For this Sunday, March 1, 2020, the Today's Issues group will discuss two essays from the New York Review of Books.

From the January 16 issue, page 42, "The Power of Morphological Thinking," by Freeman Dyson, a review of the book *Zwicky: The Outcast Genius Who Unmasked the Universe* by John Johnson Jr.

From the March 12 issue, page 26, "Dress Rehearsal for the Revolution," by Brenda Wineapple, a review of the book *American Demagogue: The Great Awakening and the Rise and Fall of Populism* by J.D. Dickey. This is a discussion of the history of populism in America up to Donald Trump.

The group meets at 9:30 on Sunday mornings in the parlor of the Religious Education building next to the Church. Everyone is invited to do the readings and join our lively discussion.

A copy of the readings is attached:

The Power of Morphological Thinking
Freeman DysonJANUARY 16, 2020 ISSUE
Zwicky: The Outcast Genius Who Unmasked the Universe
by John Johnson Jr.
Harvard University Press, 352 pp., $35.00
Fritz Zwicky at the Schmidt telescope at Palomar Observatory, California, circa 1936
Caltech Archives
Fritz Zwicky at the Schmidt telescope at Palomar Observatory, California, circa 1936
Around the year 1935, a profound change occurred in the way humans imagine the universe. It was not sudden, but it was substantially complete within a few decades. Before the change, the universe was divided into earth and sky, the earth made of perishable stuff in constant turmoil, the sky made of immortal stuff, serene and ageless. After the change, the sky became like the earth, made of the same materials and shaped by violent dynamic processes that differed only in scale from similar processes on earth.

The change from a peaceful to a violent view of the universe was the result of many discoveries by many scientists using a variety of instruments, but one man and one instrument made a major contribution to it. The man was Fritz Zwicky, the subject of a lively new biography, Zwicky: The Outcast Genius Who Unmasked the Universe by John Johnson, a writer of science books for children and a former science reporter for the Los Angeles Times. The instrument was a little eighteen-inch telescope that he installed near the summit of Mount Palomar in California in 1935, long before the big Palomar telescopes existed. That event made the year 1935 a turning point in the history of astronomy. Astronomy is the only branch of modern science that is easily understood by ordinary readers without technical training. Johnson has written a book that

explains the astronomical facts simply and clearly without using technical jargon. But the emphasis is on the human characters, not on the science.

In 1935 Zwicky was thirty-seven years old and an assistant professor in the physics department at the California Institute of Technology, where he had arrived as an immigrant from Switzerland ten years earlier. Since he had studied mathematics and physics but had no professional training as an astronomer, he was excluded from the Mount Wilson Observatory, where world-famous astronomers such as George Ellery Hale and Edwin Hubble were in charge. Hale and Hubble had the biggest telescopes in the world at their observatory. Zwicky's small, cheap telescope was the second one built with a revolutionary design by Bernhard Schmidt, an optical technician working at the Hamburg Observatory in Germany. Zwicky happened to be a friend of Schmidt and persuaded him to build it and sell it to Caltech for a low price. That telescope was the first to be used at a good site for astronomical observations, where its superb optics could produce superb pictures of faint objects in dark skies.

The Schmidt telescope had an enormous advantage over other telescopes at that time: it focused light accurately over a wide field of view. Other telescopes had accurate focus over much smaller fields. This one could produce sharp pictures of the sky with an area a hundred times larger than other telescopes. Zwicky's eighteen-inch telescope at Palomar could cover the sky a hundred times faster than the hundred-inch telescope at Mount Wilson.

Zwicky was one of the first scientists to grasp that cosmic rays—the high-energy particles that incessantly bombard the earth from all directions—are convincing evidence of a violent universe. It had been known since 1912 that they came from outer space, but nobody knew where they originated. Zwicky realized that in order to fill the vast volume of space with high-energy particles, they must somehow be the result of violent events on a grand scale. In 1933 he proposed that cosmic rays are produced in supernovae, the colossal explosions that occur sporadically in distant galaxies. He also worked out a theory that a supernova is the gravitational collapse of the core of a massive star, followed by the outward explosion of the envelope of the star. The envelope is ejected into space, while the core collapses into a neutron star. Neutron stars were imagined by Zwicky as tiny objects of enormous density. In 1933 this picture of a violent universe was a wild speculation, only confirmed thirty years later when neutron stars were observed as pulsating sources of radio waves, with one of them embedded in the debris from an old supernova.

Zwicky understood that the way to observe such events in the universe was to take pictures of the sky as rapidly as possible and look for changes from one picture to the next. He did the first photographic Sky Survey covering big areas of sky. The little Schmidt telescope was the ideal instrument for this task. He had as much time as he wanted on it. None of the bigger telescopes was fast enough to do the job, and none was available for so much of the time. With the help of a single assistant, he finished his Sky Survey in five years.

