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An American Body | Politic

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IF JOHN WINTHROP and the first generation of New England Puritans can be regarded as both connecting and being suspended between feudal structures of sovereignty and modern structures of government, then Cotton Mather can be considered a transitional or liminal figure oscillating between the fundamentally religious outlook on life of the Renaissance and the Reformation and the more secular approach of the Age of Reason—a clergyman and engaged lay scientist at the threshold of the Enlightenment. Mather’s struggle to reconcile science and religion, or the natural laws and the law of god, encapsulates the ambiguity of his time. A man given to visions of angels, who defended the outcome of the Salem witch trials, he is considered to be the “the first significant figure in American medicine” (Beall 102). In addition, his “Curiosa Americana”—a series of letters to the Royal Society in London on American natural phenomena that included descriptions of the moose, rattlesnake, and other indigenous animals as well as reports on earthquakes and thunderstorms, and that were published in the Society’s *Philosophical Transactions*—demonstrated his abilities as an accomplished scientist and observer, and in 1713 led to his becoming the first American colonist to be elected a Fellow of this prestigious Society. He also corresponded extensively with leading scientists of his times, such as Robert Boyle.

Seventeenth-century science from Bacon through Newton was quite different from classical science, although seventeenth-century scientists like Boyle and Newton were inspired by their classical predecessors. One of the main differences is that scientists in the seventeenth century took a fundamentally hermeneutical and ultimately scriptural approach to nature, often manifested in frequent references to the Bible and the so-called Book of Nature, a remnant of medieval—and also alchemist—culture that saw the world itself as a book “in which the pages are turned with our feet,” as Paracelsus put it (quoted in Curtius 322). As Mather states in *The Christian Philosopher*, a book that seeks to align religion and the science of Mather’s

time, “*Chrysostom*, I remember, mentions a *Twofold Book* of GOD; the Book of the *Creatures*, and the Book of the *Scriptures* . . . We will now for a while read the *Former* of these *Books*, ’twill help us in reading the *Latter*: They will admirably assist one another. The Philosopher being asked, What his *Books* were; answered, *Totius Entis Naturalis Universitas*. All Men are accomodated with that *Publick Library*. Reader, walk with me into it, and see what we shall find so legible there, *that he that runs may read it*” (17). Countering the traditional Calvinist view of nature as inherently flawed, this much more positive assessment saw nature as a magnificent demonstration of God’s wisdom and creativity. With regard to the “twofold book of God,” it may also be noted that Mather, in his encyclopedic scientific works, reveals an attempt to incorporate “the Book of the Creatures” into his own scriptures.¹

The close connection between humanist disciplines such as history, natural philosophy, and scientific studies in the baroque era—many of the leading scientists, like Mather, were also historians and antiquarians—might be considered as part of the background of the search for signs in nature, a privileged Puritan strategy: an interpretation of signs that was mainly founded in the deep faith of most scientists in God as the creator of the universe. The difference between the realm of genuine scientific research and that of religious belief was noticed by scientists like Boyle and Newton, but their separation, was more a programmatic concession than a real practice. Mather’s intellectual influences span a period that touches both post-Renaissance science, which interpreted texts, and Newtonian science [the new science that Mather was so interested in], which observed nature. Despite Mather’s scientific inclinations, he was a man of faith, seeking the meaning of creation. In his ‘baroque science,’² there is no clear break between the alchemism and hermeneutics of a Paracelsus or van Helmont, the Galenic interpretation of the humors of the body, and the rigorous quantitative and experimental method that characterizes Enlightenment science. Astrology was still a part of astronomy, and alchemy was mixed with chemistry and physics. Studies of nature were strongly inspired by the scriptures. Yet advances in science and technology also made their way into the baroque consciousness. The perfection of the telescope and microscope made possible accurate optical measurements and the discovery of the wonders of the newly visible world, a world infinitely greater than that of the medieval cosmos.

With regard to medicine and science, it has been generally held that the Puritans had no interest in them as autonomous disciplines. As one commentator put it, “what we call natural science, was not something which the Puritans were afraid of . . . as it was something entirely irrelevant to their interests and problems” (Schneider 42). Yet an oscillation between a

teleological, religious conception of the world and a more naturalistic one can be detected in Mather's writings. As he saw it, religion and science need not be mutually exclusive; in fact, since both disciplines could be seen to glorify the work of God, in their harmonious coexistence the one could benefit from the other. In fact, Mather was the only Boston clergyman who attempted to adapt Puritan cosmology to a contemporary scientific framework. His interest in medicine, however, followed a hundred-year-old tradition in New England of ministers who were involved in medical matters. Harvard College was the center of knowledge in the Massachusetts Bay Colony, and its professors taught the majority of the colony's physicians and ministers. In the daily practice, these two roles often went hand in hand: many ministers were also physicians, treating both body and soul of their parishioners: "As Jehovah's chosen 'ambassadors,' the ministers served as his special arbitrators, helping both to heal the sick and to avert disease in their communities" (Watson 3). The ministers and lay people of colonial New England were very confident of the link between the spiritual and the physical realm. It was widely believed that God caused disease as punishment for sin, either on a personal or a community level. It was common to send for a minister as well as a doctor when one fell ill, and some people felt the minister was more important. However, as physicians were rare in colonial America, patients often had no choice about who to send for: ministers and pastors often were the only doctors available.

Mather was keenly aware of the role that ministers played in medicine, particularly ministers in Massachusetts. In his *Magnalia Christi Americana*, Mather praises Thomas Thacher, the Boston pastor and physician who published what is considered the first recorded medical treatise in the American colonies:

The last that I shall mention of the *excellencies* that signalized this worthy man shall be his claim to the accomplishments of an *excellent physician*. He that for his lively ministry was justly reckoned among "the angels of the churches," might for his *medical* acquaintances, experiences, and performances, be truly called a Raphael. Ever since the days of Luke the evangelist, skill in *physick* has been frequently professed and practised by persons whose more declared business was the study of *divinity* . . . our English nation has commonly afforded eminent physicians, who were also ministers of the gospel. But I suppose the greatest frequency of the *angelical conjunction* has been seen in these parts of America, where they are mostly "the poor to whom the gospel is preached," by pastors whose compassion to them in their poverty invites them to supply the want of able physicians among them, and such an universally serviceable pastor was our Thatcher. (1:493)

Mather had wavered between becoming a minister or a physician, in part because of a speech defect that might have prevented him from succeeding as a preacher. Although he ultimately opted for the clergy, the “angelical conjunction” of medical matters and ministry remained part of his life.

As both Puritan minister and scientist, Mather was deeply interested in the human body. As Robert Middlekauff points out, “no Puritan of Cotton Mather’s day studied carnality more devotedly than he” (279), always turning to his own body, looking for signs of debasement or sin. Once when he had a toothache, Mather reported in his diary: “About the Middle of this Month, I lost abundance of precious Time, thro’ tormenting Pains in my *Teeth* and *Jawes* . . . In the Pains that were now upon mee, I sett myself, as well as I could for my Pains, to *search and try my Wayes*. I considered, I. Have I not sinned with my *Teeth*? How? By sinful, graceless excessive *Eating*. And by evil Speeches, for there are *Literae dentales* used in them” (*Diary* 1:24).

The controversy during the 1721–22 smallpox epidemic in Boston provides a good example of Mather’s brand of new science and medicine.³ From the mid-seventeenth century on, epidemics of smallpox were immensely feared in Europe, since no cure for the disease was known. Macaulay describes the serious threats and ravages of smallpox in his *History of England*: “That disease, over which science has since achieved a succession of glorious and beneficent victories, was then the most terrible of all the ministers of death. The havoc of the plague had been far more rapid: but the plague had visited our shores only once or twice within living memory; and the small pox was always present, filling the churchyards with corpses, tormenting with constant fears all whom it had not yet stricken, leaving on those lives it spared the hideous traces of its power, turning the babe into a changeling at which the mother shuddered, and making the eyes and cheeks of the betrothed maiden objects of horror to the lover. Towards the end of the year 1694, this pestilence was more than usually severe” (4:566–67). Presumably originating in the East, smallpox swept through Europe and was transmitted to America by the colonists.⁴ Prior to the introduction of inoculation, there had been six outbreaks of the disease since the arrival of Winthrop’s *Arbella*. The medical historian James Mumford notes: “When the eighteenth century opened, the population of the English colonies in North America was about three hundred thousand; when it closed, the United States numbered nearly four millions; and at the beginning of that era, of all the foes our ancestors faced,—hardship, famine, pestilence, Indian and foreign wars,—the most dreaded was the small-pox” (41–42).

A major outbreak of smallpox—the third since the beginning of the Massachusetts settlements—occurred in 1689–90, due to the arrival of an

infected ship from Barbados. The first and only issue of *Publick Occurrences*, New England's first newspaper, reported:

The *Small-Pox* which has been raging in *Boston*, after a manner very Extraordinary, is now very much abated. It is thought that far more have been sick of it than were visited with it, when it raged so much twelve years ago, nevertheless it has not been so Mortal. The number of them that have dyed in *Boston* by this last Visitation is perhaps not half as many as fell by the former. The time of its being most *General*, was in the Months *June, July* and *August* then 'twas that sometimes in some one Congregation on a Lords-day there would be Bills desiring prayers for above an *hundred Sick*. It seized upon all sorts of people that came in the way of it, it infected even *Children in the bellies of Mothers that had themselves undergone the Disease many years ago*; for some such were now born full of the Distemper. 'Tis not easy to translate the Trouble and Sorrow that poor *Boston* has felt by this *Epidemical Contagion*. But we hope that it will be pretty well extinguished by that time twelve months since it first began to Spread. It now unhappily spreads in several other places, among which our *Garrisons in the East* are to be reckoned some of the greatest Sufferers. (quoted in Monaghan)

Boston suffered twice from epidemics of smallpox in the first quarter of the eighteenth century: in 1702–3, when scarlet fever was also present and about 300 people died, and in 1721–22. There was also a measles epidemic in 1713. In between the two smallpox epidemics, Mather's approach to illness changed considerably. In an essay written during the 1702–3 epidemic, completely in line with the Calvinistic view of illness as a result of sinful living, Mather declared that the "Sickness of any one in the family is by the Providence the Great God has bro't upon them. 'Tis *Atheism* in us . . . if we see not the *Providence* of God in it, when *Sickness* threatens to lay any of us or of ours, in the Ground" (*Wholesome Words* 2). Sin, according to this line of argument from orthodox Puritanism to which also Mather adhered, was the first and only cause of sickness: "When *Health* is taken away from any of us, tis by the Hand of *Him*, who is, *The God of our Health*. It was the *Creation* of God, which put our *Body's* in their good *Order* at the first: If *Sickness* put our *Body's* out of *Order*, there is the *Providence* of God, ordering of it" (3). This Calvinistic doctrine owes much to the Platonic concept of the 'original' *idea* and the 'degraded' *simulacrum* [deficient copy, or copy of a copy], according to which, as Deleuze puts it, "God made man in his image and resemblance. Through sin, however, man lost the resemblance while maintaining the image. We have become simulacra" (*Logic of Sense* 257). In sickness—the visible sign of sin—the image itself is being corrupted as a consequence of the loss of resemblance: "Are we *Sick*? We must *Esteem*

ourselves to be *Stricken and Smitten of God, and Afflicted* . . . The Pale, the Swollen, the Wasted, & perhaps the Spotted Faces of the Sick in the Family, are such as our Heavenly Father has been spitting upon: Shall *He Spit in our Faces, and shall we not be Ashamed?*” (Mather, *Wholesome Words* 3–4). As a consequence, “a Sick Person should be more Desirous to be Delivered from *Sin*, than from *Sickness*. Be more *Sick of Sin*, O Sick Man, than of any *Sickness*” (18) since purging oneself of sin is ultimately intended to restore one to some resemblance to God.

Ten years later, during the Boston measles epidemic of 1713, Mather wrote a tract containing medical advice. Here his voice is much more compassionate, much more sympathetic with the suffering of the infected. He worried that the medical profession in Boston might oppose his views, but the very want of doctors in Boston justified and called for charitable action: “I *know* not (and . . . , I may add, I *Care* not,) what *Censures* this Action may meet withal. I am sure, nothing but a pure *Act of Charity to the Poor*, where *Physicians* are wanting, is now intended; nor any thing offered, but what a Number of our most Eminent *Physicians* have approved of, with their Charitable Wishes to have it Communicated” (*Letter about a Good Management* 4). Although in *Wholesome Words*, God appears as a hard and merciless punisher of the sinful, here he is referred to as “the Glorious GOD, who is, *The Lord our Healer*” (*Letter about a Good Management* 1). As Maxine Van de Wetering has convincingly argued, Mather reveals a decisive shift in his approach to the body and illness. In later works such as *The Christian Philosopher* and *The Angel of Bethesda*, he constantly oscillates between these two views of illness—on the one hand, as God’s just punishment; on the other hand, as a state of human suffering to be compassionate about. Still, Mather’s 1713 *Letter about a Good Management* definitely “signals a deemphasis on death-oriented Calvinist orthodoxy in favor of a new beneficence and life-oriented compassion” (Van de Wetering 59), a shift for which the influence of pietism—Mather’s almost obsessive urge to do good—and his interest in both science and medicine were responsible.

On April 22, 1721, a new smallpox epidemic began in Boston. The disease arrived from the West Indies with HMS *Seahorse*. As the disease became increasingly lethal, its control and treatment became an ever more pressing medical problem. On May 8, the Boston Board of Selectmen—the elected city administrators—noted in their minutes that “a Certain Negro man is now sick of the Smal pox in the Town, who came from Tertudos in His Majesties Ship Seahorse, which renders it likely that distemper may now be on board of that Ship. Therefor for the preservation of the Inhabitants of this Town, Voted that John Clark, Esqre., be Desired to go on board his Majesties Ship Seahorse and Report in what State of health or Sickness

the Ship's Company are in, Espetially with respect to the Smal Pox or other Contagious Sicknes" (Boston Selectmen 81). The minutes also noted that "a Certain negro man Servant to Capt. Wentworth Paxton of Boston is now Sick of the SmalpoX at his masters House." The board posted guards outside houses where the disease was suspected to have taken hold, and a law was passed requiring that "the Streets & Lanes within this Town be forth with Clensed and the Dirt removed to prevent the Small poX spreading" (82).

Whereas the common treatment for smallpox [in addition to isolation and repentant prayer, which Mather also recommended] was bleeding, purging, and vomiting, Mather's approach to the epidemic was based on a combination of firsthand observations and readings in scientific literature. He was introduced to the method of inoculation by his slave Onesimus, who had been presented to Mather on December 13, 1706, as a gift of his "Flock," and whom he felt the obligation to turn into "a Servant of Christ" (*Diary* 1:579). In a letter of July 12, 1716, after reading in the *Philosophical Transactions* of 1714 an account by Emanuel Timonius about smallpox inoculation as practiced in Constantinople, Mather wrote: "I do assure you, that many months before I mett with any Intimations of treating y^e *Small-Pox*, with y^e Method of Inoculation, any where in *Europe*; I had from a Servant of my own, an Account of its being practised in *Africa*. Enquiring of my Negro-man *Onesimus*, who is a pretty Intelligent Fellow, Whether he ever had y^e *Small-Pox*; he answered, both, *Yes*, and, *No*; and then told me, that he had undergone an Operation, which had given him something of y^e *Small-Pox*, & would forever praeserve him from it; adding, That it was often used among y^e *Guaramantese*, & whoever had y^e Courage to use it, was forever free from y^e fear of the Contagion" (quoted in Kittredge 422). It is not clear if Mather asked Onesimus about the procedure of inoculation in 1706—in a diary entry, he mentions only the acquisition of his new servant—or later, yet Mather's crusade against smallpox can justly be said to have begun at that moment.

