

УНИВЕРЗИТЕТ У БАЊОЈ ЛУЦИ  
ФИЛОЛОШКИ ФАКУЛТЕТ

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# THE ALTERNATING CURRENTS OF BENJAMIN FRANKLIN'S THOUGHT ON SCIENCE AND FAITH

**Abstract:** *Benjamin Franklin, throughout his life, demonstrated an ambiguous attitude toward the interaction between religion and science, as evidenced directly in his celebrated Autobiography, as well as indirectly in lesser-known writings such as his technical papers on the nature of the electrical charge. This paper argues, based on the poststructuralist work Anti-Oedipus by Gilles Deleuze and Felix Guattari, that Franklin's view of science and faith can be explained by assuming that both the religious devotion of his clerical peers and his own scientific enterprise were the consequence of "desire-production". In other words, the objections of organised religion to science that were still a part of Franklin's world in the mid-18<sup>th</sup>-century may have been little more than the power-brokering that is so central to the human enterprise. This intrinsic drive to dominance is epitomised by Deleuze and Guattari as the Oedipal imposition on human individuality that is so characteristic of modern psychoanalysis, when in actuality it is a tool of capitalist society. If Franklin managed to circumvent these powerful factors, then he also sidestepped the traditional dichotomy between the natural world and culture, thereby avoiding the blatant contradictions between the will to scientific knowledge and technological prowess, on the one hand, and the will to submit society to divine punishment, on the other.*

**Key words:** *Benjamin Franklin, Gilles Deleuze, Early-American Literature, Science and Religion.*

Many scholars have weighed in on Benjamin Franklin's problematic attitude toward the reconciliation of religion and science, as evidenced directly in his celebrated *Autobiography*, as well as indirectly in lesser-known writings such as his technical papers on the nature of the electrical charge. The problem is similar to that which confronted Franklin's older Puritan acquaintance Cotton Mather in the early 18<sup>th</sup>-century: how can one be so presumptuous as to promote a scientific or naturalistic remedy for mankind's ills when those very ills may be a punishment sent by God? After all, it was one thing to suggest to a typical 18<sup>th</sup>-century churchgoing

Christian that God had created a clockwork universe in which lightning rods could be manufactured so as to prevent one's house from being burned down by lightning. But it was quite another to actually take steps to make such an invention a reality if it conflicted with the mainstream religious thought of the day.

Even though Franklin has always been credited with being a "free-thinker", the fact remains that he continued to entertain religious musings throughout life, was moderately supportive of the British evangelical firebrand George Whitefield, and even wrote a book of theology himself as a young man. The question is merely

how he reconciled these “alternating currents”, as I call them in the title of this paper, when there is a blatant contradiction between supernatural explanations of the universe, and explanations based on systematic observations of nature. I argue an alternative view based on the poststructuralist work *Anti-Oedipus*, by Gilles Deleuze and Felix Guattari, that effectively rectifies the discrepancy by arguing a common source for religious devotion and scientific enterprise as productive mechanisms.

Previous critical work mostly concludes that Franklin’s beliefs about the interaction between science and faith were highly complicated, that he was cagey about revealing them, and that resolution of the issue remains evasive to the present day. Kerry Walters, for example, argues that Franklin’s attitude “anticipates the contemporary problem of sectarian religious belief in a religiously pluralistic world”, (“A Note” 801). Harry S. Stout observes that Franklin’s unlikely friendship with evangelical firebrand George Whitefield reveals that the two “humanised each other”, even though they had little in common doctrinally (23). By sharp contrast, Michael Atiyah discusses Franklin’s equally close friendship with the philosopher David Hume, who could hardly be called a defender of establishment religion (599). James Campbell, too, finds little to support the view of Franklin as possessing religious impulses (759), seconding Paul K. Conklin’s assertion that Franklin “rejected the most basic aspect of Puritanism - the profound submission to, and acceptance of, God’s will” (84). Elizabeth Dunn argues in a 1987 article that Franklin’s ambiguous statements allowed him “to mediate between his belief in a need for practical ethics for the common people and his strong personal skepticism of orthodox Christianity”, (“From a Bold Youth” 522). In a 1991 review, Dunn further observes that three 1990 books on Franklin “probe and illuminate Franklin’s image as a modern enlight-

ened American”, even though his pre-Romantic skepticism toward reason means that only with future work “will the real Benjamin Franklin emerge” (“Who Was Benjamin Franklin” 232).

