

**The Invention of Air**  
**Rev. Rod Richards**  
**Unitarian Universalist Church of Southeastern Arizona**  
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**Reading**

From [\*The Invention of Air: A Story of Science, Faith, Revolution and the Birth of America\*](#) by Steven Johnson:

A few days before I started writing this book, a leading candidate for the presidency of the United States was asked on national television whether he believed in the theory of evolution. He shrugged off the question with a dismissive jab of humor. “It’s interesting that that question would even be asked of someone running for president,” he said. “I’m not planning on writing the curriculum for an eighth-grade science book. I’m asking for the opportunity to be president of the United States.”

It was a funny line, but the joke only worked in a specific intellectual context. For the statement to make sense, the speaker had to share one basic assumption with his audience: that “science” was some kind of specialized intellectual field, about which political leaders needn’t know anything to do their business. Imagine a candidate dismissing a question about his foreign policy experience by saying he was running for president and not writing a textbook on international affairs. The joke wouldn’t make sense, because we assume that foreign policy expertise is a central qualification for the chief executive. But science? That’s for the guys in lab coats. That line has stayed with me since, because the web of events at the center of this book suggests that its basic assumptions are fundamentally flawed. If there is an overarching moral to this story, it is that vital fields of intellectual achievement cannot be cordoned off from one another and relegated to the specialists, that politics can and should be usefully informed by the insights of science. The protagonists of this story lived in a climate where ideas flowed easily between the realms of politics, philosophy, religion, and science. The closest thing to a hero in this book—the chemist, theologian, and political theorist Joseph Priestley—spent his whole career in the space that connects those different fields...

With Priestley, the mystery is not just that he was able to hit upon so many important ideas in such a brief time frame, it’s also that those ideas were scattered across so many different fields...There were literally dozens of paradigm shifts in distinct fields during Priestley’s lifetime, watershed moments of sudden progress where new rules and frameworks of understanding emerged. Priestley alone was a transformative figure in four of them: chemistry, electricity, politics, and faith.

**Sermon**

Joseph Priestley did not *invent* air. The title of Steven Johnson’s book about Priestley refers to the original “invention of air” by the ecosystem, two billion years ago cyanobacteria concocting a metabolic strategy that envelops the planet with oxygen, that results over vast amounts of time and through a variety of events (this is the life as we know it. Johnson marvels at the awesome link between this original invention of air and our human understanding of the process that made that invention possible and explores how it was that Joseph Priestley was positioned to see the problem of air at a time when air was not generally considered a tangible subject for investigation.

Joseph Priestley is an amazing guy, no doubt about that. I know that sounds trite, but reading about Priestley the thought kept coming to my mind, in its most sincere form: this guy is amazing! Scientific investigation, political action, religious reflection, historical research, invention, experimentation,

preaching, teaching, working, writing. I feel great admiration as I ponder Priestley's life...and I also feel a great distance between us. Though he lived only a little over 200 years ago, it feels like he is a resident of a vastly different world than the one I live in. So I feel a great sense of awe and admiration...as well as distance; disconnection. But let's start with the admiration.

Priestley is a prime example of the great potential we have as human beings.

Possibly the greatest surprise about Priestley is that he is not more well-known. He has merited only a small handful of biographies. You may not recognize his name, or only have a vague recollection of hearing it in a long ago science class. But though only a small number of books are specifically about Joseph Priestley, he does hold a prominent place in the biographies of other...well, *prominent* people: Benjamin Franklin, Thomas Jefferson, and John Adams just to name a few...

Priestley is the one who, outside of many of his own accomplishments that you've heard about today, forever connected Benjamin Franklin to a kite and a key when he retold the story of Franklin's experiment with electricity.

It was Joseph Priestley who offered Thomas Jefferson a way to reclaim Christianity with his book [\*History of the Corruptions of Christianity\*](#). Jefferson wrote to John Adams that once having read Priestley's theological writings, they provided the basis for his faith. Under attack for his liberal religious beliefs just after becoming President in 1801, Jefferson said with reference to the title of Priestley's book: "To the corruptions of Christianity, I am indeed opposed, but not to the genuine precepts of Jesus himself...I am a Christian, in the only sense in which he wished anyone to be: sincerely attached to his doctrines in preference to all others, ascribing himself every human excellence and believing he never claimed any other." This was Priestley's version of Unitarian Christianity shining through his words.