In a later tract that was probably published by the Boston physician Zabdiel Boylston, who had no medical degree but who had been an apprentice to another local physician, Mather states that he confirmed his slave's account by interviewing other African witnesses. He had asked "a considerable Number of *Africans* in this Town, who can have no Conspiracy or Combination to cheat us. No body has instructed them to tell their Story . . . And I don't know why 'tis more unlawful to learn of *Africans*, how to help against the *Poison* of the *Small-Pox*, than it is to learn of our *Indians*, how to help against the *Poison* of a *Rattle-Snake*" (*Some Account* 9).⁵ Basing on these references and personal observations his insistence on the need for testing the procedure of inoculation, Mather announced in his 1716 letter

that “for my own part, if I should live to see y^e *Small-Pox* again enter into o^r City, I would immediately procure a Consult of o^r Physicians, to Introduce a Practice, which may be of so very happy a Tendency” (quoted in Kittredge 422). Mather recounted all the incidents [as well as recycled much material from his letters and tracts] in his 1724 work *The Angel of Bethesda*. This treatise, which is named after a description in John 5:2–4, is an outstanding example of his attempted synthesis of religion and medicine.⁶

When the 1721 smallpox epidemic began, Mather had been concerned for many years with the practice of inoculation based on the accounts both in the *Philosophical Transactions* and of the Africans he had interviewed, and he was prepared to take action. On May 26, 1721, he noted in his diary: “The grievous Calamity of the *Small-Pox* has now entered the Town. The Practice of conveying and suffering the *Small-Pox* by *Inoculation*, has never been used in *America*, nor indeed in our Nation. But how many Lives might be saved by it, if it were practised? I will procure a Consult of our Physicians, and lay the matter before them” (*Diary* 2:620–21). Zabdiel Boylston, the only physician in Boston whom Mather could convince to try the inoculation procedure, wrote that Mather made a transcription from “the *Philosophical Transactions* of the Royal Society, the Accounts sent them by Dr. *Timonius* and *Pyllarinus* of inoculating the *Small-Pox* in the *Levant*, and sent them to the Practitioners of the Town, for their Consideration thereon” (1–2). After a few days of hesitation and a further, personal letter by Mather, Boylston inoculated his two slaves and one of his sons on June 26. In Boston, controversy immediately erupted, but Boylston, observing the success of the inoculation with his first patients and urged on by Mather, went on to inoculate fourteen other people within the next six weeks, including two more of his own sons and Mather’s son Samuel. Despite the protests of the public and the Boston medical profession, and various actions taken against him by the Selectmen, Boylston continued to inoculate people throughout the smallpox epidemic, backed up by Mather and the Boston ministry. By February 26, 1722, Boylston had inoculated 242 individuals, of whom only six died, and these deaths may have been due to previous infections or to causes other than smallpox (see 50). In Boston altogether, of the approximately 5,800 people infected by smallpox during the epidemic, about 840 had died. Thus, compared to a mortality rate of 2.5 percent among those who were inoculated, there was an overall mortality rate of 15 percent among the people ‘naturally’ infected instead of inoculated. The statistics proved Mather and Boylston right. The inoculation experiment ultimately was a tremendous success.⁷

The smallpox controversy has generally been interpreted as a struggle between ministers and the medical profession.⁸ One of the points I want

to make, however, is that this controversy—in addition to a shift in the valorization and metaphoricality of the ‘real body’ that Mather’s medical writings during and after this period reveal—also highlights tensions within, and an attempt to restructure the institutional body of, the medical profession itself. William Douglass, Mather’s chief opponent in the Boston medical profession, attacks the Boston ministry as a whole, those “Praying, Preaching, Scribbling” clergymen, who, with at most “*third hand*” knowledge of “physick,” nevertheless “meddle in Matters not in the least appertaining to them” (*Inoculation* 4)⁹ and interfere with the medical practitioners. Knowing Mather’s preference for scientific literature, but also despising his tendencies toward pompousness and self-righteousness, Douglass in his criticism also aims at one of Mather’s weakest points,—his pride: “What volumes of Physick and Mathematicks he may have swallow’d down without chewing, I cannot say! But I know so much of his constitution, he is naturally troubled with indigestion” (*Postscript* 3). Considering the traditional role of the clergy, Mather’s opponents also employed religious arguments—is it not a sin to afflict a healthy body with a disease, contrary to God’s plan? Thus, Douglass repeatedly points out Mather’s “*Abuse of the Scripture*” (*Abuses* 3). Or was it even a crime, against the law? As early as May 1649, a revised and updated version of the Body of Liberties included an act warning: “*Forasmuch as the Law of God allows no man to impaire the Life or Limbs, of any Person, but in a judicall way. It is therefore Ordered, That no person or persons whatsoever employed at any time, about the bodyes of men, women or children for preservation of life or health, as Chirurgeons, Midwives, Physicians or others, presume to exercise or put forth, any act, contrary to the known approved rules of art . . . nor exercise any force violence or cruelty upon, or towards, the body of any, whether young or old (no not in the most difficult and desperate cases) without the advice and consent of such as are skilfull in the same art*” (*Book of the General Lavves* 18–19). A concise definition of the “known approved rules of art,” however, was missing, and the fact that medical services was most often performed by ministers and laymen as well as practitioners also attests to the abstractness of such a law. Mather himself refuted the unlawfulness of inoculation with regard to the divine law in a letter to James Jurin of the Royal Society, stating: “I always thought the Word of the blessed God had instructed us that for our physic as well as our food, every creature of God is good, and nothing to be refused if it be received with thanksgiving” (*Selected Letters* 363). Nor did Mather believe that the knowledge and the benefit of inoculation should be limited to Boston. True to Winthrop’s vision of the City upon a Hill, Mather wrote: “One would think here was an experiment enough to instruct a country; yea, to instruct a nation” (365). Interestingly, the cure

should spread like the disease itself—proliferation and communication are seen as a means to inoculate the whole body of the nation.

In connection with both the ‘untimely’ knowledge of inoculation and the BodylPolitic, it is important to note that Mather relies on the testimony of his own slave, Onesimus, as well as on the reports of other African slaves in Boston. In *The Angel of Bethesda*, Mather takes pride in his fieldwork with the African slaves. His report also provides one of the earliest instances of a written rendition of Creole English, adding authenticity to the testimony: “I have since mett with a considerable Number of these *Africans*, who all agree in One Story; That in their Countrey *grandy-many* dy of the *Small-Pox*: But now they learn This Way: People take Juice of *Small-Pox*; and *Cutty-skin*, and Putt in a Drop; then by’nd by a little *Sicky, Sicky*; then very few little things like *Small-Pox*; and no body dye of it; and no body have *Small-Pox* any more” (*The Angel of Bethesda* 107). Slaves—if they were regarded as belonging to the BodylPolitic at all—were situated at the outer extremities of that body, mere hands and bodily working power, with no access to knowledge whatsoever. Thus, Mather’s decision to base his arguments on their testimony is particularly noteworthy. Kittredge calls it “one of the most remarkable features of Mather’s advocacy of inoculation” (435), and Beall and Shryock point out that “there entered into the situation what might be termed an African background to American culture” (98). When the Boston pro-inoculation ministers were criticized for adopting knowledge used by African slaves, the Reverend Benjamin Colman responded by saying that white citizens must “be willing to learn from the poorest slave in town” (16), and Mather and Boylston denounced any expression of the view that it would be “unlawful to learn of *Africans*.”

Douglass and the anti-inoculationists regarded Mather’s and other ministers’ credulous reliance on the slaves’ testimony as a monstrous folly. In a letter to his London friend Alexander Stuart, commenting on Mather’s statement that “the more plainly, brokenly, and blunderingly, and like Ideots, they tell their Story, it will be with reasonable men, but the much more credible” (*Some Account* 9), Douglass ridicules Mather’s African sources and his reliance on “half a Dozen or half a Score *Africans*, by others call’d Negroe Slaves, who tell us now (tho’ never before) that it is practised in their own Country. The more blundering and Negroish they tell their story, it is the more credible says *C.M.*; a *paradox in Nature*; for all they say true or false is after the same manner. There is not a Race of Men on Earth more *False Lyars*, &c. Their Accounts of what was done in their Country was never depended upon till now for Arguments sake . . . *O Rare Farce!*” (*Inoculation* 6–7). The notion of “farce” is paralleled in Douglass’s rebuttal of a pro-inoculation pamphlet written by Isaac Greenwood. In his *Postscript* to

Abuses, &c. Obviated, which he composed as an answer to Greenwood's satirical text, Douglass defines the genre of burlesque: "Burlesque is a kind of continued *Irony* representing the lowest abject Persons as *Heroes* . . . of the Farce" (1). In an isomorphic step, then, Douglass implicitly states that Mather's credulity regarding the testimony of a race of liars is also a burlesque in which he represents the "lowest abject Persons"—the African slaves—as heroes.

Douglass goes even further in denouncing the black slaves in his comments on what he sees as an undisputable [however ambiguous] advantage of the temporary warding off of smallpox: inoculation "consequently may be of great Use of the *Guinea Traders*, when the Small Pox gets among their Slaves aboard to inoculate the whole Cargo, and patch them up for a *Market*; . . . tho' to the *great Damage* of the next *Purchasers*" (*Inoculation* 20). Also, in an article meant to be ironic, published in *The New England Courant* in 1721, Douglass suggested using inoculation as a weapon against the Indians. For every native killed by inoculation, there should be a "*Gratuity*" of five pounds for the inoculators, and a higher reward of ten pounds for any who survived and spread the disease, in addition to "*their usual Fees and travelling Charges*" ("A Project"). Commenting on Mather's argument that England was also experimenting with inoculation, Douglass concedes this but also points to a crucial difference between the practice in England and New England: in the mother country, "Tryals were made . . . by Permission of the *Government* on the Bodies of Persons *dead in Law*" (*Abuses* 10).¹⁰ The overall cynical tone of Douglass's pamphlets gives the impression that the main difference between England and New England is the approval of the government: the status of criminals is comparable to that of slaves.

As he promoted the practice of inoculation, Mather continued to study the question of why this procedure protected the inoculated from future infection with smallpox. In *The Angel of Bethesda*, he wrote:

Behold, the Enemy at once gott into the very *Center* of the Citadel: And the Invaded Party must be very Strong indeed, if it can struggle with him, and after all Entirely Expel and conquer him. Whereas, the *Miasms* of the *Small-Pox*, being admitted in the Way of *Inoculation*, their Approaches are made only by the *Outworks* of the Citadel, and at a Considerable *Distance* from it. The Enemy, 'tis true, getts in so far, as to make Some *Spoil*, yea, so much as to satisfy him, and to leave no *Prey* in the Body of the Patient, for him ever afterwards to sieze upon; but the *Vital Powers* are kept so clear from his Assaults, that they can manage the *Combat* bravely and, tho' not without a *Surrender* of those Humours in the *Blood*, which the Invader makes a Siezure on, they

oblige him to *march out the same Way he came in*, and are sure of never being troubled with him any more. (112)

Mather argues that the different outcomes of cases of smallpox due to inoculation compared with those acquired by natural infection were not a result of the relative weakness of the inoculated material, but of the location of the infection. This coincides with the findings of modern research. Naturally acquired smallpox is an effect of airborne infection, replicating in the mucus membranes of the respiratory system and moving to the lymph nodes. This leads to a high concentration of the virus in the infected person's blood; the virus moves to other internal organs and finally to the skin to generate the pox. The actual cause of death is the damage done to the internal organs, "the very *Center* of the Citadel." With inoculation, the virus is introduced directly into the skin, and the viral replication in the respiratory and lymphatic systems and invasion of the blood is prevented. A much weaker and generally milder disease develops, with the pox erupting sooner in inoculated cases: the virus "march[es] out the same Way he came in." Another point of Mather's hypothesis worth mentioning is his statement that the virus leaves "no *Prey* in the Body of the Patient, for him ever afterwards to sieze upon." Here Mather is suggesting that some substratum wears away after infection or inoculation, and due to this fact the disease does not develop in the same person for a second time. More than 150 years later, Louis Pasteur reached a very similar conclusion when he stated that it was possible to become resistant to a specific type of infection once the germ dies, due to the absence of its necessary substratum in the patient's body. Mather is mapping out a germ theory—in his own term, an *animalcular* theory—of infectious disease. Beall summarizes: "The significance of Mather's knowledge of the animalcular theory becomes clear when it is realized that not until about 1880 was it a generally accepted theory in America and that Mather's statement antedates by eighty-three years what appears to be the earliest animalcular hypothesis published in America—that of John Crawford of Baltimore . . . in 1807" (113–14).

Mather's choice of words also oddly foreshadows a claim Emily Martin has recently made, a claim that in turn aptly describes some of the strategies Mather is employing in the way he handles smallpox. "Anthropology and the Cultural Study of Science," Martin observes that the sciences today curiously present themselves as set apart from their sociohistorical context, as citadels, as "a fortress that commands a city, both for control and defense." What sets the sciences apart is that they claim to construct reality but not to be themselves constructed" (26). Yet, science in fact is part of a larger reality, and the walls separating science from society are rather permeable, so,

sticking with the metaphor, “it is as if we thought of science as a medieval walled town, and it turns out it is more like a bustling center of nineteenth-century commerce, porous and open in every direction” (29). In order to show how scientific [or medical] knowledge within the citadel is connected to processes, events, and people outside, Martin refers to Deleuze|Guattari’s notion of the rhizome, since it well captures “the kind of discontinuous, fractured and non-linear relationships between science and the rest of culture” (31). Not surprisingly, Martin then chooses research on the immune system as an example of how such rhizomatic knowledge [related to experience, directly connecting thought to life] is applied to the body [which is also understood as a rhizome].