My argument is that Franklin indeed avoided direct comment on the interaction of science and faith, particularly after 1745, as Owen Aldridge asserted (75), because he was increasingly given to producing a type of work in the laboratory that consciously or unconsciously struck him as being structurally similar to the type of work being produced verbally by his friends in the pulpit. As Deleuze and Guattari argue in *Anti-Oedipus*, albeit not directly about the crisis between faith and scientific reason, there is a relationship between what they define as “desiring-production and social production”, (*Anti-Oedipus* 10). The Stanford Encyclopedia of Philosophy unpacks the term “desiring-production” as follows:

...a “universal primary process” underlying the seemingly separate natural, social and psychological realms. Desiring-production is thus not anthropocentric; it is the very heart of the world. Besides its universal scope, we need to realise two things about desiring-production right away: (1) there is no subject that lies behind the production, that performs the production; and (2) the “desire” in desiring-production is not oriented to making up a lack, but is purely positive.

In effect, the concept of desiring-production allows us to circumvent the traditional dichotomy between the natural world and culture, and even if cultural forces tend to strive toward keeping natural forces in check, their mutual origin assures that production in a capitalist society will continue in a rather schizoid manner. As the Stanford Encyclopedia further states,

[N]atural desiring-producing is that which social machines repress, but also that which is revealed in capitalism...Capitalism sets free desiring-production even as it attempts to rein it in with the institution of private property and the familial or

“Oedipal” patterning of desire; schizophrenics are propelled by the charge of desiring-production thus set free but fail at the limits capitalist society proposes, thus providing a clue to the workings of desiring-production.

Again, I must clarify in saying that Deleuzian-Guattarian desiring-production by no means implies that either Franklin's science or Whitefield's fire-sermonising was schizophrenic. Instead, I offer the anti-Oedipal analogy to suggest that the blatant contradictions between the will to scientific knowledge and technological prowess, on the one hand, and submission to God's punishment, on the other, can be reconciled in a manner that sidesteps the commonsensical conclusion that no such reconciliation can rationally exist. In other words, one can simplify the notion that Franklin was enigmatic toward religion by positing that he increasingly favoured the resolution of philosophical questions with empirical evidence because he had slowly arrived at the intuitive conclusion that the productive work that is manifest by the latter is similar to the cerebral work that animates the former. Demonstrating that this is descriptive of Franklin's views, of course, requires an analysis of several of his key writings.

One reason many scholars have found it difficult to determine precisely where Franklin stood on science and faith was because throughout his life he avoided being pigeonholed as either a confirmed Enlightenment humanist in the tradition of Voltaire, or as a pious son of the Puritans in the manner of Cotton Mather. Franklin for centuries has indeed been considered an exemplar of the American Enlightenment, but he also displayed a lifelong facility for withholding or qualifying his opinion with nuance when there was advantage in doing so. Although a self-professed Deist, he cultivated a positive relationship with Whitefield during the Great Awakening; although a slave-owner, he became increasingly more ambivalent toward slavery as he

aged, finally specifying in his will that one of his heirs would qualify for inheritance only if he freed his house servants; and although a crafty artificer in the world of international relations who could engage in a vigorous game of espionage, he advised the Dunker religious sect to remedy all public misunderstandings by “publish[ing] the Articles of their Belief and the Rules of their Discipline”.

The germ of Franklin's later attitude toward the reconciliation of science and religion can be traced to a seminal public event in Boston before his illustrious career in Philadelphia even began. In 1721, Boston was embroiled in a controversy over the use of inoculations to protect the citizenry against smallpox. Cotton Mather was the leader of the progressive voices in favour of inoculation, while most of the medical establishment and many of the clergy were opposed. Many scholars have noted Mather's advocacy of smallpox inoculations, but Franklin has escaped scrutiny in the matter. Even though his elder brother James aligned his newspaper with the inoculation naysayers, Franklin apparently never voiced his opinion on the controversy.