In 1969 Zwicky published Discovery, Invention, Research through the Morphological Approach. It is a personal account of his life and work, explaining how his achievements in many different enterprises were based on a way of thinking that he called morphological. The morphological thinker discards all prejudices and all prior knowledge. Even highly reliable prior knowledge may be misleading. The thinker then makes a list of all possible explanations for a phenomenon and all possible inventions that might help gather information. Only after the list is complete is one of the explanations or courses of action chosen as most reasonable. Zwicky claimed that this way of thinking led him to many important discoveries that other scientists missed. He saw his decision to do a Sky Survey with the Schmidt telescope as a result of morphological thinking. It set the pattern for all the bigger Sky Surveys that have been the main business of astronomy ever since. In his book, he proudly described what he had done:

The Schmidt telescope on Palomar Mountain, whose construction I promoted in 1935 for the specific task of supernovae, which I suspected to be the most giant eruptions of energy in the universe that could actually be discovered and observed in action from their start…. Twenty of the very elusive supernovae were discovered by my assistant…and myself in the period from 1936 until 1941…. For the construction of the 18-inch Schmidt telescope, its housing, a full-size objective prism, a small remuneration for my assistant, and the operational costs for the whole project during ten years, only about fifty thousand dollars were expended. This probably represents the highest efficiency, as measured in results achieved per dollar invested, of any telescope presently in use, (and perhaps of any ever built, with the exception of Galilei's little refractor).

Another outcome of morphological thinking was Zwicky's discovery of dark matter in 1933 through careful analysis of observations of a large cluster of galaxies. He found that the galaxies in the cluster are moving at such high velocities that they cannot be held together by the gravitational attraction of all the visible mass in the cluster. To keep the cluster from flying apart, there must be about four hundred times more mass present in it than we can see in the galaxies. Eighty years later, the evidence for dark matter has been abundantly confirmed, but its nature and origin are still unexplained. Dark matter is another major mystery in a universe that we are just beginning to explore.

Zwicky applied morphological thinking to all aspects of his life, not only to astronomy. Besides his career as an astronomer, he had three other careers in which he was an outstanding leader: as a military engineer building weapons, as a pioneer explorer of space using rockets, and as a rebuilder of libraries in many countries to repair the destruction caused by World War II. He played a major part in the organization of two large institutions, the Aerojet Corporation for developing and producing weapons and the Jet Propulsion Laboratory for exploring space. Zwicky felt a moral obligation to use his gifts as a scientist to lead efforts to solve important problems of all kinds. He saw clearly in the 1930s that the most urgent problem was to organize an effective military defense of free societies against Hitler and Stalin. That was why he became a designer of weapons and a leader of military engineering projects.

It was important to Zwicky's military thinking that he was intensely Swiss. He was a citizen of Canton Glarus, in the medieval heartland of Switzerland. Canton Glarus is a small and rugged mountain valley that won its independence in a famous battle in 1352, defeating the Austrian Empire and joining the Swiss confederation. For six hundred years the canton has practiced direct democracy, with all male citizens voting as legislators in a public assembly. The traditional culture of Switzerland rests on two basic principles. First, every male citizen is a soldier, trained and equipped to defend his homeland against invaders. Second, a Swiss citizen remains a citizen for life, even if other citizenships are acquired. These two principles made it natural for Zwicky to promote military defense in several countries. Morphological thinking and Swiss thinking fit well together, encouraging him to walk freely across national as well as professional boundaries.

In 1940, when Hitler's armies defeated France and his air force was attacking Britain, Zwicky decided it was time for him to take action. He went to Britain to talk with leading scientists about weapons and found two well-placed physicists who were willing to listen, Patrick Blackett and Frederick Lindemann. Blackett had been a navy officer in World War I and was highly respected in professional military circles. Lindemann was a friend of Winston Churchill and became his scientific adviser when Churchill became prime minister.

Zwicky discusssed with them various inventions that might help Britain defeat Hitler. His favorite was long aerial mines (LAMs), based on the idea that mines could destroy aircraft in the air as effectively as they destroy ships at sea, if they could be given a vertical reach extending over a few miles. A LAM was a long vertical wire with an explosive package hanging at the bottom and a helicopter or a parachute or a balloon supporting it at the top. If an aircraft flew into the wire, the wire would cut a groove in the leading edge of a wing, then slide upward in the groove until the explosive hit the underside of the wing and detonated. The 1940 Battle of Britain was a fight between two air forces for command of the air over southeast England. Zwicky imagined that it could be won by the British with LAMs deployed in large numbers over the southeast coast so that German aircraft could not penetrate British airspace.

Blackett rejected the LAM as an impractical solution to the problem of air defense. German aircraft flying low over the English Channel could cross the coastline in far less time than it would take to put a barrier of LAMs in place. The LAMs would need to be constantly replaced, which would be slow and complicated. And it was easy to imagine simple countermeasures that the Germans could attach to the wings of their aircraft to make LAMs ineffective. Blackett thanked Zwicky for his advice and sent him back to America.