Reading Mather’s account of the citadel, and his stressing of the immense importance of the “outworks” in the healing process, the connection to the actual outworks of the Body|Politic cannot be missed: the folk medicine of slaves, the help of medical practitioners, and traditional healing techniques derided as the wisdom of heathens, madmen, and old women by those deep within the center of the citadel—these are all instances of a knowledge derived from the ‘extremities’ of the Body|Politic, the manual workers, and it is here that “the supreme distinction between the intellectual and the manual, the theoretical and the practical, modelled upon the difference between ‘governors’ and ‘governed’” (*Thousand Plateaus* 368) that Deleuze|Guattari comment on holds. By his willingness to “learn of *Africans*” or “from the poorest slave in town,” Mather opens up the citadel to the outworks. Douglass attacks on Mather’s reliance on the testimony of slaves can be seen as part of a wider unwillingness of the medical profession to accept lay knowledge and folk medicine, a refusal to ‘open up’ the citadel of academic knowledge to its outworks. Thus, he writes that inoculation, if it is to be practiced at all, must be “prosecuted by abler hands than *Greek old Women, Madmen and Fools*” (*Inoculation* 20). Beall and Shryock point out that in the case of inoculation, “an old folk practice gained access . . . to . . . Western science” (98). As a folk custom, inoculation had been practiced in Africa, China, India, and other Asian countries for centuries—thus, it was a folk practice that was either nonwhite [the slaves’ reports] or ‘heathen’ [the case histories from the Levant]; accordingly, the anonymous author of the pamphlet *A Letter from One in the Country* proposes that the procedure of inoculation should be left to the “*Turks and Pagans*, whence it came” (8). In the case of the Boston smallpox controversy, then, there is a clash of what Deleuze|Guattari see as “two formally different conceptions of science” (*Thousand Plateaus* 367): [major] “royal science” or “State science” is invaded by [minor] “nomad science” (362). As a consequence, “nomad science is continually ‘barred,’ inhibited, or banned by the demands and conditions

of State science”—witness the attacks on the procedure of inoculation based either on scriptural arguments or medical authority. “State science continually imposes its form of sovereignty on the inventions of nomad science” (362), since the rhizomatic connections between the different loci of the ‘invention’ of smallpox—the folk medicine of the Levant and the West Indies, the various attempts to introduce inoculation into Western Europe [Lady Montague in England, Voltaire in France]—were ultimately bundled and sanctified by academic “royal science.”¹¹ This process of appropriation culminated in the accepted theory of vaccination with the cowpox virus, an improved, controlled, and less dangerous form of inoculation introduced by Edward Jenner. Yet even this accepted history of immunology shows the importance of folk practices and the testimony of ‘nonprofessional’ persons. Jenner, who discovered the practice of vaccination in 1796, is said to have been informed by milkmaids who had developed cowpox from contact with cow udders that they were protected from the human form of the disease. Jenner’s subsequent experiments raised their folk wisdom to the status of a scientific fact, indelibly connected to his name. A whole history of experimentation was reduced to the metaphysics of origin that demands one name as a trademark. The model for a nomad science “is one of becoming and heterogeneity, as opposed to the stable, the eternal, the identical, the constant” (Parish 361).

Although these two conceptions of science have “different modes of formalization” (362), they are not inscribed in a hierarchical relation. Rather, they share a “single field of interaction” and are folded into each other alongside a “constantly shifting borderline.” Royal science perpetually appropriates the inventions of nomad science, while nomad science “continually cuts the contents of royal science loose” (367). Royal science follows the “legal or legalist model” (369), looking for absolute laws. In its tendency to control science and the productive forces of the governed, royal science aims at always “tak[ing] over management” (368). On a judicial level, the search for absolute laws *in* science also implies the judgment of what is lawful and what is not in the practical operations *of* science. Thus, Douglass counters the need for unorthodox action [in the case of how to deal with smallpox] with references to the state and legislation: in England, “the KING did condescend to allow this [i.e., inoculation] to be tryed on a *few condemned Criminals*” (*Inoculation* 10). Thus, without royal consent, the carrying out of inoculation in Boston is “*by the penal Laws of England Felony*” (13). Inoculation, if to be practiced at all, “must first be allowed of by *Acts of the Legislature*” (20). State science turns out to be a science both sanctioned by and in service of the state. In addition, Douglass seems to have realized that what was at stake was not only a medical, but also a political, question.

Anticipating the political implications that Mather was to draw from his conflation of medicine [body] and politics [community], Douglass warned: “If a Man may make free with his own Body Natural, because in Conscience he thinks he ought to do so, this not only countenances the old *Roman* Doctrine of *felo de se*, but is also a considerable step towards the making free with the Body Politick, *v.g.* He foresees something like to be *amiss* in the *State*, which in *Conscience* he is obliged to prevent by a *lesser Illness* or *Commotion*” (12).

One of the examples of nomad science Deleuze/Guattari refer to, as they illustrate their concept in *A Thousand Plateaus*, is the medieval journey-men’s associations, “the nomadic or itinerant bodies of the type formed by masons, carpenters, smiths, etc.” (368), and their approach to the building of the Gothic cathedrals. “Scattering construction sites across the land” (*ibid.*), these workers and artisans did not have recourse to an architect’s plan, reproducing a theoretical blueprint, in order to deal with the problem of weight distribution in the construction of high vaults. The *conceptual* difference is pointed out in terms of different *relations* to the material: “the static relation, form-matter, tends to fade into the background in favor of a dynamic relation, material-forces” (364). The skill of the workers is, in effect, their submission to a dynamic relation, a rhythm of construction defined by the material and its requirements, and not by mathematical and theoretical imperatives imposing the law of a *normalized form* on obedient matter. Nomad science appears to be a form of production that marks an *excess* over the disciplinary regulations of royal science.

The Boston smallpox controversy has been widely regarded as an effort on the physicians’ side to defend their authority in questions concerning medicine, and, accordingly, to limit the authority of the clergy “to interfere with and control the life of the community” (Blake, “Inoculation Controversy” 503). This is certainly a very important factor. Yet I would like to shift the dividing line with regard to the distinction between the two conceptions of science discussed so far, and connect it to the rise of the institutional body of the medical societies and their attempt to fix and regulate the more open and decentralized system they encountered in the colonies. In the course of the quarrel—in addition to ridiculing the testimony of slaves and the reliance on medical folk practice—Douglass, the only M.D. in Boston, continuously attacked Zabdiel Boylston, one of his opponents, as being merely an ignorant practitioner, making him part of the group consisting of credulous clergymen, lying and untutored Negro slaves, and old Greek women. Commenting on the medical situation in Boston, Douglass complains: “We abound with Practitioners, but no other graduate than myself” (“Letters from Dr. William Douglass” 164). In a letter published in the *Bos-*

ton *News-Letter* under the pseudonym of W. Philantropos, Douglass derides Boylston's status as a practitioner, calling him a "certain *Cutter for the Stone*" ("Open Letter") who lacked a medical degree. To that insult, Mather and four other pro-inoculation ministers—Benjamin Colman, Thomas Prince, John Webb, and William Cooper-Boylston—replied that Boylston "has not had the honour and advantages of an *Academical Education*, and congruently not the *Letters* of some *Physicians* in the Town, yet he ought by no means to be called *Illiterate*, ignorant, &c." ("Reply"). Douglass self-consciously and thoroughly embraces the perspective of state science that parallels the dichotomy of major and minor science with the "supreme distinction between the intellectual and the manual, the theoretical and the practical" (Deleuze and Guattari, *Thousand Plateaus* 368). An Englishman who had been educated in Edinburgh, Paris, and Leiden, receiving his M.D. from the University of Utrecht in 1712,¹² Douglass scorned and harshly criticized minister physicians such as Mather and the apprentice-trained doctors such as Boylston. Judging from the often rash and cynical tone of his letters, Douglass seems to have entertained a professional prejudice against learning acquired outside university walls. Commenting on the common practice of employing doctors like Mather or Boylston, he declared that "frequently there is *more Danger* from the Physician, than from the Distemper" (*Summary* 2:351).¹³

John Williams, a Boston apothecary, articulates his stance in religious terms, claiming that Mather and other Boston ministers "bring not their argument from Scripture, but from the History of Places where it was practiced, and plead the lawfulness of it from the event, which we believe is no safe way for Christians to argue" (14). Williams' dichotomy sets scripture [God's plan] apart from practice and experiment. As Deleuze and Guattari observe, "in the nomad sciences, as in the royal sciences, we find the existence of a 'plane,' but not at all in the same way. The ground-level plane of the Gothic journeyman is opposed to the metric plane of the architect, which is on paper and off site" (*Thousand Plateaus* 368). In Williams's argument, there is a hint of a transformation from a *scriptural* to a more *materialist* realm. According to the more religiously inclined anti-inoculationists, one of Mather's main faults is that he does not resort to a 'lawfulness' derived from holy writ, but to an *experiment*, to a strategy of bricolage derived from 'the event'—even history itself is in danger of no longer being seen as a teleological development according to God's will. Instead it seems likely to become concentrated in an 'event' in the Deleuzian sense, closely related to nomad science, which privileges the geographical over the historical. Masons, smiths, journeymen—all are characterized by a specific relation to space: "Nomads have no history; they only have a geography" (393).

Indeed, one of the most distinguishing characteristic of the early American medical practitioners was their mobility. Since medical practitioners [to say nothing physicians with a medical degree] were rare, apprentice-trained men moved across the country to make a living, employing their knowledge where it was needed. Small towns and communities tried to make sure that medical support was within reach. On December 26, 1639, Dr. Giles Firmin, who had received a grant of land on the condition that he stayed in Ipswich, Massachusetts, complained to Governor John Winthrop on behalf of the nomadic practitioners who “range from place to place on purpose to liue vpon the Country” (210). Before the mid-eighteenth century, there was scarcely any person whose only occupation was medicine. Minister physicians and apprentice-trained doctors relied on both old English folk remedies and Native American healing techniques, revealing a willingness to experiment with new medical approaches. Yet the early transfer of English culture to the colonies certainly did not involve what Daniel Boorstin has called the “attic-full of institutions” (229), referring to the formal medical hierarchy of the English guild system.¹⁴ These guilds made strict separations among university-educated physicians, surgeons, apothecaries, nurses, midwives, and so forth. As the elite among medical men, physicians [at least in England] only practiced among the upper class, their peers. Thus, there is also a social reason why the early colonists consulted other practitioners instead of ‘real physicians.’ In addition, only a few physicians immigrated to the colonies, in part because in the colonies—like in the rural parts of England—“there were no opportunities worthy of their prestige” (Shryock 9). But whenever a trained physician with a degree was in town, he showed a profound hostility to the rank and file of other practitioners and their kind of ‘folk empiricism.’ Douglass wrote in *The New England Courant*: “Let us be thankful that we have skilful Physicians and others, who are capable to minister Advice and Relief to the Sick, and that we are not left to the blind Conduct of *Empiricks and Montebanks*, whose Knowledge extends to a few *ill-pronounc’d hard words*, but no further” (“Letter”). Yet, much to the chagrin of the educated medical elite, the uneducated practitioners, and not “graduates of Edinburgh or founders of some medical society, who, for better or worse, formed the bulk of the profession, provided most of the medical care, and gave the profession its prevailing tone” (Bell 498). As Shryock has pointed out, the “ideals of the guild,” as set up mainly in London and Edinburgh, where Douglass was educated, established that at least “theoretically, as gentlemen and scholars, physicians did not work with their hands as did surgeons, nor should they engage in trade as did apothecaries” (3). And even if a case could be made that the strict English guilds’ distinctions and ideals had at least to be modified in

the colonies' environment and social reality, the claim of superiority of the physicians over their poorly trained country cousins remained. In an almanac for 1765, Nathaniel Ames Jr. derides the practitioners as "idle persons . . . some of them commence *Quacks*, and call themselves Doctors, having seen a Man that saw another Man cured of a foul Gunshot by hot Oil of Turpentine and heard their Grandmother say that Carduus Tea will vomit" (1). Moreover, over the years, a pattern of general medical practice had established itself in the colonies that was unacceptable to the physicians, since it basically reflected the standard of what in the English system was associated with the guild of surgeons and apothecaries, the class of mere practitioners with which no gentleman would identify. From the first quarter of the eighteenth century onward, British-trained and university-educated physicians in, for example, Boston and New York were generally eager to import the hierarchical and elitist structure of the English medical profession.

William Douglass was a founding member of the first Boston Medical Society in 1735. In a letter of February 17 of that year to Cadwallader Colden in New York, another physician of Scottish descent and reputedly one of the most learned colonists of the time, Douglass announces an early step in the formal organization of what would soon become state medical societies: "We have lately in Boston formed a medical society" ("Letters from Dr. William Douglass" 188). The fact that Douglass describes it as "a virtuoso society" shows the high aspirations and pretensions of the group. Aiming to emulate the strict formality and hierarchy of the English model, Douglass's early society "dealt with the question of registration of regular medical practitioners throughout the province" (Burrage 2). One of their official announcements presents the group as "a Medical Society in Boston, New England, with no quackish view of the manner" (quoted in *ibid.*). Another medical society's inaugurating document said that one of the group's objectives was "to get the Profession on a more respectable footing in the Country by suppressing this Herd of Empiricks who have bro't such intolerable contempt on the Epithet *Country Practitioner* . . . We don't know what Objections there may, there have been such Societies in Boston and where medical Academies are established & Empiricks are punished by Law there is not so much need for them."¹⁵ British medical professionals were pushing forward a movement to bring Massachusetts institutions into conformity with the English guild structure. Ultimately, this meant not only a repudiation of "the medical practice of locally apprenticed physicians, clergymen, and laymen all over Massachusetts; it implied a repudiation of . . . an . . . open, fluid, and decentralized standard [that] had flourished" (Brown 44) in the Massachusetts Bay Colony.

Whereas state science proceeds from hierarchy and from rational theorems, nomad science is “problematic, rather than theorematic” (Deleuze and Guattari, *Thousand Plateaus* 362). Such an approach proceeds from the problem itself, finding a solution by using the material at hand, and not a preestablished theoretical framework, concentrating on “the accidents that condition and resolve it” (ibid.) instead. Mather confirmed the experimental character of his approach. Attacked for favoring and pushing forward the procedure of inoculation, he proclaimed himself a pure empiricist on the smallpox issue. As Sacvan Bercovitch has observed with regard to Mather’s affinity for science, he was an “avid dilettante, with an encyclopedic range of interests and a predisposition toward the experimental and pragmatic” (“Cotton Mather” 130). Mather voiced his criticism of a one-sided, theoretical medical logic: “Of what Significancy are most of our Speculations? EXPERIENCE! EXPERIENCE! ’tis to THEE that the Matter must be referr’d after all; a few *Empirics* here, are worth all our Dogmatists” (*An Account* 8). In what follows, I will position Mather’s understanding and involvement in the testing of inoculation in the wider context of his view of the human body, as he explains it in *The Christian Philosopher* and *The Angel of Bethesda*. Mather’s interest in science and medicine over the years had influenced his attempt at handling the smallpox crisis in a different way, just as this experience in turn informed the writing of those works—his two most detailed scientific writings, which are an amalgam of old and new, blending an alchemist’s [Galenic, Paracelsian]¹⁶ and a vitalist’s [largely Helmontian] views of body and universe with findings of the ‘new science.’ *The Christian Philosopher* [published in 1721] and *The Angel of Bethesda* [finished in 1724, but never published during Mather’s lifetime] were both written during Mather’s early research on inoculation and putting it into effect. The significance of Mather’s scientific and medical writings certainly does not lie in the fact that he created a new and original ‘natural philosophy’—most of the time, his books seem to be mere compendiums of other authors’ scientific findings, generally consisting of long quotations, spiced with an occasional observation with relevance to New England. What is important, however, are the facts that these books expounding the new scientific ideas were written in New England, where these ideas were little known, and that they were written by Cotton Mather, whose Calvinist and first-generation Puritan heritage was particularly at odds with at least some aspects of the worldview he was promoting. In addition, Massachusetts’s “legal and social systems, perceptual frameworks, and social and cultural imperatives were inevitably in large measure British in origin” (Elliott xii), but provincial in nature. Within that framework, Mather tried to create a difference. In many respects, Mather can be seen as reinterpreting the ‘New England way’ as a middle way, steer-

ing its course through various oppositional forces, expressing his “*American Sentiments*” (*Diary* 2:625) against the “formality” (*Wonders* 65) of English high culture, which had invaded and put roots into American culture, in his view. Refusing “to follow unswervingly the intellectual fashions of his English peers, or to conform with their divisions, particularly in the field of medical science” (Breen 340), Mather, in an awakening of regional pride, rather asks what—in terms of science and medicine—can be expected of the colonies, as “our little New England may soon produce them that shall be commanders of the greatest glories that America can pretend unto” (“Way to Prosperity” 137). Thus, Mather carved his own middle way [which he liked to see as representatively American] not only through theology and science, but also through mechanist and vitalist philosophy, iatromechanist and iatrochemical approaches, blending what in England seemed to be unbridgeable, hard-lined, and bitterly antagonistic camps.