It is difficult to determine what Franklin thought of Mather's advocacy of inoculations. First, there is no way of knowing whether Franklin even agreed with the official editorial position of his older brother James Franklin's *New-England Courant*, which sided with the Boston physicians who had launched a public protest against Mather and his inoculations. In fact, the very first issue of the *Courant*, published on August 7, 1721, featured a column by John Checkley, an Oxford-educated import from England—and apparently an Anglican somewhat disdainful of Puritans like Mather in general and advocacy for smallpox inoculations in particular—calumniating those Boston clergymen who “pray hard against sickness, yet preach up the Pox” (Isaacson 23). If James Franklin

was indeed siding with the naysayers, he may have merely been siding with the medical establishment—which, after all, would be a very smart tack in most other circumstances involving disease. The first issue of the *Courant* also included a piece by Dr. William Douglass, the only physician in Boston at the time who actually possessed a medical degree.

Franklin neglects to mention his brother's part in the inoculation controversy in his *Autobiography*, as previously mentioned, although he does say at one point that not having his four-year-old son inoculated was one of the great errors of his life, for the child died of smallpox some time after he would normally have had the inoculation. But as is often case, Franklin does not say why he failed to take the action, and certainly does not attribute it to any conventional embracing of conservative Christian dogma.

However, neither do we find any indication from Franklin in the *Autobiography* that he believed that scientific rationalism would have saved the boy. If anything, Franklin's approach to scientific understanding was invested more in his skepticism over conflicting claims that a stable and fundamental truth could always be discovered. Franklin implies several times in the *Autobiography* that the quest for additional information is beneficial when one is confronted with arbitrary circumstances that lead to conflict, and moreover, that dogmatic pronouncements tend to collapse under their own internal contradictions.

For example, while Franklin was himself the offspring of religious dissenters, as a child he quickly discovered ample cause for dissent on the dissent itself:

My parents had early given me religious impressions, and brought me through my childhood piously in the Dissenting way. But I was scarce fifteen, when, after doubting by turns of several points as I found them disputed in the different

books I read, I began to doubt of Revelation itself (106).

Concluding that service to others was the best that one could accomplish because it could not be displayed to have such internal contradictions, Franklin continues this line of reasoning when he resumes writing the draft of the *Autobiography* some years later. In the second section, written after the American Revolution, he again states that he was “never without some religious principles”, but that he typically discovered in most encounters with organised religion a preference for denominational doctrine over moral instruction that was apparently intended “rather to make us Presbyterians than good citizens” (154). After one such experience, he set about composing his own “little Liturgy, or form of prayer, for my own private use” (154).

Franklin's tendency was therefore to evaluate religion more on its doctrinal variations than on his own theological and metaphysical interpretations, thereby arriving at a low common denominator that tended toward humanism and nominal Deism. One of the few exceptions was his published answer to a rather obscure book he had helped print in 1725 during his first sojourn in London. Titled *The Religion of Nature Delineated* and written by William Wollaston, the book is representative of the Deism that Franklin already found attractive. The work is highly systematic, with chapter headings such as “Of Reason and the Ways of Discerning Truth”, which then lays out in strict outline form such propositions as “An intelligent being, such as mentioned before, must have some immediate objects of his understanding, or at least a capacity of having such” (Wollaston 41). Whether or not the Wollaston book was overly Lockean is irrelevant to the present discussion, but Franklin nonetheless found himself disagreeing with a few of Wollaston's conjectures and soon elected to publish a speculative book titled A

*Dissertation on Liberty and Necessity, Pleasure and Pain.*

Although Franklin later retracted this early writing, certain portions nonetheless demonstrate his propensity to seek out empirical evidence. For example, he writes that “even common Experience shews us” certain things, and also assumes the validity of syllogisms when arriving at general propositions:

Now tho' 'tis not necessary, when a Proposition is demonstrated to be a general Truth, to shew in what manner it agrees with the particular Circumstances of Persons, and indeed ought not to be requir'd; yet, as this is a common Objection, some Notice may be taken of it. (*A Dissertation*)

In other words, one may use empirical evidence to arrive at inductive statements, but there is no universal enjoinder that requires one to do so. As he might have argued many years later when performing his electrical experiments, the experimental result is valid only if its design has been carefully conceived and its procedure has been performed with fidelity by the experimenter. At any rate, *A Dissertation* should not be the focus of Franklin's attitude toward science because he dismissed the essay as invalid.