And Priestley had an important, if little known, influence on the very ideas that propelled the American Revolution, opposing British oppression of the colonies when he lived in England and opposing an early attack on civil liberties in the newly formed United States. Writer Steven Johnson points out that Thomas Jefferson and John Adams wrote 165 letters to each other. In those letters, Benjamin Franklin is mentioned five times, George Washington three times, Alexander Hamilton two times, and Joseph Priestley *fifty-two times*.

And, I cannot neglect to mention, though his is not one of the first names you hear about in Unitarian history, that Joseph Priestley was a Unitarian minister, instrumental in the beginnings of Unitarianism in both Britain and the United States. We have a Joseph Priestley District in the Unitarian Universalist Association (serving 67 congregations in Pennsylvania, New Jersey, Delaware, Maryland, Northern Virginia, and the District of Columbia), and you will find numerous congregations that have named themselves in his honor.

And in a way, it is quite fitting that Priestley appears, not as superstar, but supporting actor--backup singer, if you will—in so many stories because he was a passionate, generous, creative *collaborator* throughout his life.

He met Benjamin Franklin through a group called The Honest Whigs that Franklin helped found. This group of freethinkers met at a London coffeehouse in St. Paul's churchyard and engaged in long rambling sessions on the ramifications of new scientific ideas in caffeinated community.

He later became a member of another group devoted to sharing the fruits of their scientific investigations, The Lunar Society, which included (as mentioned before) Charles Darwin's grandfathers Erasmus Darwin, an evolutionary theorist in his own right, and Josiah Wedgwood of ceramic ware fame, as well as toymaker Matthew Boulton and James Watt, inventor of the steam engine. This group grew so enamored with Priestley's capabilities that they ended up funding Priestley's scientific work...though they didn't publicize the arrangement, as Priestley had already become known as a political and religious radical. One of their big challenges with Priestley, who was so used to sharing all of his investigations as widely as possible, was to get him to restrict his sharing of some of those findings, especially the ones that they could use in their businesses, to the Lunar Society.

Joseph Priestley was devoted, in all his endeavors, to free inquiry. That was the way to find out about things; you had to try new things and ask new questions until you found the question that was relevant and the answer that made a difference, that gave a new foundation from which to begin asking questions that one would have never known to ask unless you had been free to ask the first questions. He was not constrained by supposed barriers between different fields of enquiry because his curiosity ranged across them freely, unaware of any barriers. A scientific theory could have religious implications, just as a theological conclusion could have political consequences.

His collaborative method arose from that same devotion: the way to find out about things was to tell what you knew (or what you thought you knew) and to listen to what other people had found (or thought they had found) and to see if the meeting of those insights, conclusions, opinions might inspire the participants in the exchange to a new revelation.

The optimism--incurable optimism some said--that stayed with him throughout his life is what propelled this devotion. So enamored was he with the particularities of life, in all its forms, that each discovery led to more exciting questions that he wished to explore. And more than that, he believed deeply that the answers would matter. Fully immersed in the ethos of the Enlightenment, he fully expected that greater knowledge and understanding would lead to governments that were more just, religions that were more reasonable, technological advances that would benefit all humankind.

Priestley defended the opening of the first Unitarian church in England by invoking the same principles that governed his scientific research and with the same amount of unquenchable hope for the future: "The only method of attaining to a truly valuable agreement is to promote the most perfect freedom of thinking and acting...in order that every point of difference may have an opportunity of being fully canvassed, not doubting but that Truth will prevail, and that then a rational, firm, and truly valuable union will take place."

And I respect and admire that faith in free enquiry; I envy it. But, sadly enough, it may be Priestley's optimism that makes him seem so distant. My cynical, 21<sup>st</sup> century self says, "Oh, Joe, easy for you to say! There you were smack dab in the middle of the Enlightenment. You lived in a world where amateur scientists like yourself could shift whole paradigms with your discoveries. You lived in a world where a bunch of radicals could sit around in a coffee shop talking about changing the world...and then go do it! You lived in a world where ministers--and I still can't figure this one out--where ministers had time to also be brilliant chemists, thoughtful theologians, prolific writers, and political activists. You lived in a world where it still seemed like knowledge could improve our lives; where it still felt like progress was real; where the future seemed brighter than the past. Oh, Joe, easy for you to say!"