Mather’s reservations about the [as he saw it] narrow-minded and one-sided English approach to science and medicine was political not only in tone and intent, I argue, but also as regards content. I am not so much interested in the scientific accuracy of Mather’s writings as in his concept of the body, and the political consequences that might follow from such a concept. The colonies’ negotiations with England about their charters at the end of the seventeenth century had posed a troubling question for New England, in both religious and political terms: was Massachusetts only another British colony, or an independent Body|Politic? To put it in terms of the Puritan project: was New England still an elect nation, engaged in the building of a new Jerusalem? If Puritan influence was declining, that was at least partly because of the unwillingness or inability of the Puritan clergy to synchronize and synthesize heterogeneous intellectual traditions, and to update them according to the times. Jeffrey Jeske has rightly argued that this historical moment, in addition to a spreading confusion, might also result in a variety of voices: “Juxtapositions of Calvinism, Scholasticism, humanism, and seventeenth-century ideas produced strange hybrids, offering multiple personae to the orthodox thinker” (583) to choose from. A more unorthodox thinker, it follows, might even want to make exactly this multiplicity of voices his own, a *multiple persona* rather than *multiple personae*. In fact, in his writings, Mather can be seen to adopt “different personae with contradictory philosophical assumptions, depending on situations and audience” (584)—a “polyphonic subjectivity”¹⁷ to back up his discursive strategy of the ‘middle way.’¹⁸

In one of his letters Mather, one of whose favorite personae was that of the minister physician, explicitly draws the analogy between the individual body and the Body|Politic with regard to medical treatment. Since this

document has until now remained unpublished, it deserves a somewhat longer quotation:

It is a Principle among some Politicians, *If the People will be deceived, let them be so*: And perhaps in one Case it may be admitted; namely, when the People are in a bad State and ugly Frame, then it may be proper to use some methods to impose on them in order to recover them from such a State & Frame, and bring them from a wrong & lustful Way and put them in a right and good One.—For so skilful and prudent Physicians sometimes use their Patients, who are not capable of judging and choosing for themselves: They represent Things in a plausible and striking manner to them, and so lead them to take what they utterly dislike, and thus they gain the mastery of their distempers and happily cure them. And, when such a method as this is allowed with regard to the Natural Body for its Benefit; why may not the same method be indulged for the Advantage of the *Body Politic*? Not that I would recommend the Use of any Arts in this case, which are in Fact *morally Evil*. But yet perhaps in some cases People may be innocently and honestly amused and imposed on, so as to be brought into a safe and comfortable Condition.

But this Principle will not hold good, nor ought it to be allowed, but only in Favor to People and from Regard to their Welfare [illegible] there are to be found Politicians, falsely called so, who, while the Poor People are willing to have it so, are [so?] deceiving them, and that not for their Benefit and Comfort, but to their Loss, Detriment, and Ruine.

And, as I apprehend, this is the Truth with regard to those naughty persons among us, who, when the Government is in a fair Way of being recovered to a sound and healthy State, take Pains to deceive and impose on the honest and wellmeaning People, and endeavor to make them believe that they are in a bad way and that the only method of setting them to rights must infallibly ruine them. (“A Political Letter”)¹⁹

Taking this letter at its word comes close to an invitation and a license to politicize Mather’s writings about the body, and to read his medical and scientific texts in conjunction with his political tracts and sermons, using them all to draw conclusions about his theory of the Body|Politic.²⁰

Mather’s writings, then, operate on the interface of medicine and politics, body and community. These discourses clash with and influence each other within the framework of Puritan theology, which, however—because of the impact—is significantly transmogrified in the course of events. If Winthrop started with a theological framework [God’s law], from which certain concepts of the Body|Politic derived, Mather proceeds from scientific/medical knowledge of the body, which suggests different models for the Body|Politic and which also results in a theological framework that stresses the produc-

tivity of the world more than the wrath of God. It is within this context of several attractors that Mather's forays into both politics and science have to be read, and it is this complexity of approaches that make Mather's thrust into modernity by advocating inoculation more than just "a lucky shot" (P. Miller, *The New England Mind: From Colony to Province* 348) in the work of an otherwise supposedly antiprogressive and vain, repressed and repressive Puritan bigot, as Perry Miller would have it. It might be fruitful to assume that the strategy of illustrating political issues in medical language also works the other way around. And indeed, a highly political vocabulary informs Mather's medical treatises and writings on the body, just as in many of his sermons and writings that address question of politics, Mather uses medical terms. The wider political implications of the question of inoculation were also evident to Mather's opponents. I will therefore take a look at Mather's medical and scientific writings, examine their sometimes unexpressed and possibly unintentional conclusions, and see what reading them in a political frame of reference might reveal.

The Christian Philosopher is much more a general overview of the new sciences of the universe and of man, whereas *The Angel of Bethesda* concentrates mainly on medicine, mixing together a collection of traditional, herbal household remedies and more modern approaches, and culminating in Mather's formulation of an early germ theory of illness—closely related to his experience with the smallpox epidemic—as well as his notion of the *Nishmath-Chajim*, both of which I will comment on later. In both works, Mather attempts to bridge the gap that separates the scientific view of the world from a theological outlook. In adopting the role of a physico-theologian, Mather tries to span and embrace both discourses. *The Christian Philosopher* is in many ways the mirror image of a large opus that Mather never finished or published, the "Biblia Americana." While the "Biblia Americana" aimed at presenting a *scientific religion*, *The Christian Philosopher* tackles the problem from the side of a *religious science*, shifting the emphasis very strongly to the scientific part. As the book's subtitle makes unmistakably clear, *The Christian Philosopher* presents the "Best Discoveries in Nature, with Religious Improvements." Symptomatically, in its exploration of the findings of the new science, the book takes John Ray's *Wisdom of God Manifested in the Works of the Creation* as a model, while its structure closely follows that of the book of Genesis, beginning with an essay called "Of the Light," moving through essays on the elements, minerals, vegetables, and animals, and culminating in the section "Of Man."²¹ "The Body of Man," Mather writes, is both "a *Machine* of a most astonishing Workmanship and Contrivance", as it is "a *Temple of GOD*" (*The Christian Philosopher* 237)—Mather is reading findings from the field of anatomy first

of all within a Cartesian framework. However, he soon comes up with reservations against a merely mechanistic view. In the chapter “Of the Four-Footed,” he makes clear where his main difference with and objection to Descartes lie: —“The Opinion of *Descartes*, and *Gassendus*, and *Willis*, and others, That the *Soul* of Brutes is *material*, and the whole Animal a meer *Machine*, is clogg’d with insuperable Difficulties” (226), a point he shares with Leibniz’s critique of the Cartesian mechanics that conceived of nature as a stable structure, where matter was inactive and every force external.²² And although Mather’s point of departure is somewhat different from Leibniz’s²³—after all, Leibniz was not so much seeking scientific accuracy as he was developing a philosophical system, whereas Mather was interested in scientific and medical ‘facts,’ and his work provides nothing of the inherent coherence and systematics of a Leibniz, but is more of a heterogeneous compendium—the ultimate conclusions that can be drawn definitely bear traces of convergence with Leibniz’s thought in important respects.²⁴

In a famous quotation, William James denounced the times “when Leibnitzes with their heads buried in monstrous wigs could compose Theodicies, and when stalled officials of an established church could prove by the valves in the heart and the round ligament of the hip-joint the existence of a ‘Moral and Intelligent Contriver of the World’” (42). Thus, by analogy to Deleuze’s Leibniz, this chapter will present a similarly *philosophically* de-wigged Mather.²⁵ Mather, like Leibniz, as Deleuze states, was situated at “the threshold of the Enlightenment” (*The Fold* xii), and like Mather, “Leibniz turns his back on Cartesianism. He renews the tradition of Van Helmont and is inspired by Boyle’s experimentation” (7). The most important aspect of Leibniz’s philosophy with regard to my analysis of Mather’s thought is his connection of mechanism and what might be called vitalism, materialism, and metaphysics. In his *Monadology* [1714], Leibniz speculated that the universe, in both its spiritual and material aspects, was made up of an infinite number of infinitely small ‘force centers’—the monads, which for Leibniz are “the true atoms of nature” (*Philosophical Texts* 268), indivisible and without windows. Since the monads—which vary in kind, according to their capability of perception [and even apperception]—fill all spaces, everything in the universe is connected. Matter and monads, body and soul, are connected not by influence, but by a preestablished harmony presided over by God, the supreme monad. It is not within the scope of this study to prove that Leibniz influenced Mather. Yet I think it is strange that what Voltaire called the best of all possible worlds these two men never met, intellectually. Despite their differences, these two coevals share many things: both were deeply interested in the material world and its connection to metaphysics; both were Fellows of the Royal Society of London; their work reveals similar

influences; and the theories and concepts of both reveal a fascination with and an indebtedness to the invention of the microscope. As Robert Mulvaney has shown, there has been little scholarly attention to the place of Leibnizian theory in American philosophy. Mulvaney himself cites two nineteenth-century thinkers as early proponents of the reception of Leibniz's work in the United States, and notes that its influence was mainly on transcendentalist thought. Yet there is reason to suggest that Leibniz's name was known in Boston society as early as 1704, the time when Mather was working on *The Christian Philosopher* and his other scientific writings. As a young man, Jonathan Belcher, son of a Boston merchant and governor of Massachusetts from 1730 to 1741, went on the grand tour of Europe in 1704, where he met the Electress Sophie, Leibniz's friend and correspondent, and mother to the future English King George I—who, as a Protestant, ensured the security of New England congregationalism—a meeting that proved helpful in his later efforts to become governor. In his diary entry for September 11, 1704, Belcher describes his visit to the library of Frederick I, the Prussian king, “where we met with one Mr. Leibnitz, with whom we had an hour or two's conversation. He is mighty civil and obliging. He is president of the Academy of Sciences, which the King has lately Erected” (quoted in Crockett 82).²⁶ As Michael Batinski rightly observes, Belcher did not mean to keep this journal for himself. Aimed at showing the aspirations of an ambitious young man, Belcher “wrote with an audience at home in mind. His accounts of Europe's splendid palaces and lofty cathedrals, the historic sites, religious customs, and social life were intended to provide several evenings of pleasant entertainment and conversation among his family and friends in Boston” (12). It is likely that Mather, who knew Belcher, also came across what I think is the earliest document of contact between the American colonies and Leibniz.

Talking about the body of man, Mather oscillates between descriptions of scientific observations, ranging from anatomy to what we today would call biology, and praise of God, the creator of that “astonishing” machine. As “the *Lord of this lower World* . . . who is to do the Part of a *Priest* for the rest of the Creation” (*The Christian Philosopher* 236), man in this account curiously retains the image of and resembles God on a smaller scale. And in Mather's anatomical account and praise of the “*erect Posture of Man*” (238), where “all the parts of the Body [are] so disposed as to *poise* it! All in a nice *Equipoise*” (239), it is not so much sin that makes the body crumble into pieces, that is responsible for man's ‘fall,’ but “Nature's Law of *Equilibration* [which] should always be observed”—if instead “it be transgressed or neglected, the Body necessarily and immediately tumbles down.” The “Law of *Equilibration*,” similar to the general harmonious structure pervading the universe as a whole, is in fact the coordination of the virtual

multiplicity of the body's forces, its speeds and intensities, synergizing the "great . . . variety of *Motions*" (239) the body is capable of. In the much earlier chapter "Of Gravity," Mather introduces the idea of the universe as a vast machine, engineered by God. The "Great GOD not only has the *Springs* of this immense *Machine*, and all the several parts of it, in his own Hand, and is the *first Mover*; but . . . without His *continual Influence* the whole Movement would soon fall to pieces" (95). If not necessarily common in New England, this trope of the mechanical universe [mainly borrowed from Cartesian mechanics, but with an obviously much greater emphasis on the divine presence in the machine] had been employed by other Puritan ministers as well, to praise the regular and mostly smooth functioning of God's creation. In 1726, Samuel Willard speaks of the universe as a machine, admiring "the *harmony* of the whole in all its parts . . . its nature being every way adapted to the place it bears: every wheel in this curious watch moving aright" (*Compleat Body of Divinity* 38), alluding to the trope of God as the ultimate watchmaker. Mather also seems to be in line with that way of thinking, subscribing to a divinely enhanced but still fairly mechanistic theory that encompasses both man and the universe as a whole. I will show that this is only part of the truth, however: Mather, I argue, goes much further than just repeating this traditional trope.

Mather had already used the trope of the clockwork universe, but he had taken his cue both from a different source, and for a different occasion. In a sermon delivered on April 1689, titled "The Mystery of Providence," Mather commented on the Glorious Revolution, the news of which had just shortly before reached Boston. Choosing Ezekiel 1:16 for the motto of his sermon—"the fashion of the wheels and their work was like unto a chrysolite: and they four had one form, and their fashion, and their work was as one wheel in another wheel"—Mather's exegesis can be read as justifying the revolution by being in line with the providence of God who 'engineers' the state and fate of human affairs: "The *Revolution* of the world is ordered by y^e providence of God in a manner very so intricate, but yett very *Glorious*" ("Sermons 1680-1722," my emphasis).²⁷ Ostensibly concerned only with God's providence in the general machinations of the world, stating that "God is in all things making way for y^e Best Issue & Event that can bee, His glory," Mather's suggestive choice of words cannot be a mere coincidence, given the context of the fresh news from England. Since all the wheels and parts of this clockwork mechanism are intricately and inextricably interconnected, the effects of the 'revolution' at one end of the world machine has resonances and effects everywhere else: "A wheel makes a Noise in y^e Turning of it. So, when y^e world is turned upside down,—all y^e Earth rings of it.—yea, & y^e Heaven too." Mather's image of resonating forces that af-

fect the whole universe expresses in more overtly religious *and* mechanistic terms a position quite close to Leibniz's view. Unlike Newton, who believed in a vacuum, a space substantively empty of matter, Leibniz held that "all matter is interlinked. In such a plenum, any movement must have an effect on distant bodies in proportion to their distance. Each body is affected by the bodies which are in contact with it, and in some way or other feels the effect of everything that happens to them" ("Monadology," *Philosophical Texts* 276).²⁸ This 'resonance effect' comprises more than just the influence of adjacent bodies: "In addition, by means of those bodies with which it is in direct contact, it also feels the effects of all the bodies which they are in contact with, so that such communication extends indefinitely." Mather's "noise" of the turning wheel is Leibniz's indefinitely extended [i.e., infinite] communication of mutually affecting bodies, like the circles that a stone creates when thrown into water,²⁹ so that "as a result, every body feels the effects of everything that happens in the universe" (276).