Much more efficacious to my argument is a brief passage in an obscure 1732 publication titled “On the Providence of God in the Government of the World”, which is available at *The Papers of Benjamin Franklin* Web-site, sponsored by the American Philosophical Society and Yale University. In this 2,400-word essay, Franklin proposes that there are four possibilities for God's entering into human affairs, with the only viable alternative being the fourth - that God “sometimes interferes by his particular providence and sets aside the effects which would otherwise have been produced in the course of nature”. After arguing against the other three alternatives, Franklin explains that the fourth possibility is preferable because it assumes that

God allows humans to partake of a small amount of his knowledge and power as a free agent. Although he does not elaborate further, Franklin apparently proposes that God is free to intervene or not in specific human affairs, and that we humans are likewise free to employ our God-given reason and intellectual ability to alter nature unless specifically prohibited from doing so by God, and only then in discrete circumstances.

Perhaps more befuddling to modern readers of the *Autobiography* is Franklin's enthusiasm for the fiery English evangelist George Whitefield. The flashpoint of the phenomenon soon to be permanently labeled as the Great Awakening, Whitefield would hardly be considered under normal circumstances a soul-mate of the man who was soon to begin his experiments on electricity, for one of the central motivations of the Great Awakening was the fear on the part of many that rationalism was becoming a threat to Christianity (Lambert 32). Especially galling was the tendency on the part of scholars on both continents to employ rationalist readings of the Bible (Lambert 14). And whether or not they were further antagonised by Cotton Mather's carefully hedged explanation for smallpox inoculation as one of the many means of living the good life in the American land of promise, plus his own and Franklin's later justification of inoculation.<sup>1</sup> Americans and Englishmen by the 1730s were ready for a breather from what may have seemed to them to be the loneliness of rational life and an acquiescence in divine revelation.

<sup>1</sup> In 1730, Franklin published a description of smallpox inoculation taken from an encyclopedic work, and shortly thereafter reported some statistical data demonstrating the likelihood of an individual's survival if inoculation precluded infection by natural mechanisms. Then, in March of 1731, he reported to the Royal Society in the *Philosophical Transactions* that Americans were coming around to the support of inoculation. And as Chaplin notes, Franklin's disparate publications on smallpox were his first published forays into natural history (50).

However, the Great Awakening was also the time when a widespread and more or less systematic critique of scientific empiricism was first articulated in America. To the Isaac Newtons and Cotton Mathers of prior generations, the argument of Design was sufficient to account for a divine creator who constructed the physical universe in such a way that it ran more or less like a mechanical clock, with every breakthrough in science or technology a further demonstration of the revealing wonders of God. But the first humans had, after all, managed to fall on their faces in the Garden of Eden, and the danger always existed for modern-day humans to become a little too intelligent for their own good and reach for things that they weren't even permitted to grasp.

As for modern interpretations of Franklin's precise feelings about Whitefield, Chaplin says nothing at all and Isaacson hints that Franklin may at least initially have been exploiting the religious fervour of the day for personal gain. At any rate, Franklin provided significant coverage of Whitefield in 45 consecutive issues of the weekly *Pennsylvania Gazette*, and even devoted eight front pages to reproductions of Whitefield's sermons. Before long, Franklin had befriended Whitefield and talked the English pastor into letting him print his materials by the thousands. Whether or not Franklin sincerely believed in Whitefield's brand of religion, the collaboration nonetheless made him a wealthy man (Isaacson 110-11). One can hardly refrain from comparing his work for Whitefield with his advice that the Duncers should educate the public by taking out display ads in newspapers outlining their beliefs. As a publisher, Franklin materially profited from the increased flow of information, so a cynical interpretation is that he advocated free speech and the free flow of information because it enriched him. But it is also possible that his native

belief in these freedoms was the reason he became a publisher.