Unexpectedly, LAMs emerged later in Britain as a serious concern. It turned out that Zwicky had convinced Lindemann that they might be a decisive weapon, and Lindemann had convinced Churchill. Churchill insisted that considerable efforts be expended on testing and deploying them. In spite of his demands, no LAMs were ever operationally tested. Zwicky's first venture into war-fighting was a lamentable failure. He never imagined the two inventions that gave

Britain, and later the United States, military advantages against Hitler: microwave radar and computer-aided code-breaking.

Zwicky tried again in 1940 to be helpful to the defenders of freedom, this time in his native Switzerland. He volunteered his services to the Swiss government as a military adviser, suggesting a scheme for deploying Swiss fighter aircraft on mobile runways floating on mountain lakes, where they would be difficult for German aircraft to find. Even if the Germans had air superiority over most of Switzerland, Swiss aircraft could survive and protect troops in the mountains. The Swiss authorities politely informed him that they did not need his services. Without his help, they successfully kept Hitler out of Switzerland. Swiss cities were bombed accidentally from time to time by British and American aircraft, less frequently by Germans.

Zwicky's career as a rebuilder of war-damaged libraries began in 1941, when he decided that the problem of reestablishing a peaceful world after the war was as important as the problem of defeating Hitler. He used the morphological method to identify the most effective way for him to contribute to the postwar restoration of international friendship and decided that scientific journals were the best tool for this purpose. In one day in 1941 he collected eighty-three volumes of the Astrophysical Journal that had been discarded as surplus by various institutions in California.

At first he worked single-handedly, collecting and packing volumes into boxes for future shipment to damaged libraries, but he was quickly overwhelmed by the quantity of journals. He then established the Committee for Aid to War-Stricken Scientific Libraries and used his formidable talent as a fund-raiser to pay for the packing and shipping. When the war ended, the committee was ready to start shipping boxes of journals to France, Germany, Korea, Japan, Taiwan, the Philippines, Nigeria, and other countries where war had destroyed buildings and interrupted communications. It continued for ten years to collect and distribute journals on an enormous scale, with a total value of about $1 million at 1950 prices. The committee remained active until 1957, when Zwicky disbanded it to devote the next ten years of his life to astronomy.

Meanwhile, he had been working with Aerojet Gen to develop and produce rockets for the American military. He was not giving strategic advice but doing experiments with rockets and jet engines. In 1943 the company established a research department with Zwicky as director. In an amazingly short time he was supplying the US Navy with large numbers of jet-assisted take-off (JATO) engines. The JATO engine was a quick-burning high-thrust rocket. A pair of them attached to the sides of an aircraft could push it into flight from a short runway on the deck of a small aircraft carrier. They made it possible for small US carriers to destroy larger Japanese carriers. Zwicky's leadership as a scientist and as a manager produced an abundant supply of JATO engines that helped to cripple the Japanese navy in 1945.

Zwicky was aware of the German rocket program that bombarded London with a substantial number of V2 rockets in 1944. He knew that the Germans' rocket technology was in many ways ahead of that of the Americans, and he considered it important to ensure that the German

rocket experts fell into American, not Soviet, hands. Following his usual custom, he took personal charge of things and a few days before the war ended arrived in Germany, where he found Wernher von Braun, the leader of the rocket program. He quickly established friendly relations with him, discussing opportunities for von Braun and his team to continue their work in America and smoothing the way for them to find homes and jobs in Alabama rather than in Siberia.

After the war ended, the Aerojet company grew rapidly, moving from JATO engines to long-range missiles and spacecraft of many kinds. Zwicky continued to direct the research department, receiving clearance to work on top-secret air force and navy projects while refusing to become an American citizen. In 1949 he was the first noncitizen to be awarded the Presidential Medal of Freedom, the highest civilian honor of the United States. The citation said that he received it for many services to the US military, but mainly because he “contributed immeasurably to Air Technical Intelligence.” This phrase does not spell out what Zwicky did. It is easy to guess that he was teaching the US Air Force how to fly high over Soviet territory using U2 airplanes equipped with cameras of advanced design. His unique skill as an astronomical photographer was precisely what was needed to give spy planes high optical performance with a wide field of view.

Zwicky was as zealous in his opposition to Stalin as he had been to Hitler. He had been an enemy of Communism long before Stalin took power in Russia. During World War I, Zwicky was a student in Zurich while Lenin was living nearby. While waiting for his chance to start a revolution in Russia, Lenin tried to arouse revolutionary activities among the workers of Zurich, organizing gangs of young hooligans to engage in brawls with the Zurich police. Zwicky was alarmed and disgusted by his firsthand observation of Lenin’s tactics. He left school for a while to organize a federation of Swiss workers and employers to promote reform without revolution. Thirty years later, he was a veteran cold war warrior, eager to beat Stalin in the skies over Russia.