This sounds almost prophetic, given the fact that in the course of the negotiations over the charters, in which Cotton's father, Increase Mather, was a principal player, Boston revolted against the royal governor of Massachusetts, Sir Edmund Andros. The nullification of Massachusetts's original charter, granted to John Winthrop, had turned the colony into a administrative dominion of England, governed and controlled by a governor not elected by the people, but by a non-Puritan representative of the Crown—Puritan self-government had been abolished in one quick stroke. In the absence of his father, Increase, who at that time was in London trying to persuade the king to reinstall the old charter, Mather was involved in the revolt in Boston and the overthrow of Andros. Edward Randolph, the deputy auditor of Boston, wrote that "the world may not bee any longer deluded with Lyes and shams: that the Rebellion here is the act of all the poeple where as onely Morton Minister of Charlestown Moode Allen young Mather Willard and Milborne the Anabaptist preacher with some of the principal members of all their churches and some of the Old Magistrates were the chiefe designers of it yet they calld God Almighty into the plott, saying that twas providentially done that all the people rose vnanimously" (6:312–13).³⁰ In addition to being one of the "chief designers" of the upheaval, Mather even seems to have accommodated a 'revolutionary cell' in his house. Randolph reported in a letter to William Blathwayt, another royal officer: "I send you a booke putt out by young Mather. The Epistle to Mr. Winthrop shoves what great hopes the church men had of his turning Rebel to serue their Turn this Mather had a meeting of Armd men at his house" (6:291).

From the perspective of the royal officers, Mather's activity must have seemed antimonarchical—which indeed it was. However, it has to be noted

that the ministers' position was an ambiguous one. Apart from those 'moderate' clergymen and merchants who saw the status of dominion governed by England as a way to connect New England more closely to the mother country, both politically and economically, ministers such as the Mathers attempted to prove to the new monarchs that the colony was fit for self-government, and had curious stance in regard to the more rebellious and active forces in New England. On the one hand, it was [in good measure] justified as a means to do away with tyranny; on the other hand, open anarchy and disobedience had to be condemned and suppressed in order to keep the king in good spirits. Thus, when Cotton Mather and others drafted *The Declaration, of the Gentlemen, Merchants, and Inhabitants of Boston*, they were carefully but willfully positioning themselves 'in between': this tract can be read as underscoring the colony's loyalty against being "attaqu'ed by the *French*" (*Declaration* 1),³¹ but it also openly announces the possibility of seditious tendencies against maltreatment of [the officers of] the crown, for whom "the only difference between them [i.e., New Englanders] and slaves is their not being bought and sold . . . Accordingly we have been treated with multiplied contradictions to *Magna Carta*" (2). Divine providence, it seems, had chosen Mather to respond to the "noise" that the turning of the wheels in the machine had caused. The idea of the machine provides Mather with two different political ideas: revolution as a stance against tyranny and oppression [this was how Cotton Mather, a loyal son, regarded the deeds of the Puritans of the first generation], and the idea of providence as good government. In the body-as-machine, these ideas merge with Mather's 'double articulation' of the Body|Politic and the questions related to the good government of, and care for, this body.³²

The Christian Philosopher's further comments on the "machine" that man is considerably stray from the mechanist image to a more biological and chemical one, an image that became even more prominent in *The Angel of Bethesda*. Using as a scriptural hook the same quote that John Winthrop had used in "A Modell of Christian Charity" to lay down a model for the workings of the Body|Politic—1 Cor. 12: 14–26: "God hath so tempered the Body together, that the Members should have the same care for another, and if one Member suffer, all the Members suffer with it!" (*The Christian Philosopher* 244)—Mather enters the realm of the body's capacity for self-healing, the "Provisions made in the Body of Man to *stave of Evils*" (241). This is a remarkable step away [or, rather, a revision of and expansion on] the traditional mechanist trope: "How astonishing the *Methods* and *Efforts of Nature* to set all things to rights . . . in most *Wounds*, if kept clean and from the *Air*, the *Flesh* will glue together with a *native Balm* of its own; and . . . *broken Bones* are cemented with a *Callus*, which they themselves

help to make” (243). Even diseases in general are far from being “useless, for the *Blood* in a *Fever*, if well govern’d, like Wine upon the *fret*, will discharge itself of all heterogeneous Mixtures” (ibid.). Thus, the body, under ‘good governance,’ is able to heal itself—and it is even more astonishing that in this context, which basically asks for the common association of disease and sin, Mather refrains from making it. Moreover, in the next passages, he even hints at the fact that this ‘government of the body’ need not necessarily be a ‘centralist’ one. As the ‘democratic’ structure of the body according to St. Paul suggests, there is an egalitarian relation between the organs. The management of the body is not [or at least not only] controlled by the head or the heart, but also regulated by ‘sympathies,’ by affinities and almost ‘transversal’ alliances between other organs and parts of the body: “What inexplicable Sympathy which there is between Diseases of the *Belly* and those of the *Skin* . . . What a Sympathy between the *Feet* and the *Bowels*” (244)—here one can find another example of the importance of the “out-works of the citadel.”

These various subsystems are contained within the envelope provided by the skin: “And what better *Covering* were it possible for the whole Body to have, than the *Skin*; whereof the *Microscopical Views* given by *Cowper* in his *Anatomy*, must give a vast Surprize to us!” (241). The particular point about this covering, in the scientifically grounded view of the skin to follow, is that, in contrast to the impermeable skin of the early Puritan Body/Politic, Mather’s account of the skin points to its intricate foldedness and permeability: “The *Scarf-skin* examin’d with a Microscope, appears made up of Lays of exceeding small *Scales*, which cover one another more or less, according to the different Thickness of the *Scarf-skin* in the several Parts of the Body; but in the Lips they only in a manner touch one another” (246). Leeuwenhoek’s microscope—an important reference for Leibniz as well—provides a view of the infinitely porous structure of the skin responsible for one level of interaction of the organism with the outside: “*Leuwenhoek* reckons that in one cuticular Scale there may be five hundred *excretory Channels*, and that one Grain of *Sand* will cover one hundred and twenty-five thousand *Orifices*, thro which we are *daily perspiring*. What a prodigious number of *Glands* must there be now on the Surface of the whole Body!” (246–47). The body for Mather, it seems, is a system of heterogeneous aggregates, and the logic of the montage-like text here clearly mirrors the structure of the body itself: the chapter on the body, “Of Man,” is as heterogeneous as the ‘object’ it attempts to describe. These interacting subsystems that constitute the body are situated within a permeable envelope. This permeability of the skin, no longer signifying [and also not functioning as] a clear boundary between inside and outside, for Mather provides an important

site of a dynamic interaction between body and world, as his foray into the praxis of inoculation has shown.

Yet, amid all those transversal alliances, Mather still identifies a center: the heart. But if he assigns to it the function of the engine of the body-machine, he does so only in terms of its importance for the circulation of the “Vehicle of Life”: “The Divine Workmanship about the HEART, who, that has any *Heart*, can forbear admiring of it, with most sensible Acknowledgements! This is that admirable Bowel, which with its incessant Motion distributes the *Blood*, the Vehicle of Life, throughout the whole Body. From this *Fountain of Life and Heat*, there are *Conduit-Pipes* even to the least, yea, and most remote Parts of the Body. ’Tis the Machine, which receives the *Blood* from the *Veins*, and forces it out by the *arteries*, thro the whole Body” (279). Yet, even this center is not a real one in the sense that of the heart as an organ that depends on no other, but on which all others depend. Mather hastens to add that “the *Heart* and the *Brain* do notably enable one another to work” (280). Stressing the importance of the blood, Mather comments on the mutual interdependence of brain and heart, observing that “the *Brain* cannot live unless it receive continual Supplies of Blood from the *Heart*, much less can it perform its Functions of preparing and dispensing the *Animal Spirits*; nor can the *Heart* afford a *Pulse* unless it receive Spirits or something descending from the *Brain* by the *Nerves*” (ibid.). It seems indeed to be the intricate system of conduits and their structure—visualized by Mather in terms of a tree, but described in a more rhizomatic fashion—that for him is of the utmost importance and most remarkable here: “About the *Blood*, this is admirable; the Branches which go off at any small distance from the Trunk of an *Artery*, unite their Channels into one Trunk again, whose Branches likewise communicate with one another, and with others; whence it comes to pass . . . that when any small *Artery* is obstructed, the Blood is brought by the communicating Branches to the Parts below the Obstruction, which must otherwise have been deprived of their Nourishment. And in the *Veins* there is the like Provision, that so justly surprizes us in the *Arteries*” (290).

Although he does not explicitly mention William Harvey and his discovery of the blood’s circulation [Mather does include an almost verbatim quotation from Harvey’s quantitative analysis of the heart capacity], Mather seems to have accepted Harvey’s shift from the importance of the heart to his emphasis on blood and its circulation—an important factor in a ‘politicized’ reading of Mather’s scientific/medical text. As court physician to James I, Harvey had dedicated his seminal study, known as *De Motu Cordis*, published in 1628, to the king: “Most Gracious King, The heart of creatures is the foundation of life, the Prince of all, the Sun of their Microcosm, on which all vegetation does depend, from whence all vigor and

strength does flow” (*The Anatomical Exercises* vii).³³ By analogy, and in perfect accordance with the metaphor of the monarchical Body/Politic, “likewise the King is the foundation of his Kingdoms, and the sun of his Microcosm, the Heart of his Commonwealth, from whence all power and mercy proceeds” (*ibid.*). Harvey’s pivotal contention in *De Motu Cordis*, in line with Aristotle’s cardiocentrism, was the primacy and sovereignty of the heart itself, and he drives this point home while referring back to the metaphor established in his dedication: “The heart is the first subsistent . . . the heart, as a sort of internal animal, consists longer, as if Nature by the making of this first, would have the whole animal afterwards to be made, nourish’d, preserve’d, perfected by it, as its own work and dwelling place. The heart is as it were a Prince in the Commonwealth, in whose person is the first and highest government every where; from which as from the original and foundation, all power in the animal is deriv’d, and doth depend” (115). Self-consciously referring to the possible influence of a political reading of the scientific treatise, Harvey also stresses its pedagogical model character: “The knowledge of his own Heart cannot be unprofitable to a King, as being a divine resemblance of his actions (so us’d they small things with great to compare). You may at least, best of Kings, being plac’d in the top of human things, at the same time contemplate the Principle of Man’s Body, and the Image of your Kingly power” (vii–viii).

Yet the influence might also have worked the other way round. Christopher Hill has shown that the framework of absolute monarchy, in which Harvey was developing his ideas, did not allow for drawing the final consequences of his implications in 1628. The cardiocentric position ostensibly held by Harvey has been regarded as evidence for the synchronicity of science’s Copernican turn and, according to Hill, for “the doctrine of absolute sovereignty over a community of equal individual atoms” (“William Harvey” 55)—a view sanctified by Harvey’s dedication. Yet, in his treatise *De Circulatione Sanguinis*, published in 1649, the year of the execution of Charles I and the proclamation of the republican commonwealth, “Harvey explicitly and precisely renounced his earlier opinion: he dethroned the heart” (Hill, “William Harvey” 55). Not only did Harvey now clearly point out the primacy of blood and its circulation with regard to the heart, he also abolished the microlmacrocosm analogy his previous dedication to “the Prince of all, the Sun of their Microcosm” had been based on. The heavenly bodies could not provide any analogy, since our knowledge of them is only “uncertain and conjectural” (*The Anatomical Exercises* 179), and “the example of Astronomie is not to be followed” (168).

Even if the title of Harvey’s treatise does not necessarily indicate it, the idea of the importance of the circulation of the blood is already present in

De Motu Cordis. For him, because of the evidence of his analysis, it “must be of necessity concluded that the blood is driven into a round by circular motion in creatures, and that it moves perpetually; and hence does arise the action and function of the heart, which by pulsation it performs; and lastly, *that the motion and pulsation of the heart is the only cause*” (91, my emphasis). Harvey accurately described how the blood circulates through the body. He recognized that the heart, lungs, liver, veins and arteries made up a single but intricate and interdependent system. The heart was a muscle, and as an effect of its alternating contraction and dilatation, blood circulates through the veins and arteries. The diastole [expansion of the heart] pumps blood into the right atrium, from where it passes into the right ventricle. The contraction of the heart [systole] pumps the blood to the lungs through the pulmonary artery. There the blood picks up oxygen, leaves the lungs again through the pulmonary vein, and moves to the left atrium. From the left ventricle, the blood is pumped into the aorta, from where it moves to the various organs and eventually returns to the right atrium. In *De Circulatione Sanguinis*, however, Harvey uses these observations—which he had made as early as 1618, but which initially remained unpublished—in order to stress the doctrine of the circulation of the blood even more. Whereas in *De Motu Cordis*, despite his insistence on the importance of blood circulation, “the heart is the beginning of life, the Sun of the Microcosm” (59), Harvey later concedes that the heart is neither “the effector of all things” (186), nor “the framer of the blood” (187): “Nor is the heart . . . the beginning of heat and blood, but rather the blood delivers that heat which it has receiv’d to the heart, as likewise to all the rest of the parts, as being the hottest of all” (ibid.). It is no longer the heart but the blood that is of primary importance, the circulating material on which the heart depends, and to which it ministers by keeping it in motion. As Harvey puts it: “All which is clearer discovered by this, that the heart hath not a pulsation in all animals, not yet at all times; when yet the blood, or something proportionable to blood, is never wanting in any” (*De Generatione* 282). Both Mather and Harvey emphasize the importance of atmospheric pressure, cooperating with the heart to pump blood. Mather writes: “The *Heart* has no *Antagonist Muscle* . . . But the weight of the incumbent *Atmosphere* . . . [is] the true *Antagonist* for all the *Muscles*” (*The Christian Philosopher* 277), without which blood circulation and respiration—in other words, life—would not be possible.³⁴

For Hill, the implications of Harvey’s revisions “can only be described as republican—or at best they suggest a monarchy based on popular consent” (“William Harvey” 56). Yet Hill does not put forward the claim that the convinced royalist Harvey was a parliamentarian in disguise. Rather, Hill

shows that a change in the political climate made it possible in the first place to think in terms and structures different from those on which absolutism rested: “If Newton’s physics is the ideological analogue of monarchy limited by law, Harvey’s anatomy is the analogue of monarchy limited by representative assemblies . . . Such analogies do not lead men to create limited monarchies: but they make them seem more reasonable, less shocking, in a world still dominated by analogy, and a world in which such traditional analogies were among the strongest supports of monarchy. To be able to conceive of the possibility of something new was the first step towards introducing it” (67).