*Autobiography* contains an explication of Whitefield at Franklin's most ambiguous, with an apparent stamp of approval at the beginning:

It was wonderful to see the Change soon made in the Manners of our Inhabitants; from being thoughtless or indifferent about Religion, it seem'd as if all the World were growing Religious; so that one could not walk thro' the Town in an Evening without Hearing Psalms sung in different Families of every Street (*Autobiography* 108).

Here, Franklin does not say that he follows Whitefield's brand of theology, or that it is even particularly desirable for anyone else, but merely that the religious fervour of the Great Awakening improved the "Manners of our Inhabitants". Earlier sections within *Autobiography* endorsed high-minded ethical conduct, so the changes that followed Whitefield's revival in America were hardly a newly encountered ethical stance on the part of Franklin; if anything, the Awakening was merely a catalyst for good conduct.

Nor does Franklin provide much endorsement for the Whitefield programme in the words that follow:

Both House and Ground were vested in Trustees, expressly for the Use of any Preacher of any religious Persuasion who might desire to say something to the People of Philadelphia, the Design in building not being to accommodate any particular Sect, but the Inhabitants in general, so that even if the Mufti of Constantinope were to send a Missionary to preach Mahometanism to us, he would find a Pulpit to his Service. (*Autobiography* 108)

It is difficult to find much comfort in these lines for those who maintain to this day that Franklin as a Founder was fully vested in turning America into a fundamentalist Christian nation. Not only is the building intended to circumvent inconvenience, but also, it is to be made freely available to all sects and even to the Mus-

lims, whom fundamentalist Christians to the present day consider little more than infidels. And not only is another religion such as Islam to be tolerated, in Franklin's mind, but it is also to be allowed full opportunity for proselytising.

Franklin withholds any sort of doctrinal endorsement even when he writes of his greatest moments of weakness under the guiles of Whitefield's fierce rhetoric. For example, Franklin recounts the episode in which Whitefield has returned from Georgia, asking that Philadelphians donate money for an orphanage in the Southern colonies. Franklin thinks it more expedient to move the orphans to Philadelphia than to send Philadelphian workmen to the wilds of Georgia. Franklin tells Whitefield so, and at first refuses to donate any money to the cause. But later he relents:

I had in my Pocket a Handful of Copper, Money, three or four silver Dollars, and five Pistoles in Gold. As he proceeded I began to soften, and concluded to give the Coppers. Another Stroke of his Oratory made me ashamed of that, and determin'd me to give the Silver; & he finish'd so admirably, that I empty'd my Pocket wholly into the Collector's Dish, Gold and all (*Autobiography* 109).

Nowhere in these lines does Franklin say that Whitefield's religious argument in itself was particularly appealing, but merely that Whitefield's oratory skills were responsible for bringing him around. As in the anecdote about encountering his future wife with bread loaves under his arms, Franklin provides both the viewpoint of his young and older selves, and further triangulates them with the perspective of a second consciousness as interpreted both by the young Franklin who originally had the experience and the older Franklin who looks backward. "Franklin", as critics have always noted, is a literary self-creation in the *Autobiography*, but the question remains precisely how this self-created voice reconciles science and religion.

The answer, at least for the *Autobiography*, is that Franklin's conjoining of science and religious outlook may be fairly informal, and even modest connections may be possible only by comparing widely separated passages. Franklin hopes, for example, that the religious meeting house to be constructed in Philadelphia, ostensibly for Whitefield's convenience, will also be available for practitioners of all religious persuasions, including non-Christians. This sentiment sounds not only democratic in its assertion that everyone should have a voice, but pluralistic in minimising the possibility that minority voices will be suppressed. Later, when he discusses his electrical experiments, he writes of his insistence of taking the electrical equipment and dividing "a little this Incumbrance among my Friends" (159). He wants to do this because others can not only "undertake showing the Experiments for Money", but also to ensure a higher standard of construction of the apparatus itself—and thus, technological advancement. One friend, for example, "procur'd an elegant Apparatus for the purpose, in which all the little Machines that I had roughly made for myself, were nicely form'd by Instrument-makers" (159). Not entirely sure that his work indeed pushes the scientific paradigm forward or is even more than a mere rediscovery of that already known in Europe, Franklin writes that he was very particular in his manner of reporting his experiments to the Royal Society, presumably because he feared that "several Performers" of electrical tricks in faraway America would be dismissed or even laughed at. Indeed various members of the Royal Society are dismissive of his reports until his letters reach John Fothergill, a Quaker physician in London who thought better of Franklin's scientific acumen than did his colleagues. Fothergill "thought them of too much value to be stifled, and advis'd the Printing of them", Franklin reports. The word "stifled" is hardly a syno-



