutions were born out of monarchic domination seen as increasingly repressive.

Recent experiments with democratic institutions can similarly be seen as responses to social, economic, and partisan crises. Citizens increasingly disengaged or ignorant about politics? Experiment with online access (27) and deliberative bodies of volunteers (32). Partisan manipulation of voter districts and gerrymandering? Charter more neutral commissions of citizens to redraw boundaries in various states (33). Citizens resentful of self-dealing elites dominating different branches of government? Experiment with panels of "ordinary people" chosen by lot to provide regular input to government decisions (34). Also, pursue more experiments in "open and participatory" budgeting (35), so people can provide direct input and make transparent choices about how to spend public money. Citizens fatigued by the unproductive actions of Congress in the glare of media spotlights? Focus more attention on governors and regional state networks below the Federal level, and build a new politics of "localism" (36).

But major transformation of democracy may call for leaders taking advantage of major crises to stimulate action for change. The attacks of 9/11 briefly brought much of the domestic factionalism among Americans to a halt, but the "community moment" was squandered in poorly planned and eventually unpopular wars, which opened up new divisions and redirected much of the federal budget away from domestic programs (37). The recent, and still ongoing technology and information manipulation of American democratic debate and partisan politicking by foreign agents has the potential to disrupt the U.S. system even more (38). But it could be a catalyst for major change, if enough citizens see the mortal danger when shared values and free speech are threatened by external enemies with an unprecedented scale of hostile technological prowess.

Implications for Tomorrow's Democratic Leaders

These four design principles also suggest that new kinds of leaders will be needed to effect the necessary change. The "command and control" model based on the bureaucracies of traditional political parties and representative government will have to be replaced by more network-savvy and horizontal leaders (39), people who can rally and mobilize citizens, building both the scale of resources for change and the motivational enthusiasm to drive it. We've already seen echoes of this kind of leadership in the "community organizing" campaign and "visionary" early years of the Obama presidency (40); and Donald Trump, for all his deficits, has also shown how direct engagement of citizens via social media can be a force to leapfrog over many of the (now gridlocked and ineffectual) traditional processes of representative government (41). Expect to see more, and even savvier, versions of this kind of leadership in the future.

Whoever such leaders may be, if they are to be successful in building Democracy 4.0, they will also have to think more strategically and communicate more engagingly to ordinary people. They will have to build followership around "real problems to be solved" in society, rather than on popularity based on empty promises and villainizing opponents. They will have to focus as much on the design and process of a new democratic model as they do on "making policy." They must have the temperament and understanding to respect the Aristotelian core while nourishing new experiments. They must learn from past failures and capitalize on innovations that gain traction. Such qualities have in fact been seen in the leaders of democratic reinvention in the past — from

Pericles to Thomas Jefferson to Martin Luther King. There is no reason that a new generation of such leaders cannot arise again. Let us hope they are found soon.

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