In a similar manner, but much more in line with his antimonarchical politics, Mather was writing a scientific work concentrating on “something new,” trying to replace those traditional analogies with new ones that might exert a pedagogical influence similar to Harvey’s work. The combination of an almost acentric center [heart, brain] and the stress on a more transversal communication [belly, feet, skin], reveal the overall importance of the principle of dynamics, of ‘circulation,’ for Mather. And it comes as no surprise that the same concept is also stressed in some of his more overtly political writings. After the revocation of the original charter in 1684, the Massachusetts colony had lost its sovereign powers to mint its own currency and regulate its trade, all of which had been crucial for its economic growth. The overthrow of Governor Andros five years later was followed by new efforts on the part of the Massachusetts authorities to promote economic development, and both Cotton and Increase Mather argued that the colony must have the power to issue and control its own currency.³⁵ In 1691, Cotton Mather attempted to raise support for an economic experiment, the introduction of bills of credit, the new paper currency, and attacked the “great indiscretion of our Country-men who Refuse to accept that, which they call Paper-mony” (*Some Considerations* 2).³⁶ In this pamphlet, composed on the same issue on which he, in his “Political Letter,” had firmly drawn the connection between the individual body and the Body/Politic, medicine and politics, Mather asked: “Now what is the *Security* of your Paper-mony less than the *Credit of the whole Country* . . . *All the Inhabitants* of the Land, taken as one Body are the *Principals*, who Reap the *Benefits*, and must bear the *Burdens*, and are the *Security* in their *Publick Bonds*” (2). Just like the blood in the human body, “*Bills* Transmit to Remote Parts, vast sums without the intervention of *Silver*” (3). The introduction of paper money, Mather hoped, would discourage the condemnable habit of hoarding, simple paper having less appeal than precious metals such as silver and gold, used to make ‘actual money’ [coins]. As a result, Mather envisaged that “the *Growth of the Country* will be carried off, and that will be no Damage but rather an

Advantage to us” (7). The bills of credit, like the covenant or the social contract between individuals, was built upon a kind of promise, a promise closely connected with the question of economic self-regulation [and, ultimately, self-government]. And like blood in the individual body, paper money was seen as the motor of the Body|Politic’s economy, a sign of the production of value not imposed from the outside, but from within the community itself. The alternative to accepting paper money, according to Mather, is being “reduced to *H bs* [Hobbes] his state of Nature” (5).³⁷ Thus, if money marks the transition from the natural state to civilization, paper money marks the transition from a monarchic system to a more self-governed one, backed by the promise and trust of the community, and not by a solid and immutable ‘gold standard.’³⁸

For Mather, then, money|circulation is civilization; yet, as usual with Mather [in particular, Mather the physician and diagnostician], it is a question of the right quantum. In his sermon *Concio ad Populum*, Mather bemoans the state of faction that has perverted Winthrop’s notion that “some must be rich, some poore, some high and eminent in power and dignitie” (“Modell” 33). Commenting on the weak body of a “*Languishing*, if not a *Perishing People*” (*Concio ad Populum* 1), Mather states that “the *Blood* in the *Body Politick* is depauperated, and has too *Hectick* a Circulation” (5). This depletion is the result of the irreverence of ‘good measure’ in the economy that was supposed to hold together and strengthen the communal body: “There seems an Epidemical Resolution in almost all People, who can do so, to cast off all Rules in *Buying* and *Selling*, Even the *Necessaries of Life*, but that Rapacious One, *To Extort upon one another as much as ever they can*. In the mean time, the *Poor* must be cruelly Pinched; this *Capital CITY* of the Province must lose very many of its Inhabitants; Those who are not capable of Raising the Price of what they *have*, or of what they *do*, as their Neighbours can, are ground between the Milstones” (21–22). Paradoxically not only the circulation of dangerous material, but also its speed [too much or too fast circulation] can deprive the blood of its nutritive value and result in a state similar to a state of no circulation|civilization at all—Hobbes’s “state of Nature,” with its war of all against all. In *The Christian Philosopher*, Mather hints at that ambiguous structure in his discussion of the stomach [the seat of all diseases] and intestinal motion: “There is in Bodies a *Principle of Dissolution*, which upon the Extinction of their vital and vegetative Faculty, begins to exert itself towards the *Destruction* of the Subject. This *Principle of Corruption* is, perhaps, the same that in a State of *Circulation* and *Vegetation* was the *Principle of Life*, but now being denied that Passage which it had before, it makes its way *irregularly*, and so destroys the Continuity of the *Solids*, in which it is included, and introduces

that Change in the whole Mass, which is called *Corruption*" (281). The difference between the principle of corruption and the principle of life appears to be not one of kind or substance, but of degree, even of speed. Thus, in accordance with the politicized reading, the question of limited monarchy [Hill uses the term for the political implications of Harvey's prerogative of the blood] or even self-government crucially depends on the right dose, which provides a thin line of defense against anarchy. If "every Man take all his Measures from his own *Self*," things "shall be plainly for the *Hurt of the whole*" (*Concio ad Populum* 17). The only remedy, according to Mather, is a return to that 'right quantum': "Frugality, I say, frugality: A Discrete, a Righteous, a Needful FRUGALITY" (10). There is no other cure for the depletion of the blood that keeps the body running but a dietary rule: "Nothing but a *Frugality* can help us; We *Bleed unto Death*, until that *Sovereign Stipstick* be applied unto us. Unless this One Thing be brought into Practice, all our *Projectors* will be *Physicians of no value*" (ibid.).

Again, in Mather's typical conflation of political and medical discourses, a "physician of value," one who could put an end to the hurt and fragmentation of the body, its bleeding to death, would be one who knows the right quantum to distinguish the poison from the cure. The problem is that it is not always easy to tell the difference—in fact, at least sometimes they are one and the same.³⁹ Earlier in *The Christian Philosopher*, Mather had already commented on this problem: "What tho there are *venomous* Plants? An excellent *Fellow of the College of Physicians* makes a just Remark: '*Aloes* has the Property of promoting *Haemorrhages*; but this Property is good or bad, as it is used; a *Medicine* or a *Poison*: And it is very probable that the most dangerous *Poisons*, skilfully managed, may be made not only *innocuous*, but of all other Medicines the most *effectual*'" (142). Facing this ultimate undecidability—in Derrida's words, "there is no thing as a harmless remedy. The *pharmakon* can never be simply beneficial" ("Plato's Pharmacy" 99)—Mather, true to his advocacy of empiricism and experience, opts for a practical way out of the dilemma, for a decision which accepts the ambiguity of the *pharmakon* and ultimately calls for assuming responsibility. The strategy of the 'right quantum' suggests itself as a way out of this dilemma, a way of mastering the simultaneous ambiguity of the poison/remedy—a strategy that Mather was to develop hands-on in his application of inoculation. The economy of the Body/Politic ultimately depends on 'good measure,' on the right quantum [of circulation/what is circulated,⁴⁰ of democratic liberty], and it functions only *within* the healthy frame provided by good management/governance—the political analogue to medical knowledge. To Mather, this first of all implies an adherence to congregationalism, and in particular to the moral standards [and political liberties] of the founding

fathers. Commenting on the structure of the body in general, Mather wonders: “How often does the *Ars, Providentia, & Sapientia CONDITORIS* appear to the Pagan *Galen* upon the Contemplation!” (*The Christian Philosopher* 243). It may be no coincidence [and it certainly makes sense within a politicized reading of the text] that Mather changed the word *creator* in Galen’s original phrase—“*Ars, Proventia & Sapientia Creatoris*,” or skill, foresight, and wisdom of the creator—to the [at least in a Puritan American context] much more politically suggestive term *founder* [*conditor*], which suggests a return to the virtual independence from England as well as to the community’s self-government under the founding fathers as a general frame of reference, a reading that Mather’s fight for the restoration of the original charter substantiates.

Comparing Derrida’s analysis of Plato’s *pharmakon* with the incidents and attitudes displayed in the inoculation controversy, it becomes clear that the anti-inoculationists argued according to a decisively Platonic model, stressing the unnaturalness of inoculation—which interferes with the natural, God-given course of life, which attempts to meddle with predestination. Like Plato, the anti-inoculationist party “believes in the natural life and normal development, so to speak, of disease . . . In disturbing the normal and natural progress of the illness, the *pharmakon* is thus the enemy of the living in general, whether healthy or sick” (“Plato’s Pharmacy” 100). It is this final undecidability between smallpox proper [death] and a preventive simulation of the smallpox [staging of death] that William Douglass expresses when he states: “All solid and sound *Phylosophy*, that is *Natural History*, is founded on *Observations* made, and *Experiments* taken of the various *Actions* and *Influences* of *Natural Bodys* on one another. I was always fond of this kind of Knowledge, especially as it related to *Humane Bodies* in a *Healthy* or *Morbid* State; and if these two dear Characters of a *Good Citizen* and *Good Christian* could be dispensed with, I should have been pleased to see some Thousands inoculated” (*Inoculation* 13). Somehow, the inoculated body occupies a position *in between* healthy and morbid, life and death. Such a state, defying a clear either-or dichotomy, cannot be accepted, since it obviously transgresses the ontological categories upon which a comprehensive representation of reality can be grounded. Mather argued—against the charge that inoculation tampers with predestination, against “the cry of a multitude that they *can’t see through* it how one can with a good conscience bring a sickness on himself, until it shall please the God of our life to send it upon him” (*Selected Letters* 362)—“I beseech you, what is there in the Word of the blessed God (which proscribes and limits the whole duty of man) that forbids the use of this medicine any more than an antidote against the plague? It is rather plain that the Sixth Command-

ment requires him to use it" (363). By incorporating what to the hard-core Puritan appears as a deviation from belief in predestination, Mather attempts to complexify the whole concept and transform it from its original model as a kind of linear determination into something more dynamic and flexible. Thus, early in *The Christian Philosopher*, Mather states that life and movement are "*caused by some immaterial power, not having originally impressed a certain Quantity of Motion upon Matter, but perpetually and actually exerting itself every Moment in every Part of the World,*" which to Mather "*gives a very noble Idea of PROVIDENCE*" (92). The important point here is that Mather does not see the world as a watch that, when run down after its first winding, must be rewound from time to time. Life and motion exert themselves every moment, everywhere. Mather's notion of the world as a machine [and the body as a machine within this other vast machine], of which God controls the springs, differs from the more traditional notion of that trope in that it comes very close to the doctrine of deism [dangerously close, since this also reveals Mather's defection from Puritan orthodoxy].⁴¹ In fact Mather has more in common with Leibniz's notion of the same issue, as he vehemently argued in his correspondence with Samuel Clarke.⁴² In this controversy, Leibniz argued that Newton's conception of the universe as a machine, and God's relation to it, renders God an imperfect and incompetent artist:

Sir Isaac Newton, and his followers, have also a very odd opinion concerning the work of God. According to their doctrine, God Almighty wants to wind up his watch from time to time: otherwise it would cease to move. He had not, it seems, sufficient foresight to make it a perpetual motion. Nay, the machine of God's making, is so imperfect, according to these gentlemen; that he is obliged to clean it now and then by an extraordinary concourse, and even to mend it, as a clockmaker mends his work; who must consequently be so much the more unskilful a workman, as he is oftener obliged to mend his work and to set it right. According to my opinion, the same force and vigour remains always in the world, and only passes from one part of matter to another, agreeably to the laws of nature, and the beautiful pre-established order. And I hold, that when God works miracles, he does not do it in order to supply the wants of nature, but those of grace. Whoever thinks otherwise, must needs have a very mean notion of the wisdom and the power of God. (*The Leibniz-Clarke Correspondence* 12)

With Mather, Leibniz shares the rejection of the idea that the watch was endowed with only a limited quantity of motion, so that the machine has to be wound up every now and then. When Mather refers to God's "*continual influence,*" without which the whole machine "would soon fall into pieces"

(*The Christian Philosopher* 95), he explicitly equates this influence with an “*attractive Faculty*” (93), and the “*Matter of Fact*, that *Matter* is in possession of that quality.” Clarke responded by pointing out the consequences of Leibniz’s conception of God as an absent watchmaker, and it should come as no surprise that his rhetoric openly announces a fundamentally political level:

The notion of the world’s being a great machine, going on without the interposition of God, as a clock continues to go without the assistance of a clock-maker; is the notion of materialism and fate . . . If a king had a kingdom, wherein all things would continually go on without his government or interposition, or without his attending to and ordering what is done therein; it would be to him, merely a nominal kingdom; nor would he in reality deserve at all the title of king or governor. And as those men, who pretend that in an earthly government things may go on perfectly well without the king himself ordering or disposing of any thing, may reasonably be suspected that they would like very well to set the king aside: so whoever contends, that the course of the world can go on without the continual direction of God, the Supreme Governor; his doctrine does in effect tend to exclude God out of the world. (*The Leibniz-Clarke Correspondence* 14)

Clarke’s reproach points out deism’s ambiguous positioning of God in relation to the universe, but it is ultimately also alert to the political [anti-monarchical] consequences that might arise from that doctrine. Leibniz answers this accusation by showing that he does not want to argue God out of existence, but to show that his influence is *immanent* to creation—and his arguments neatly parallel Mather’s in defending the use of inoculation: “I do not say, the material world is a machine, or watch, that goes without God’s interposition; and I have sufficiently insisted, that the creation wants to be continually influence’d by its creator. But I maintain it to be a watch, that goes without wanting to be mended by him: otherwise we must say, that God bethinks himself again. No; God has foreseen every thing; he has provided a remedy for every thing before-hand; there is in this world a harmony, a beauty, already pre-established . . . This opinion does not exclude God’s providence, or his government of the world: on the contrary, it makes it perfect. A true providence of God, requires a perfect foresight” (*The Leibniz-Clarke Correspondence* 18–19).