nym for “ignored”, so Franklin’s true opinion perhaps sneaks through just a little: possibly he felt that American intellectual effort would ultimately be derided, and regardless of its inherent value, deliberately suppressed due to prejudice. If so, Franklin never hints a word of self-consciousness about his intellectual reception in Europe; any evidence of such must therefore be inferred from verbal slips such as this one.

The aforementioned verbal slip leads to the question of whether Franklin is indeed a reliable narrator (in the modern understanding of the term) of his true views on America as capable of fostering an intellectual alternative to European culture. Franklin’s sole report of continuing European negativity to his scientific work concerns the Abbé Nollet, at the time preceptor of natural philosophy for the royal family of France. Nollet, Franklin writes, “could not at first believe that such a Work came from America, & said it must have been fabricated by his Enemies at Paris, to oppose & decry his System” (160). Nollet had his own theory of electricity—obviously a wrongheaded one, since it contradicted Franklin’s, which happens to have been correct—and undoubtedly would have been reluctant to let go of his own claim to scientific fame and yield to someone else. But Franklin’s wording imputes a venality on Nollet’s part that, like the aforementioned use of the word “stifled”, may have been more inadvertent than planned—or if planned, then very cagey. Franklin’s use of the term “at first”, for example, obviates the reading of the passage as an apprehension of American worth by a chauvinistic Frenchman, instead imputing further obtuseness on Nollet’s part as the controversy continued. Nollet’s obtuseness and Franklin’s American-bred naïveté are two entirely different matters, but it is difficult to resolve precisely what Franklin thought of the matter from the rhetorical construction of the passage. At any rate, the paragraph ends with hardheadedness being

implied the greater intellectual crime than American greenhornedness, for the Abbe, we are told, “lived to see himself the last of his Sect, except Mr B — — his Eleve & immediate Disciple”. The elided name refers to Mathurin-Jacques Brisson, whose name presumably is not worth saving for posterity due to his wrongheadedness. The inclusion of the word “sect” is interesting also, because the use of a word with a thoroughly religious connotation functions as an almost dismissive reaction to the word’s normal context. If a scientific sect holds the same provisional validity as a religious sect, then the latter for Franklin presumably was only good as long as it was displaced by something better. But again, this is reading between the lines rather than reading the lines directly; the problem one finds oneself doing often when reading Franklin’s prose exclusive of his scientific reports. Moreover, one’s tendency to wonder if Franklin is hedging his words becomes more manifest with repeated readings.

At any rate, Franklin was more straightforward in his aversion to settling for received wisdom when it came to investigating nature. When he first began experimenting with lightning as a phenomenon in the late 1740s, the prevailing opinion was that valuable property could be preserved if certain dubious practices such as ringing church bells were employed. As St. Thomas Aquinas had said several centuries before Franklin’s time, “the tone of the consecrated metal repel the demon and avert storm and lightning” (Isaacson 137). Aquinas had undoubtedly been on the right track in focusing on churches as buildings worthy of concern, for church steeples were frequently struck by lightning due to their height. But the remedy itself left something to be desired, for a hundred bell-ringers had been electrocuted in Germany in a single 35-year period during the mid-1700s. Even more inauspicious was a single lightning strike of a Vi-

enna church, which had resulted in the deaths of 3 000 hapless churchgoers when an injudiciously placed powder magazine in the basement exploded. Rather than dwell on the karma of churchgoers being killed by the very agent through which they had surreptitiously hoped to ensure their military advantage, Franklin merely stated “it was now time to try some other trick” (Isaacson 137-8).