All through his life, Zwicky loved to engage in public disputes with his colleagues, to prove them wrong and also to insult them personally. He arrived at Caltech at the same time as two other young men who made brilliant careers in later life, the German astronomer Walter Baade and the American physicist Robert Oppenheimer. He made enemies of both of them, by calling Baade a Nazi and Oppenheimer a Communist. He took special delight in attacking famous people in high positions that he considered undeserved. He was friendly to students and children, hostile to journal editors and senior professors. His colleagues, having no wish to fight with him, found it best to ignore him.

Johnson shows us a vivid picture of Zwicky at a dinner party in 1942:

Zwicky loved talking about Morphology. He launched into a detailed description of how he approached every problem. Morphology was not just a way of thinking, he said, it was “a way of life…attempting to realize the genius of each individual and each race.” The prime directive, as

he put it, was “to generalize all problems before drawing fallacious conclusions.” In practice, this meant keeping one’s mind open to all possible solutions, no matter how seemingly impractical…. He believed that “if the earth and humanity are going to survive at all, the next cultural style will be that of the age of morphology.”

After he reached the age of sixty, Zwicky became increasingly isolated. In 1955, in spite of his Medal of Freedom, he had lost his military clearances. Intimidated by Senator Joseph McCarthy and other demagogues in Congress, the Air Force demanded that Zwicky become a US citizen if he wanted to continue to work on Air Technical Intelligence. He resolutely refused. He would always remain Swiss, and so his military career ended. In 1962, for the same reason, he was forced to resign from his job at the Aerojet Corporation.

For the next few years he worked full-time as an astronomer. As a Caltech professor he had his share of observing time on the two big telescopes, the 100-inch on Mount Wilson and the 200-inch on Mount Palomar. He discovered a total of 123 supernovae, a large enough number for him to identify several different types with different patterns of behavior. He completed his monumental six-volume catalog of galaxies and clusters of galaxies, summarizing the results of the Sky Survey done twenty years earlier with the little Schmidt telescope. In 1966 he retired as a Caltech professor and lost his access to all the telescopes. Finally, in 1968 he was banished from his office and given a meager space in the subbasement of the Caltech physics building. At the age of seventy, all his careers were over, and his achievements were largely forgotten.

But Zwicky’s final years were not gloomy. He married twice, and his second marriage was to a much younger woman who bore him three daughters. Margrit Zürcher was also from Canton Glarus and knew how to handle his stormy temperament. He doted on his wife and daughters and settled into a harmonious family life. In the last year of his life he paid for a stylish wedding in Switzerland for his middle daughter and presided at the ceremony, where he preached a sermon full of fatherly advice, urging her to use morphological methods to deal with the problems of matrimony.

Zwicky’s success as a morphological thinker gave rise to an often-repeated joke that the morphological method is an infallible way to make correct decisions, with one defect: it only works if your name happens to be Zwicky. The joke is usually true, but not always. Theodore Taylor was another scientist who used the morphological method. Taylor was an undergraduate at Caltech who became a personal friend of Zwicky and learned the method directly from him. After World War II ended, Taylor was at the Los Alamos laboratory designing nuclear weapons—a job well matched to morphological thinking. Taylor imagined all possible arrangements of nuclear materials and picked out those that were best suited to particular military missions. He quickly became the leading developer of small weapons at Los Alamos, changing the main thrust of the laboratory from megaton monsters to kiloton devices that became tactical weapons. Morphological thinking gave us tactical nukes.

After a few years at Los Alamos, Taylor turned his morphological thinking to the design of spacecraft. He looked without prejudice at the whole range of possible spacecraft and chose the design best suited to the task of exploring the entire solar system at an acceptable cost. It would use small nuclear bombs in large quantities to propel spacecraft with thousand-ton payloads to high velocities, enabling them to reach Mars in a few months and Saturn in a few years. He gave the name Project Orion to his plan and organized it as a private venture funded in part by the US Air Force at the General Atomics company in California. Besides being a spectacularly thunderous way to travel to the planets, Project Orion would have given Taylor an opportunity to put his bombs to better use than killing people. The project ended after the 1963 Partial Test Ban Treaty made nuclear explosions in space illegal. The memory of the project remains, like Zwicky's Long Aerial Mines, as a demonstration of the power and the limitations of morphological thinking.