Leibniz here refers to his idea of a “pre-established” harmony,⁴³ which not only regulates and assures the relation between body and spirit but also produces the best of all possible worlds, which is simply the best because it is the only one actualized out of a virtuality of other possible worlds. Ac-

ording to Deleuze, Leibniz “turns our relative world into the only existing world, a world that rejects all other possible worlds because it is relatively ‘the best’” (*The Fold* 60). This does not amount to a simple, linear determinism, since within this preestablished harmony, because it consists of “infinite series ruled by convergences and divergences” (61), there is an infinity of virtual possibilities at every moment. In fact, every infinitely small moment is not a single point in time but a multiplicity, which makes life anything but predictable. However, since all that exists is contained within God’s plan, Mather [along with Leibniz, I would argue] insists that there is “no sign of *Chance* in the whole Structure of our Body” (*The Christian Philosopher* 240), since what we would call chance is also part of God’s plan.⁴⁴ This does not preclude variety and singularity in creation, though. Predetermination is not equal to uniformity. Paralleling Leibniz’s claim that all monads [and, in a wider sense, all beings, not only humans] express the same worldplan, but each from its own perspective—that, although all monads, for Deleuze, are “strangely similar . . . [,] actualization is different for each monad” (*The Fold* 90)—Mather, commenting on the “*remarkable Dissimilitudes between Men*” (*The Christian Philosopher* 244), connects this observation with an aside on the varieties of handwriting: “To no other Cause than the wise Providence of God can be referr’d the no less strange variety of *Hand-writings*. Common experience shews, that tho Hundreds and Thousands were taught by one Master, and one and the same Form of Writing, yet they all *write differently*; there is some *peculiar* in every one’s *Writing*, which distinguishes it; some indeed can counterfeit another’s Character” (245). Mather here plays on the polyvalent meaning of the signifier *character*, whose meanings include the combination of qualities or features that distinguishes one person, group, or thing from another; moral or ethical strength; a mark or symbol used in a writing system; and a personal style of writing. In connection with the materiality of the human body, character also foreshadows the genetic meaning, denoting a structure, function, or attribute determined by a gene or group of genes. Yet this passage also echoes the widely established notion of creation as “God’s Handy Worke” (K. Rowe). Thus, it can also be interpreted to mean that God’s handwriting actually is the multitude of “Hundreds and Thousands” of varieties of individuals—all strangely similar, but with “remarkable dissimilitudes,” with something “peculiar in every one.” Life is ‘informed’ by God’s handwriting, a kind of software that programs what Deleuze calls an “intrinsic singularity” (*The Fold* 15) within each individual, an algorithm according to which that person develops and is actualized.

In his answer to Clarke’s reproach, Leibniz also responds to the addressed political subtext:

The comparison of a king, under whose reign every thing should go on without his interposition, is by no means the present purpose; since God preserves every thing continually, and nothing can subsist without him. His kingdom therefore is not a nominal one. 'Tis just as if one would say, that a king, who should originally have taken care to have his subjects so well educated, and should, by his care in providing for their subsistence, preserve them so well in their fitness for their several stations, and in their good affection toward him, as that he should have no occasion ever to be amending any thing amongst them; would be only a nominal king. (*The Leibniz-Clarke Correspondence* 19–20)⁴⁵

Mather definitely subscribed to this view of things. In wholeheartedly embracing his friend Robert Boyle's atomism [despite its obvious clash with Puritan doctrine], Mather tacitly shares the [deist] assumption that God has set the universe in motion and has posited a system of physical laws, according to which the world 'runs,' and which assures God's continual influence without his having to actually intervene. In their complexification of the concept of providence, Leibniz and Mather share a similar approach, I argue—the antimonarchical consequences of which did not escape their contemporaries. Clarke and Douglass respectively sensed not only materialist [i.e., atheistic] but also dangerously liberal political tendencies in Leibniz's and Mather's ideas.

It is here that both the practice and the semantic history of inoculation become important. Two major lexical fields can be distinguished: the field of horticulture, and the field of medicine. The medical semantic field was opened up, as the *Oxford English Dictionary* shows, by a contribution by Emanuel Timonius to the *Philosophical Transactions* of 1714, to which Mather often referred in his correspondence concerning smallpox, and which can be said to have started Mather's interest in the subject. In this sense, inoculation refers to what the online *Oxford English Dictionary* calls the "intentional introduction of the virus of small-pox in order to induce a mild and local attack of the disease, and render the subject immune from future contagion." The horticultural meaning of the word—to "join or unite by insertion (as the scion is inserted into the stock so as to become one with it)"—has been in use since at least 1420.⁴⁶ It was in this sense that the words *inoculation* and *inoculate* provided a rich metaphorical background, translating the horticultural practice into a material analogue of spiritual refinement and sublimation.⁴⁷ Puritan poets made much use of this metaphor; for example, Edward Taylor wrote: "Wilt thou enoculate within mine Eye/Thy Image bright, My Lord, that bright doth shine/Forth in the Cloudy-Firy Pillar high/Thy Tabernacles Looking-Glass Divine?/What glorious Rooms are

then my Eyeholes made./Thine Image on my windows Glass portrai'd?" (186). Taylor clearly uses the horticultural metaphor here to signify the process of ennoblement that the Puritan believer hopes for. Drawing on the etymological roots of the term *inoculation* [from the Latin *oculus* for both eye and bud], Taylor's use of this metaphor subtly and neatly links up with the predominant imagery of identification with Christ's image, so that this [visual] identification inoculates the bud of a godly identity within the believer, who may become one with it.⁴⁸ Mather elaborates on and politicizes the second, modern, medical meaning of inoculation. Before he wrote *The Christian Philosopher* and started to research inoculation, Mather was working on a kind of 'controlled liberalization' and secularization of the Puritan doctrinal as well as political tradition. In addition to his involvement with the anti-Andros tract *The Declaration, of the Gentlemen, Merchants, and Inhabitants of Boston*, Mather's *Pietas in Patriam: The Life of His Excellency Sir William Phips, Knt* which, according to Philip Gura, "gave to the world what might be termed the first *American* life" ("Cotton Mather's *Life of Phips*" 441). In this laudatory biography of William Phips [the first governor of Massachusetts, who returned to Boston with Increase Mather—who played a crucial role in securing Phips's appointment by the Crown—bringing a new charter that ended the English ban on colonial self-government], Mather stressed Phips's secular career. That was a significant step away from the traditional Puritan view, as expressed in Winthrop's doctrine, that each man should keep his place in the hierarchy that he had been appointed to. As a result of Mather's exemplary American life, Gura argues, "the good magistrate would thenceforth be evaluated not so much with regard to his position as God-fearing Puritan as by his sense of being as an American Englishman" ("Cotton Mather's *Life of Phips*" 455). Thus, according to Gura, Mather's *Life of Phips* not only sanctifies the secularization of the colony's political system, it emphasizes the Mathers' role in that secularization. On a political level, it parallels what Mather accomplished with his advocacy of inoculation in science and medicine: a balancing act that heralded a departure from the tension between piety and modernity by means of a paradoxical attempt to return to the early Puritan structures under new, secular premises.⁴⁹ Commenting on Solomon Stoddard, the Boston pastor who deviated from the traditional Puritan path by pushing congregationalism to the extreme—opening the church to every one, and abandoning the established distinction between the church as a body of saints and the secular community—Gura points out that "Stoddard began to build the idea that the church was a national body to which all people belonged by right" (456, note 37). At the same time as Stoddard's attempt to 'inoculate' Puritan tradition, "Mather was stressing service to a similar

ideal, albeit a more blatantly political one” (ibid.). This signals Mather’s adaptation to the fact that “the old standards of exclusiveness were being replaced by a new community involvement” (456). Mather’s use of the concept of inoculation anticipates the strategy Roland Barthes has analyzed in connection with the bourgeois myth of the mid-twentieth century: “*The inoculation*. I have already given examples of this very general figure, which consists in admitting the accidental evil of a class-bound institution the better to conceal its principal evil. One immunizes the contents of the collective imagination by means of a small inoculation of acknowledged evil; one thus protects it against the risk of a generalized subversion” (“Myth Today” 150). Such a “*liberal* treatment,” Barthes argues, “would not have been possible only a hundred years ago.” He puts *liberal* in ironic italics, since this is only a liberalism of ‘the right quantum,’ where its parameters are ultimately very controlled.⁵⁰ And yet, because Mather theorized about it almost 250 years before Barthes’s analysis, in a highly antiliberal historical context in which the social structure “did not compromise with anything, it was quite stiff” (ibid.), the “liberal treatment” of Mather should be a little less italicized. The fact that Mather sees the body as being enveloped by a permeable skin [unlike the hermetically sealed body envisioned by Winthrop] is of significant relevance: the porous and infinitely folded texture of the skin for Mather functions as a ‘meeting site’ of inside and outside. It can be argued, then, that in contrast to the all-encompassing body of God [a pure inside that knows no outside, which is why for Derrida “God has no allergies” (“Plato’s Pharmacy” 101)], the body of man is marked by finitude and mortality, and his relation to the world is constituted by a unilateral topology like that of the Möbius strip⁵¹ [in contrast to the Euclidian space of a non-allergic God], in which a clear insideloutside distinction no longer holds. As with Leibniz’s fold, the texture of the skin shows that man *enters* in the world as much as the world *is in* enters man.

In his discussion of Plato’s *pharmakon*, Derrida follows the polysemantic possibilities of this signifier, and the chain of associations also leads to the word *pharmakos*, which means wizard, magician, and poisoner, and which is closely connected to the ritualistic expulsion of the scapegoat: “The expulsion of evil, its exclusion out of the body [and out] of the city—these are the two major senses of the character and of the ritual” (“Plato’s Pharmacy” 130). Thus, the figure of the *pharmakos* [or smallpox, or even the smallpox victim] repeats the insideloutside distinction of the skin [which Mather threatened to undermine] on the level of “*intra muros/extra muros*”: the “city’s body *proper* thus reconstitutes its unity, closes around the security of its inner courts . . . by violently excluding from its territory the representative of an external threat or aggression” (133), by putting it into isolation

and quarantine. Mather's main opponent, William Douglass, seems to have understood that the walls are not what once were, which explains his fear of Mather's "*mischievous propagating the Infection in the most Publick Trading Places of the Town*" (W. Douglass, "Open Letter"), which, like the Boston ports, are a perfect analogue of the Body|Politic's porous skin|outworks. As Foucault puts it, "a port . . . is—with its circulation of goods, men signed up willingly or by force, sailors embarking and disembarking, diseases and epidemics—a place of desertion, smuggling, contagion: it is a crossroads for dangerous mixtures, a meeting place for forbidden circulations" (*Discipline and Punish* 144). Foucault goes on to describe the medical supervision in hospitals at the end of the eighteenth century, where, in an attempt to classify and partition off of space—similar to the quarantine techniques of Boston—"an administrative and political space was articulated upon a therapeutic space; it tended to individualize bodies, diseases, symptoms, lives and deaths; it constituted a real table of juxtaposed and carefully distinct singularities" (ibid.). Mather proposes an alternative to the exclusion and isolation described by both Derrida and Foucault: a controlled 'inclusion' of the alien outside, via the 'outworks' [so to be 'regulated' on its way to the 'inner courts']. Thus, if Foucault concludes that "out of discipline, a medically useful space was born" (ibid.), it is possible to say that for Mather, out of medical research, a politically useful space was born as well.⁵² Like the body, cities [the Body|Politic], as De Landa states, are "necessarily parasitic on their . . . surroundings, . . . encompass[ing] more than what is found inside their walls" (*A Thousand Years of Nonlinear History* 107).⁵³ All this raises the question of how a transversal and open system such as the Body|Politic described/envisioned by Mather is to be regulated. Again, the issue of the smallpox inoculation, in connection with Mather's theory of the vital force that he calls "*Nishmath-Chajim*,"⁵⁴ as he develops it in *The Angel of Bethesda*, provides some crucial insights. The most important step that Mather takes between *The Christian Philosopher* and *The Angel of Bethesda* is to shift his perspective from a 'molar' to a 'molecular' level. In a text that comes across as a compendium of folk medicine and homespun remedies, Mather has embedded both a scientific account of the practice of inoculation [which comes close to an early articulation of a germ theory] and his concept of the *Nishmath-Chajim*, in both of which Mather leaves the molar register of man's organs and organism and concentrates on the nonsubjective level of the chemical and viral modes of being of microorganisms.

Both Mather and Leibniz are similarly attracted by the notion of infinity, and for both this concept presents an important point of reference. In fact, in the change of Mather's focus from the old Puritan God of wrath to

creation and its sheer endless production, one might detect a transposition of the Pauline doctrine [all members are part of one body] from the Puritan Body|Politic to the whole cosmos: every human body—in fact, every part of creation—is part of God’s Body; God *is* the universe, its limitless productivity. Linked to the idea of infinity, Mather again [consciously or not] comes close to a deist|pantheistic position.⁵⁵ He muses in *The Christian Philosopher* (and the fact that this paragraph constitutes the only piece of ‘speculation’ in an otherwise ‘factual’ tometone adds to its importance and peculiarity):

We all agree that all *Parts* into which the *Whole* is divided, being taken together are *equal to the Whole*. But it seems any *single Part is equal to the Whole*. It is granted, that in any *Circle* a *Line* may be drawn from *every Point* of the Circumference to the *Center*. Suppose the Circle to be the *Equator*, and a million lesser Circles are drawn within the *Equator*, about the same *Center*, and then a *right Line* drawn from *every Point* of the *Equator* to the Center of the Globe; every such *right Line* drawn from the *Equator* to the Center, must of necessity cut thro the million *lesser Circles*, about the same *Center*: consequently there must be the same number of points in a Circle a million of times less than the *Equator*, as there is in the *Equator* itself. The *lesser Circles* may be multiplied into as many as there are *Points* in the *Diameters*; and so the *least Circle* imaginable may have as *many Points* as the greatest; that is, be as big as the greatest, as big as one that is millions of times as big as itself. (118)⁵⁶

And as with Leibniz, Mather’s actual journey into the infinitely small is triggered by a fascination with Leeuwenhoek’s experiments with the microscope. This optical instrument, providing the observer with the possibility of an infinite zoom, prompts Mather to argue against Newton’s denial of a *plenum* or *continuum*: “Every Part of matter is *Peopled*. Every *Green Leaf* swarms with *Inhabitants*. The Surfaces of Animals are covered with other *Animals*” (*The Angel of Bethesda* 43). This is a position quite similar to that of Leibniz: “There is a world of creatures—of living things and animals, entelechies, and souls—in the smallest part of matter” (“Monadology,” *Philosophical Texts* 277). Since both men can be seen to develop a kind of ‘new metaphysics’ that builds on the findings of the microscope and the new science, it is only a small step for them to the conclusion that not only the surfaces of creatures are *covered* with other animals. An even stronger zoom [the logical conclusion of the concept of infinity proposed by Leeuwenhoek’s microscope] might even show that the surfaces of these smaller animals might be covered with even smaller other animals, ad infinitum, which might ultimately result in the speculation that an animal, a body, or, as Mather has it, the world actually *is composed* of infinitely small ‘creatures’: “Yea,

the most Solid *Bodies*, even *Marble* itself, have innumerable Cells, which are crouded with imperceptible Inmates. As there are Infinite Numbers of these, which the *Microscopes* bring to our View, so there are many inconceivable Myriads yett Smaller than these, which no glasses have yett reach'd unto. The *Animals* that are much *more* than Thousands of times *Less* than the finest Grain of Sand, have their *Motions*; and so, their Muscles, their Tendons, their Fibres, their Blood, and the *Eggs* wherein their Propagation is carried on" (*The Angel of Bethesda* 43).⁵⁷ It has to be noted that Mather [although he concedes the fact that "Every Part of matter is *Peopled*"] here concentrates on the *animalcula* as transmitters of disease, describing them as some kind of alien invaders. Their actual smallness, which might even go beyond microscopic perception, suggests that their "eggs" must be even smaller and so light as to be able to drift through the air: "Diseases are Convey'ed from distant Countreys or Climates; By the *Animalcula*, or their Eggs, deposited in the Bodies or Cloathes or Goods of Travellers" (*The Angel of Bethesda* 43). Since [as he has already pointed out] the skin is permeable, "the Eggs of these Insects (and why not the *living Insects* too!) may insinuate themselves by the *Air*, and with our *Ailments*, yea, thro' the Pores of our skin; and soon gett into the Juices of our Bodies" (*ibid.*).