Although Franklin was not the first to suspect that lightning and the static charges people had been playing with since ancient times were one and the same phenomenon, he was well ahead of the game in investigating the possible connection. He had first become acquainted with electrical parlour games through his association with a Scottish visitor named Dr. Archibald Spencer. As mentioned previously, static electricity tricks such as rubbing a cat's fur and then touching someone to shock them had been performed since ancient times. But little headway had been made until Franklin undertook a serious and systematic investigation that led to his discovery of the conservation of charge, a fundamental breakthrough that Thomas S. Kuhn lauds and discusses at length in his 1962 book *The Structure of Scientific Revolutions*.

In methodical fashion, Franklin proceeded to other experiments outside the realm of the parlour show devices to which he had initially been introduced, including extensive experimentation with the then cutting edge instrument known as the Leyden jar, a sort of precursor to today's charge-storing capacitors (Isaacson 136). And eventually, as his investigations led inexorably to more generalised electrical phenomena, he turned his attention to how one might study the physical properties of lightning. First experimenting with lightning rods that were constructed as a logical consequence to his and others' characterisations of positive and negative charge, he then came upon the idea of fly-

ing a kite into an angry looking storm cloud. Fortunately, both he and his son William—his assistant in the kite-flying adventure—managed to live to tell the story.

Franklin's idea was to construct a kite of silk whose primary function was to loft a metal wire into clouds that appeared capable of producing lightning storms. Franklin had already come upon the idea of conservation of charge, as previously mentioned, so he knew that the kite, metal wire, and string would merely serve as a conduit for the equalisation of the charge in the clouds with the opposite charge on the ground. And to demonstrate that the charge was indeed in motion in the same manner as in static electricity experiments, he rigged a key to the bottom of the string where he could demonstrate that a spark would indeed jump if he approached or touched it with his knuckle. Later he would load a Leyden jar in order to demonstrate that the charge would produce precisely the same results as a jar loaded mechanically with a conventional static buildup. His goals were to design ingenious experiments to discover the subtle workings of nature that would otherwise be difficult to ascertain, to maintain controlled conditions so that the experimental results would be reproducible, and to report the results in as clear a manner as possible so that others could double-check his work. Franklin's letter to his old London friend Peter Collinson of Oct. 19, 1752, is difficult to improve on for succinctness in description:

This kite is to be raised when a thunder-gust appears to be coming on, and the person who holds the string must stand within a door or window or under some cover, so that the silk ribbon may not be wet; and care must be taken that the twine does not touch the frame of the door or window. As soon as any of the thunder-clouds come over the kite, the pointed wire will draw the electric fire from them, and the kite, with all the twine, will be electrified, and the loose filaments of the twine will stand out every way, and be attracted

by an approaching finger. And when the rain has wet the kite and twine, so that it can conduct the electric fire freely, you will find it stream out plentifully from the key on the approach of your knuckle. At this key the phial may be charged; and from electric fire thus obtained, spirits may be kindled, and all the other electric experiments be performed, which are usually done by the help of a rubbed glass globe or tube, and thereby the sameness of the electric manner with that of lightning completely demonstrated. (Franklin, *Ingenious* 115-16)<sup>2</sup>

It is significant that Franklin did not even pretend to understand the true nature of lightning, but was content to seek out practical applications—which he would do with his lightning rods—and to “[generate] universal principles from local observations” (Chaplin 123). The rods themselves were an inevitable consequence of his earlier work, for he already knew that certain materials, such as “glass, wax, silk, wool, hair, feathers, and even wood, perfectly dry are nonconductors: that is, they resist instead of facilitating the passage of this subtle [sic] fluid” (*Ingenious* 57). On the other hand, metals and water were all good conductors, Franklin wrote from Paris in 1767, making them the materials of choice for allowing electricity to achieve its natural tendency to “communicate to that which has least, till the proportion becomes equal; provided the distance between them is not too great; or, if it is too great, till there be proper conductors to convey it from one to the other”

<sup>2</sup> An old question is whether Franklin ever flew the kite at all. Bernard Cohen, in a 1952 article celebrating the 200th anniversary of the lightning rod, notes the 1947 report of the *Proceedings of the American Philosophical Society* asserting that the kite anecdote was “just a myth, one of those legends which spring up from unknown sources to adorn the story of a great man” (*Proceedings* 17). Cohen rejects this possibility, arguing convincingly that Franklin indeed performed the experiment and eventually provided Joseph Priestly with sufficient information about the procedure to describe its precise execution in Priestly’s 1775 book *The History and Present State of Electricity, with Original Experiments*.