Dress Rehearsal for the Revolution
Brenda WineappleMARCH 12, 2020 ISSUE
American Demagogue: The Great Awakening and the Rise and Fall of Populism
by J.D. Dickey
Pegasus, 370 pp., $29.95
George Whitefield delivering a sermon in England; painting by John Collet, 1700s
Bridgeman Images
George Whitefield delivering a sermon in England; painting by John Collet, 1700s
"The peculiar office of a demagogue is to advance his own interests, by affecting a deep devotion to the interests of the people," James Fenimore Cooper wrote in The American Democrat, an 1838 political pamphlet long dismissed as a screed. But it's relevant today for pretty obvious reasons. The word "demagogue" falls easily from the lips of politicians, pundits, and historians, often to provide Donald Trump's harangues with a usable American and mainly masculine past—and perhaps to palliate the alarm with which we hear them. He's no outlier, it's suggested, and besides we've survived the other demagogues with whom he's compared: Andrew Jackson (a comparison Trump relishes), Andrew Johnson, George Wallace, Joseph McCarthy, and even William Jennings Bryan, who might be considered far more of a populist than a demagogue.* (The Populists sprang up in the Midwest and South during the 1880s and 1890s to protest economic inequality, corporations, and "the money power." Bryan ran for president on both the Democratic and the Populist tickets in 1896, though such distinctions—populist, demagogue, populist demagogue—often get lost in the current political climate.)

Unsurprisingly, then, J.D. Dickey's American Demagogue: The Great Awakening and the Rise and Fall of Populism invokes both demagoguery and populism in its title and spends a good part of its introduction on Trump: his rallies and rants, his attacks on minorities and critics, his infantile slogans and invective, his condemnation of "elites," his conspiracy theories. "To his opponents," Dickey writes, "Trump is such an ideal example of a demagogue that it stands as a

wonder he does not read or study history, since so much of what makes him typical of demagoguery has appeared again and again in the annals of American life."

Demagogues were "present in American public life even before there was an America," Dickey observes, referring to his main subject, the evangelical ministers, particularly the Englishman George Whitefield, who crisscrossed America and helped spawn the religious revivals known as the Great Awakening that spread throughout Britain and America in the mid-eighteenth century. Trump then vanishes from Dickey's pages, not to surface again until his fleeting appearance in the postscript, for Dickey's subject isn't really Trump or demagoguery per se. Rather, he tells us in graceful prose how eighteenth-century American evangelists held their audiences spellbound with invective, histrionics, bellicosity, and divisiveness—the same techniques employed by one demagogue after another.

The frightening specter of demagoguery notwithstanding, Dickey can be quite sympathetic to these evangelists. For while Whitefield could easily be identified as a demagogue, Dickey prefers to hedge a bit, admiring, it seems, Whitefield's persistence and even at times his methods. For one thing, he was an adroit marketer: "What an angry tweet is to the 21st century, an angry pamphlet was to the 18th," Dickey observes, "a method of mass communication that enabled the demagogue to target his audience in the quickest and most effective fashion." It was an age of newspapers, published sermons, broadsides, and books as well as increased literacy, and Whitefield knew how to take advantage of them. He published his journals and issued his sermons in serial form, and by 1741 he had rocketed to international fame.

Whitefield was born in 1714 in Gloucester, England; his innkeeper father died when he was two, and his mother arranged for him to attend Pembroke College, Oxford, tuition-free, working as a servant to the college's far wealthier fellows. At Oxford, he met John and Charles Wesley, members of a small religious group, and he was deeply influenced by Henry Scougal's The Life of God in the Soul of Man. "True religion is an union of the soul with God," Scougal proclaimed—a phrase Whitefield said tore right into his soul. To obtain such a union, Whitefield fasted until he almost died, but he was rewarded with the transformational experience—the conversion—he had so desperately sought.

Calling it the "New Birth," he was soon encouraging his parishioners (he was ordained in the Church of England in 1736) to let God's grace convert them too. They needed no intercessors: God could change you, directly, if you allowed his grace to enter. But Whitefield, a Calvinist to the core, also believed that all of us are sinners and salvation is preordained; no matter the number of one's good works, God had already chosen the Elect, who would sit with him at his table. Still, he sincerely preached a "religion of the heart," as Dickey describes it, "in its full convulsive, cataclysmic power, offering the promise of salvation to sinners, showing the fire of Christianity."

Whitefield preached wherever and whenever the spirit moved him; no church, not even the Church of England, could confine him. Dubbed the "Grand Itinerant," he delivered his sermons

“without doors,” as he said, in marketplaces and meadows; his listeners often perched in treetops to hear the magnetic young man with the round face and lazy left eye. (Detractors would later baptize him “Dr. Squintum.”) Creating a commotion throughout Britain, he spoke off the cuff, delivering homilies with drama and emotion. “His eloquence had a wonderful power over the hearts and purses of his hearers, of which I myself was an instance,” Benjamin Franklin recalled. Newspapers claimed that about a million Britons heard him speak during the summer of 1739 alone. “His popularity is chiefly owing to the peculiarity of his manner,” Samuel Johnson wryly commented. “He would be followed by crowds were he to wear a night-cap in the pulpit.” And when he decided to return to America in 1739 (he had been there briefly in 1738) for a fifteen-month tour, his reputation amply preceded him.