My cynical self imagined how sadly out of place Joseph Priestley would be in *my* world; imagined how his optimism would wither under the brutal light of present-day realities and brutalities. What was easy for him to believe *then* would be nearly impossible for him to believe *now*, said my cynical self.

But my thoughtful self responded. (I'm sorry if I scare you, but these conversations with my selves go on all the time.) My thoughtful self responded, "Take another look at his life. Was it really so easy for Joseph Priestley to retain that faith and optimism?"

In a sermon in 1785 that was subsequently published as a pamphlet called *The Importance and Extent of Free Enquiry*, Priestley said, "We are, as it were, laying gunpowder, grain by grain, under the old building of error and superstition, which a single spark may hereafter inflame, so as to produce an instantaneous explosion; in consequence of which that edifice, the erection of which has been the work of ages, may be overturned in a moment, and so effectually as that the same foundation can never be built upon again."

This was powerfully provocative language from the pulpit, especially in a country that did not even pretend to a separation between church and state. For this, and other statements and public positions, Priestley was identified as a dangerous troublemaker and given the nickname, "Gunpowder Joe." When conservative elites managed to incite a mob—and mobs were incited back then just the way they are incited now, with manufactured fear and a clear target for the ensuing anxiety and anger—when they managed to incite a mob of working-class men who called themselves the "Church and King" movement, it is no surprise that they went after Priestley, eventually burning down his house, his laboratory and his church.

So maybe it wasn't *so easy* for Joseph Priestley to remain optimistic...

In his "Letter to the Inhabitants of Birmingham, Following the Riots of 14 July 1791," Priestley mourned the destruction of "truly valuable and useful apparatus of philosophical instruments" that he had used, not for profit, "but only in the advancement of science, for the benefit of my country and of mankind." He ended with this pointed observation: "We are better instructed in the mild and forbearing spirit of Christianity than ever to think of recourse to violence—and can you think that such conduct as yours [offers] any recommendation of your religious principles in preference to ours?"

Priestley immigrated to America after this incident and was welcomed at first as a dignitary, honored for his support of the American Revolution and for devoting "his life to the sacred duty of diffusing knowledge and happiness among nations."

This did not protect him, however, from having to handle a fractured real estate deal and, much more devastating, having to cope with the personal tragedy of the death of his son and wife over the next few years.

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Further, the welcome provided by his new country didn't last. Though John Adams attended some of Priestley's first sermons at the Unitarian church in Philadelphia, it became increasingly awkward to be associated with a minister that was known for heretical and provocative statements...especially when Adams was in the midst of a Presidential campaign. (Does that sound at all familiar?)

And after Adams became President and instituted the Alien and Sedition Laws, authorizing the state to deport any noncitizen “dangerous to the peace and safety of the United States,” and to arrest anyone who published “false, scandalous, and malicious writing” about the government, Priestley could not remain silent. Writing to an administration official, he said, “It is clear to me that you have violated your constitution in several essential articles, and act upon maxims by which you may defeat the whole object of it.” Suddenly, the country that had welcomed him as a staunch supporter now viewed him as a dangerous radical and he himself was in danger of deportation.

And if the American Revolution that Priestley had supported was proving to be a disappointment, so was the French Revolution, which at one time seemed to hold so much promise. The French government had gone so far as to execute Priestley’s scientific colleague, Lavoisier, some years before.

So maybe it wasn’t *so easy* for Joseph Priestley to remain optimistic...and maybe I don’t feel as distant, as disconnected from his world as I first thought. It wasn’t that his optimism was never challenged; it was just never defeated. It wasn’t that he was never faced with the dark sides of human nature--the irrational fear, the hypocrisy, the corruptions, the violence—it was that he never let that eclipse his vision of the light. It wasn’t that he never experienced life’s “no,” it was that he always found a way to answer “yes” to life.

If I find Priestley’s optimism misplaced in my world, maybe the fault is not with Priestley but with me. If I could rekindle Priestley’s faith in this place and time might I feel empowered to make his dreams for a better world a reality? Priestley’s faith was not based on pleasant circumstances, but a deeper current that runs through all places and times, that runs from the invention of air to the discovery of the process, that runs beneath tragedy just as it gushes forth in joy. We, here, in this Unitarian Universalist congregation are committed to tapping that current so that when we affirm our principles, when we speak our mission, when we work toward justice, we can sing together, with all conviction, “These things shall be.”