(*Ingenious* 56). The key was to build a circuit that would keep life, property, and limb out of the circuit, and this proved to be best effected by the installation of a metal rod on, or very near a roof, projecting somewhat higher than the roof itself, and buried in the ground with a subterranean bend that ideally pointed away from the structure to be protected, and extending all the way to moist earth. The innovative method would not ensure that no one would ever again be struck by lightning, but the practice of installing lightning rods would go far in protecting valuable real estate, and at the same time would provide a certain probability of survival to those who dwelt inside.

In sum, the emphasis on overcoming the misunderstandings of the past is at the core of Franklin’s notions regarding science and faith, and particularly his avoidance of being trapped in conventional thinking. In this manner Franklin’s approach to problem-solving is an exemplar of the well-functioning “desiring machine” that Deleuze and Guattari wrote about in *Anti-Oedipus*—a desiring machine that is normally best analysed within the schizophrenic psyche, because that is where one normally finds a creative process so immune to social constraints. If certain practices by the faithful cannot prevent a European church from being destroyed by a lightning strike, then the entire programme—faith and scientific method included—needs to be reworked. Franklin, therefore, is best regarded as neither an agnostic promoter of pure scientific rationalism, nor as an unquestioning exemplar of 18<sup>th</sup> century Deism, but as a scientist who amalgamated the two.

This amalgamation is reminiscent of Deleuze and Guattari’s understanding of that which is prior to “the man-nature dichotomy”. If scientific innovation can be taken as a process of production in the same manner as nature, then surely a religious dogma that limits the production of

the scientist is a production itself. In such a case, "a connection with another machine is always established" so that "one machine interrupts the current of the other or 'sees' its own current interrupted". In other words, neither the scientific process nor religious cogitating is prior to the other. But at the same time, neither obliterates the other.

In short, the objections of organised religion to science that were still a part of Franklin's world in the mid 18<sup>th</sup> century may have been little more than the power-brokering that is so central to the human enterprise. This intrinsic drive to dominance is epitomised by Deleuze and Guattari as the Oedipal impositions on human individuality that seemingly function like a chronic infection. If Franklin managed to circumvent these powerful factors, then his anti-Oedipal inclinations may best be summed up by his words concerning the useless ringing of church bells to ward off lightning strikes.

Occasionally it's simply time to look for a new trick.

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## НАИЗМЈЕНИЧНЕ СТРУЈЕ РАЗМИШЉАЊА БЕНЦАМИНА ФРЕНКЛИНА О НАУЦИ И ВЈЕРИ

### Резиме

Током живота Бенџамин Френклин показивао је двосмислен став према односу науке и религије, што се јасно види у његовој прослављеној *Аутобиографији* и, нешто слабије, у његовим мање познатим радовима о природи електричног пражњења. У овом раду тврди се, на основу постструктуралистичког дјела *Анти-Едип* Жила Делеза и Феликса Гатарија, да се Френклинов поглед на науку и религију може објаснити претпоставком да су и његов научни рад и посвећеност религији његових савременика из редова клера посљедица „стварања жеље“. Другим ријечима, могуће је да су замјерке црквених кругова науци, упућиване и за Френклиновог доба, средином осамнаестог вијека, биле нешто више од пуког трговања моћи које је тако својствено људима. Овај унутрашњи порив за доминацијом Делез и Гатари представљају као едиповску подвалу људској индивидуалности, што је тако карактеристично за модерну психоанализу, док у ствари није ништа друго до оруђе капиталистич-

ког друштва. Уколико је Френклин успио да избјегне ове моћне чиниоце, онда је такође избјегао и традиционалну подјелу на природни свијет и културу, избјегавајући на тај начин отворене контрадикције између жеље за научним достигнућима и технолошким напретком, с једне стране, и жеље да се друштво потчини божјој казни, с друге стране.

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