It preceded him because he and a friend, William Seward, a stockjobber turned Whitefield’s publicist, shamelessly promoted him, supplying inflated accounts of his crowd sizes and reporting how he mesmerized thousands with his blistering rhetoric and tearful appeals. In 1739 Whitefield stood on the courthouse steps in Philadelphia, where he acted out the biblical story of Abraham and Isaac. First impersonating the voice of Abraham, commanded by God to kill his son, Whitefield then became Isaac, brimming with fear, and then Abraham again, raising a knife (imaginary) before he again transformed himself, this time into God’s angel, who spared the boy and praised the God-loving father. The crowd went wild.

He preached to a throng of 15,000 on the Boston Common, and at one local meetinghouse so many people had jammed inside that when a floorboard splintered, the crowd panicked. People jumped from the galleries and windows. By the time Whitefield arrived, five were dead. The Grand Itinerant looked about, blamed the devil for the catastrophe, and decided to preach anyway, outdoors in the cold rain. “God was pleased to give me presence of mind,” he explained.

Whitefield’s career was also boosted by none other than the indefatigable Franklin, who, though an avowed deist, shrewdly arranged to become the primary publisher of Whitefield’s journals as well as to print his sermons in his Pennsylvania Gazette. Franklin had been publishing news and opinion pieces about Whitefield and placed him on the cover eight times, and while he was no convert, he appreciated Whitefield’s persistence, his unpretentiousness, and his apparent piety. Franklin preferred ethical behavior, virtue, and charity to organized religion. “A virtuous heretic shall be saved,” he would write, “before a wicked Christian.” But when Whitefield claimed that the legendary Archbishop of Canterbury John Tillotson “knew no more of true Christianity than Mahomet” and mocked the deceased theologian’s praise of reason, wisdom, good moral conduct, and good works, Franklin hesitated. Franklin had admired Tillotson’s reasonableness. But according to Dickey, he published Whitefield’s anti-Tillotson diatribes because it was good business and put one of the anti-Tillotson articles on the front page of the Gazette. Soon after, he bound the tracts together in a single, sensational volume. It sold well.

The irascible Grand Itinerant was taking on the Church of England, which only stirred more controversy and sold more newspapers. He was also attacking Presbyterians and Quakers,

branding the latter as “bigoted, self-righteous.” Criticism of him grew, and many of his former friends denounced him as an ignorant, overzealous prophet and rabid “enthusiast”—i.e., a fanatic. “He is a very wretched divine,” said an Anglican layman who heard Whitefield preach in Maryland. “If he is sincere, he certainly is a violent enthusiast. If not, he is a most vain and arrogant hypocrite.” Denunciation exhilarated Whitefield. “The more I am opposed, the more joy I feel,” he cried, and railed even more, particularly against the clerics who dared disparage him. “The reason why Congregations have been so dead,” he said, “is because dead Men preach to them.”

Whitefield had read Jonathan Edwards’s Faithful Narrative of the Surprising Work of God (1737), which documented the revival in 1734–1735 among the congregants of Northampton, Massachusetts. Though no showman, Edwards had nevertheless galvanized his parishioners when he invoked the horrors of hellfire to warn them about the wages of their sinful behavior. But recently Edwards had been concerned that these parishioners had fallen back into their sinful ways and that the revival he’d inspired had had no lasting effect. Hoping that Whitefield could revitalize them, he welcomed the English preacher to Northampton. Whitefield impressed Edwards, but when he attacked so-called unconverted ministers as insufficiently spiritual, Edwards mildly pushed back. “Mr. Whitefield liked me not so well,” Edwards later noted, “for my opposing these things.” Lest his congregants worship the messenger rather than the message, he began to sermonize against blindly following self-promoting preachers and to teach, as he said, “the difference between what is spiritual and what is merely imaginary.”

Edwards’s criticism of Whitefield was balmy compared to the hostility from other quarters. The Reverend Alexander Garden of Charles Town, South Carolina, described Whitefield’s sermons as “a medley of truth and falsehood, sense and nonsense, served up with pride and virulence, and other like saucy ingredients.” Whitefield was denounced as a “pedlar of divinity”; it was said that he brought chaos to America. “The country was never in a more critical state, and how things will finally turn out, God only knows,” said the liberal Reverend Charles Chauncy of Boston’s First Church. Initially moved by the religious revival, Chauncy now thought Whitefield twisted the words of God to whip parishioners into hysterical frenzies and cause dissension in the churches. Chauncy visited meetinghouse after meetinghouse throughout New England and the Middle Colonies to document the revival’s

strange effects upon the body, such as swooning away and falling to the ground…bitter shriekings and screamings; convulsion-like tremblings and agitations, strugglings and tumblings, which, in some instances, have been attended with indecencies I shan’t mention.

Though respectful, Dickey appears less impressed by skeptics such as Chauncy than by Whitefield’s presumed sincerity—and by other radical American evangelists whose exploits, or antics, he recounts at length in “Sons,” the second section of his book. Andrew Croswell would enter churches other than his own, rip off his shirt in a frenzy, and lead the parishioners, singing and crying, outside into the street. Dickey sees Croswell as a proto-American revolutionary who preached that “Americans live in a freer air, more generally taste the sweets of liberty, and being

nearer an equality of birth and wealth…they are generally more knowing than the common people of Europe." Moreover, in addition to denouncing British authority, Croswell throughout his career condemned slavery and the slave trade, corporal punishment, and the cruelties of the penal system.

Croswell had been captivated by James Davenport, who could preach for twenty-four hours straight, gesticulating and ranting. Davenport was also notorious for denouncing any minister who denied him entrance to his church, declaring that parishioners should sooner drink rat poison than listen to these unconverted miscreants. Spurred by his inflammatory visit to New Haven, some students at Yale castigated their tutors as irreligious stooges, and some walked out. The rector had to close down the school for two months.

When Connecticut passed an anti-itinerant law, Davenport ignored it. Charged with disturbing the peace and inciting havoc, he was deported from the colony. Undaunted, in the summer of 1742 he tore into Boston, where he led mobs of people through the streets. "It is impossible to relate the convulsions into which the whole country is thrown by a set of enthusiasts that strole about haranguing the admiring vulgar in extempore nonsense," a Salem minister declared, "nor is it confined to these only, for men, women, children, servants and Negroes are now become (as they phrase it) exhorters." Davenport was again arrested, declared insane at his trial, and expelled from the Massachusetts Bay Colony. But he returned to Connecticut the following year to organize a church of New London separatists. God then spoke to him with instructions to purge his followers of their finery—wigs and jewels—in a huge bonfire. A few days later, he organized a burning of books inspired by the devil, like those of Increase Mather and Charles Chauncy. The next day, another fire: Davenport insisted that his parishioners torch their clothes—laces and collars and velvet cloaks—but when he joined them, taking off his pants and tossing them onto the pyre, even his allies turned away.

Yet Dickey claims that evangelists like Whitefield, Davenport, and Croswell inspired

the masses in all their ragged and untamed emotion, in all their heady spirits and unlearned ways…. With their visions and prophecies, their outbursts and exhortations, they were changing the face of the revival, seizing it from the men of the cloth without mercy or permission.

Because those who had experienced the New Birth could speak of their direct communion with God, they could potentially create "dissenting" religious denominations of their own.

These leaders included women. One was Sarah Osborn of Newport, Rhode Island, who managed to encourage a revival there in spite of, or perhaps because of, the many hardships she had faced: bankruptcy, the death of her only son at age eleven, the infirmity of her husband, and the care of a household that included a stepson, his wife, and five step-grandchildren. In 1765, when a number of free blacks asked Osborn if they could use her home to pray, she arranged a series of prayer meetings that soon became so popular with slaves, freedmen, and women—around seventy people in all—that they became almost daily occurrences. Teenagers,

women, white and black children, as well as heads of families came to hear Osborn speak of God's grace.

By the following summer, about five hundred people a week were meeting in her home. And when she and her congregants helped secure for Samuel Hopkins the pulpit of Newport's First Church, Hopkins too opened his door to free and enslaved blacks. With the more liberal Reverend Ezra Stiles of the Second Congregational Church, he helped raise funds to send two young black men, John Quamino and Bristol Yamma, to the College of New Jersey (later renamed Princeton). "Perhaps only an extreme Calvinist could have been brave enough in 1776 to aim an antislavery sermon to a group of revolutionaries that included many slave owners," Dickey writes.

That Osborn and Hopkins were the "willing agents" of the black crusade against slavery suggests one of the unintended consequences of the Great Awakening, according to Dickey. Whitefield, however, owned slaves. Evidently rationalizing, Dickey quickly points out that Franklin had owned at least two slaves earlier in his life. But over time Franklin's view of slavery changed. In 1787 he became president of the Philadelphia Society for the Relief of Free Negroes Unlawfully Held in Bondage and just before his death petitioned Congress to abolish slavery altogether. Whitefield was a different matter. Though he had advocated for the benevolent treatment of the enslaved (teaching them the gospel), he also insisted that converting them did not imply granting them freedom.

Whitefield had first arrived in South Carolina just after the so-called Stono Rebellion of 1739, when about one hundred slaves near Charles Town killed twenty whites. A hastily dispatched militia captured and executed them, then stuck their heads on pikes along the road as a warning to other would-be rebels. Whitefield was accused of indirectly fomenting slave uprisings, but as Dickey sharply notes, "the Grand Itinerant had no interest whatsoever in leading slave rebellions and, if anything, was even more frightened of black people than other revivalists." In fact, Whitefield went so far as to argue that slavery should be legalized in Georgia (it was banned at the time) to bolster the colony's economy, and even before legalization, he acquired slaves to work in the orphanage he'd established there.

But as Dickey also observes, Whitefield "had only a dim understanding of the force of the energy he wielded." That theme is crucial to the book's third section, "Spirits," which advances yet another unintended consequence of the revivals: that they were an essential ingredient in the colonists' separation from Great Britain. Hostile to American evangelicals and their defiance of the Church of England, the clerics of Great Britain had inadvertently managed to bring together the contending sects of American Protestants, who adopted the aggressive rhetoric of the evangelicals to protest English tyranny. What's more, Dickey contends that the "common people" fought vigorously against the British because they conceived the struggle "in a cosmic, often apocalyptic light."

In this, Dickey is influenced by Alan Heimert's Religion and the American Mind (1966), in which Heimert claimed, controversially at the time, that evangelical religion provided pre-revolutionary Americans with a radical political ideology. Dickey also largely embraces Thomas S. Kidd's nuanced God of Liberty: A Religious History of the American Revolution (2010), which argues that the decisive legacy of revivalism is the spirit of religious freedom—but how much that spirit led directly to the American Revolution is a complicated question. For if various evangelicals were linked by a common enemy, it's also true that not all evangelicals were patriots, and vice versa.

Still, for Dickey, the revivals were a dress rehearsal for revolution; they fostered a democratic revolt against privilege throughout the colonies, despite regional or doctrinal differences, though none of this is remotely true for the way Native American religions or Catholicism was perceived. "We have not only a right to think for ourselves in matters of religion, but to act for ourselves also," Dickey quotes Reverend Jonathan Mayhew. "Nor has any man whatever, whether of a civil or sacred character, any authority to control us." Not an evangelist himself, Mayhew had apparently been influenced mightily by them, in his mounting of publicity campaigns and the very passion with which he spurned corruption, tyranny, and abuse of power.

Further, both radical and moderate revivalists employed the incendiary rhetoric pioneered by Whitefield in their crusade for political rights and ultimately an America independent of British rule. And referring to the unblemished, twenty-five-year friendship between Whitefield and Franklin, Dickey broadly notes that while these men may not have agreed about religion, they both distrusted traditions, institutions, and hierarchies. It's a sweeping claim, to be sure, but certainly mass printing and marketing were crucial to fomenting the religious awakening: books, sermons, broadsides, and letters circulated the rhetoric of revival throughout the colonies and Great Britain.

There was an insurgency afoot, one that combined commercialism, literacy, religion, and politics. Consider Samuel Adams, apparently "a student of the new revivalists," whose revolutionary fervor Dickey links to the rhetoric of the evangelicals and whose flair for mass communication he also learned from them. Surely such comparisons—particularly of rhetoric, imagery, range of associations and gender biases, and the way Scripture is made demotic—deserve more analysis. This is all the more interesting since Adams was trained at Harvard, as was Croswell, Davenport at Yale, and Whitefield at Oxford. They were not the unlettered crowd—far from it.

A masterful synthesizer of secondary scholarship, Dickey ends his book with a postscript that turns our attention back to the matter of populism, his real subject (not demagoguery or Donald Trump). As he wrote in the first pages of his book, his intention has been to "explain the Great Awakening through the lens of populism." Stoked often by resentment at a status quo regarded as hidebound, elitist, or institutionalist, populism encompasses ideologies of the right as well as the left, though Dickey highlights the salutary implications. For whatever its excesses, the

particular brand of revivalist populism he chronicles may resonate today: it welcomed women as well as men, the free and the enslaved; it helped to motivate the antislavery ministry of Samuel Hopkins, which eventually radiated outward; and blacks and Native Americans served as deacons or agents (though they were seldom considered free or equal).

Most crucially, it challenged authority—ultimately British authority. Citing Bryan as the nineteenth-century heir of George Whitefield, and then briefly touching on Patrick Henry, Andrew Jackson, and Charles Grandison Finney, the antislavery evangelist of the Second Great Awakening, Dickey suggests in rapid-fire exhortation—perhaps evangelizing himself—that the Great Awakening was a popular and inclusive uprising spearheaded by Whitefield and his apparent demagoguery but by no means confined by them. And that uprising presumably made Americans of us all.

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See, for instance, Daniel Howe, “The Nineteenth-Century Trump,” NYR Daily, June 27, 2017; Jelani Cobb, “The Model for Donald Trump’s Media Relations Is Joseph McCarthy,” The New Yorker, September 22, 2016; Tim Reuter, “Before Trump, There Was William Jennings Bryan,” Forbes, June 20, 2016; Daniel Klinghard, “Forget Hitler: Trump Is the New William Jennings Bryan,” US News and World Report, March 4, 2016; and Patrick Healy and Maggie Haberman, “95,000 Words, Many of Them Ominous, from Donald Trump’s Tongue,” The New York Times, December 5, 2015. ↩