Although working in different registers—Leibniz on a philosophical and speculative level, Mather on a theological and medicalpolitical one—both men draw on Leeuwenhoek's observations. And both Mather and Leibniz have a similar impetus in their use of the microscope, drawing on the world of the infinitely small as a way to make up for the "loss of the greater cosmos as an image of divinity and spiritual order" (C. Wilson 181)—this reads almost like an answer to Harvey's conjectural and [as it were, *macroscopic*] "example of Astronomie." In a statement that echoes Mather's approach, Leibniz argues that "nothing better corroborates the incomparable wisdom of God than the structure of the works of nature, particularly the structure which appears when we study them more closely with a microscope. It is for this reason, as well as because of the great light which could be thrown upon bodies for the use of medicine, food, and mechanical ends, that it should be most necessary to push our knowledge further with the aid of microscopes" ("Reflections" 566).⁵⁸ Both Leibniz and Mather see the universe as "composed of an infinite envelopment of organic creatures" (Rutherford 226). As a result, "there is no part of matter that is not endowed with life: Either it is itself the body of an animated creature or it is a collection of such creatures, each of whose bodies is in turn composed of smaller organic creatures" (229). It is possible [and a logical consequence] to "think of matter as endowed with an intrinsic force or power" (237), since, ultimately, "the matter of bodies is constituted from substances that are by nature principles of

action” (242).⁵⁹ Mather, commenting on the atmosphere and the air that we breathe, sees it endowed with an almost “muscular” constitution. In a rhetoric full of political implications, Mather states that “our *Air* abounds with particles of such a nature, that in case they be bent, or press’d by the Weight of an incumbent part of the *Atmosphere*, or of any other Body, they endeavour to free themselves from that Pressure, by bearing against the Bodies that keep them under it; and as soon as the Removal of these Bodies gives them way, they expand the whole parcel of *Air* which they composed” (*The Christian Philosopher* 74).⁶⁰ Drawing on Leeuwenhoek, both Mather and Leibniz see the ‘point at infinity’ is [in the] infinitely small [microcosmlimmanence], not infinitely large [macrocosmltranscendence], although framed by God’s plan. In addition, it can be argued that between Leeuwenhoek’s *animalcula* and Leibniz’s monads there is more than just a casual similarity. In his monograph on Leeuwenhoek, Clifford Dobell points out that “Leibniz paid attention to [Leeuwenhoek’s] discoveries, which were not without influence upon his own philosophy: indeed the abstract ‘monads’ of the *Monadology* are not altogether unrelated to Leeuwenhoek’s concrete ‘animalcules’” (385). True to the concept of infinity, Leibniz states that that the monads, as simple substances, can have “neither extension, nor shape” (“*Monadology*,” *Philosophical Texts* 268). Yet, as he repeatedly points out, there is no monad without a body assigned to it, which it represents [see in particular 276–77].⁶¹ Thus, one cannot but think of monads as infinitely small in extension or shape. In comparison with actual insects, Mather observes that the *animalcula* are so infinitely small that, according to “*Lieuenhoek* (and other Eyewitnesses) . . . above Eight Million may be found in one drop of Water” (*The Angel of Bethesda* 46). The actual reference in Leeuwenhoek’s account, his “Letter to Oldenburg” published in the *Philosophical Transactions* of the Royal Society, reads: “In the year 1675 . . . I discovered living creatures in rain . . . This observation provoked me to investigate this water narrowly; and especially because these little animals were, to my eye, more than ten thousand times smaller than the animalcule which Swammerdam has portrayed, and called by the name of Water-flea, or Water-louse, which you can see alive and moving in water with the bare eye” (quoted in Dobell 117).

In his *Monadology*, Leibniz elaborates on the implicit infinite fractality of this image: “Every portion of matter can be thought of as a garden full of plants, or as a pond full of fish. But every branch of the plant, every part of the animal, and every drop of its vital fluids, is another such garden, or another such pond. And although the earth and the air between the plants in the garden, and the water in between the fish in the pond, are not themselves plants or fish, they do nevertheless contain others, though usually they are so tiny as to be imperceptible to us” (*Philosophical Texts* 277). In his dis-

cussion of the ‘microworlds’ in relation to diseases, Mather relies on a kind of ‘machinics’ quite different from the prevalent [Cartesian] mechanism. After categorically stating that “the Animal Body is a *Machine*, and Diseases are nothing else but its Particular Irregularities, Defects, and Disorders,” he claims that “a *Blind Man* might as well pretend to Regulate a Piece of *Clockwork*, . . . as a Person ignorant of *Mathematicks* and *Mechanism*, to cure Diseases, without understanding the Natural Organization, Structure, and Operations of the *Machine*, which he undertakes to regulate” (*The Angel of Bethesda* 47)—and this structure and organization is characterized, as he has just argued, by its infiniteness, its complexity. Leibniz argues similarly in his monadological system. The difference between man-made machines and God’s creation, he claims, ultimately consists in the difference between a finite and an infinite structure: “Every organic body of a living being is a kind of divine machine or natural automaton, which infinitely surpasses any artificial automaton, because a man-made machine is not a machine in every one of its parts. For example, the tooth of a brass cogwheel has parts or fragments which to us are no longer anything artificial, and which no longer have anything which relates them to the use for which the cog was intended, and thereby marks them out as parts of the machine. But nature’s machines—living bodies, that is—are machines even in their smallest parts, right down to infinity. That is what makes the difference between nature and art, that is, between the divine art and our own” (“Monadology,” *Philosophical Texts* 277). Although man-made machines are built from simple units, structural unities [such as the cogwheel], God starts with a material that in itself is infinitely complex. In contrast to man-made machines, such as Descartes’s clocks or mills, put in motion by the flow of water,⁶² God’s machines are much more complex—and this infinite complexity is the ultimate reason why there is life; in fact, it *is* life itself. Mather and Leibniz argue similarly, not against the notion of creation as a *machine*, but against the merely *mechanistic* variation of that notion. The concept of infinity seems to provide them with a notion of the *machinic* that moves beyond its more metaphorical use in the concepts of the mechanists. The blind man trying to mend a clock is analogous to a mechanic [or even a mechanist philosopher, comparable to Power’s “rude countryfellow”] trying to grasp or even work on God’s complex machinery. The question is not how to abolish the *machinic logic*, but how to push it further. What both Mather and Leibniz consider a sort of “plastic force” [a term used by both John Ray and Ralph Cudworth, one of the Cambridge Platonists, an important influence on Mather, and the father of Lady Damaris Masham, one of Leibniz’s correspondents] is for Mather not “an *universal Soul*, animating the vast System of the World, according to *Plato*; nor any omniscient *radical*

Heat, according to *Hippocrates*; nor any *plastick Virtue*, according to *Scaliger*, nor any *hylarchick Principle*, according to *More*" (*The Christian Philosopher* 95), but some intelligent force *within* [or connected to] matter that must "understand and regulate the whole Oeconomy"⁶³ of organic life. Thus, the force neither comes 'from without' [it is not hylarchic] nor can it be explained by mechanism alone: "All *Mechanical Accounts* are at an end; we step into the glorious GOD *Immediately*" (18). For Deleuze, the fault of the mechanist approach, then, lies not in "being too artificial to account for living matter, but for not being adequately machined. Our mechanisms are in fact organized into parts that are not in themselves part or piece of the machine . . . Plastic forces are thus more machinelike than they are mechanical" (*The Fold* 8). As Leibniz puts it in a letter to Lady Masham, "la force plastique est dans la machine" (*Die philosophischen Schriften* 3:374)—"the plastic force is in the machine"—and I now want to take a further look at how Mather envisions this 'inner-machinic' plastic force, and at the political consequences that can be drawn from his conceptions.

In his introduction to the concept of the *Nishmath-Chajim* [the breath of life, a vital force], Mather extends his frame of reference—disease—and embraces a more general approach. Usually dismissed as a mere "arm-chair theory,"⁶⁴ scholars have not analyzed this concept in detail so far, with the notable exception of Margaret Humphreys Warner, who has drawn attention to Mather's theory as evidence of the declining role of the Boston Puritan clergy. I want to pursue the connections of this "arm-chair theory" to the speculative philosophy of the seventeenth century, in particular Leibniz's thought, and turn Warner's perspective inside out. Although she is also concerned with "the social use he [Mather] made of a biomedical concept" (278, note 1), given Mather's discursive mingling of theology, medicine, and politics, I want to focus not so much on his 'spiritualization of medicine' as on the 'matter-ialization of politics.' Mather conceives of the *Nishmath-Chajim* as something between the somatic and the spiritual.⁶⁵ It is "of a *Middle Nature*, between the *Rational Soul*, and the *Corporeal Mass*; by which they work upon One another. It wonderfully receives also *Impressions* from *Both* of them. And perhaps it is the *Vital Ty* between them" (*The Angel of Bethesda* 28).⁶⁶ The *Nishmath* is situated at [or indeed *is*] the interface where matter changes into mind, the material into the immaterial—and vice versa.⁶⁷ It comes close to a 'materialization' of Leibniz's fold between soul and matter.⁶⁸ If one considers Mather's general taxonomy of the 'creation-machine'—"Brutes are more simple Machines" (*The Christian Philosopher* 224) than man who, as a much more complex organism, is "a Machine composed of so many Parts, as to the right Form, and Order, and

Motion whereof there are such an infinite number of Intentions required” (247–48)—it becomes obvious that he sees all animate nature as pervaded by that ‘life-force.’ On the one hand, this force is quasi-universal [it pertains to all living beings, thus Mather—like Leibniz—defies Descartes’s notion that animals have no soul],⁶⁹ but on the other hand, it is singular. As Warner rightly observes, the *Nishmath* does not offer itself as “a general formative force . . . Mather’s concept is rather one of individual *nishmath-chajims* for each creature; there is no global *nishmath-chajim*” (285, note 18).⁷⁰ In contrast to forerunners of a vitalist force such as Cudworth’s plastic nature or van Helmont’s *Archeus*, a self-determining principle in matter that guides its unfolding [whose influence on his concept Mather duly acknowledges], the *Nishmath* is a more local force, operating in each body individually. In his taxonomy, Mather echoes Leibniz’s system of monads, which differentiates among naked monads [possibly modeled on the *animalcula*], animal monads, and the more complex human monads which [in contrast to the animal monads] have not only perception, but also apperception—that is, consciousness.

Mather states” “There are indeed many Things in the Humane Body, that cannot be solved by the Rules of *Mechanism*” (*The Angel of Bethesda* 31). The mechanist [or iatromechanic] view of the body [and the universe] could not account for life or ‘purposeful’ processes [which does not necessarily mean ‘conscious’ processes]. The *Nishmath* was Mather’s attempt to tackle the old problem of how mind and body interact. From within the traditional theological framework, still operating within his thought, Mather tried to scientifically come to terms with the view that “*sin* sometimes is *Naturally* the Cause of *Sickness*,” from whence it follows that “a *Sickness* in the *Spirit* will *naturally* cause a *Sickness* in the *Body*” (6). There can only be a *natural* connection between body and soul, if both constitute a continuum, or if, in an almost Spinozist move, they constitute one substance. Mather states: “The *Soul* and the *Body* constitute *One Person*” (7). Denying a mere Cartesian dualism, Mather still found it “necessary to continue the analysis in dual terms” (Beall and Shryock 67). Leibniz’s solution to the interaction between soul and body was that there ultimately is none: “The soul follows out its own laws, just as the body too follows its own” (“*Monadology*,” *Philosophical Texts* 279); any correspondence between the two was ensured by the preestablished harmony, taken in its more specific meaning. Mather now takes this preestablished harmony *into* the body, into a ‘substance’ that infinitely repeats the interaction between soul and body and is both material and immaterial at the same time—a paradox that is also at the heart of Leibniz’s monads. In fact, in *The Christian Philosopher*, Mather places his

contention that “a *gross Body* and an *immaterial Spirit* should be so united as to make up *one Man*” (117) in the context of his discussion of infinity, and the intricate connection of part and whole already mentioned.

Mather goes on to describe the *Nishmath-Chajim* as consisting of particles that are “finer than those of the *Light* itself” (*The Angel of Bethesda* 30).⁷¹ As a consequence of the plurality of even infinitely small beings, each endowed with the *Nishmath*, Mather envisions the universe as composed of an active and alive ‘substance.’ Again, the concept of the ‘infinitely small’ is of importance here. In his description of the *Nishmath* particles, Mather seems to be echoing his own account of the bad *animalcula*—the smallpox germs. There seems to be a difference not in structure, but in kind, an opposition quite similar to the [dynamic] “*pPinciple of Life*” and the [static] “*Principle of Dissolution*” he alluded to in *The Christian Philosopher*. He states that “Sharp, Austere Particles,” much coarser than the fine particles of the *Nishmath*, cause illness by clogging and “vexing the *Fibres*” (*The Angel of Bethesda* 58), slowing down circulation. The task of the *Nishmath*, then, is to eliminate these disturbances, in which these “Sharp, Austere Particles” line up in “*Military Shapes*, . . . not fitt for an Association with the more *Peaceable* particles of the *Blood*” (67). Mather here seems to have reached the logical conclusion that an immune system exists. The bad particles have to be slowed down and weakened on their way through the “outworks of the citadel.”⁷² The faster *Nishmath* particles [the principle of life is defined by ‘circulation’] then can cope with the bad particles, not by doing away with them but by incorporating a small or weaker dose of them, so as to immunize the body/machine against the ‘too much’ of it.⁷³

As Mather sees it, the *Nishmath* is the ‘animating force’ in the development of material bodies. In line with the theory of preformation, he states: “We have sometimes been led by our *Microscopes*, into some Apprehensions, that our *Bodies* are Originally folded up, in inconceivably minute *Corpusculumcules*, and that *Generation* is nothing but the *Evolution* of the *Stamina* so involved” (30).⁷⁴ The *Nishmath*, then, is held responsible for the ‘purposeful behavior’ that living matter reveals when evolving. It also provides a solution to a dilemma that Leibniz, in an earlier stage of his thought, tackled in a similar manner. The theory of the *corpuscules* [or *corpusculumcules*, as Mather calls them, to stress their minuteness] is derived from Robert Boyle and logically supposes the evolving body/material to be in “a perpetual flux or changing condition” (Boyle 198)—the body as constant becoming. Though Leibniz approved of this theory, he nevertheless saw that there was a need for an ‘active agent,’ since the corpuscular theory explained everything by matter and extension alone. He saw that it was necessary to introduce an agency through which the connection between soul

and body, metaphysics and matter, was maintained. In a comment on Boyle's text, Leibniz calls this agency the "flower of substance" and claims that "this flower of substance is our body; that the flower of substance now persists perpetually in all changes . . . This flower of substance is diffused through the whole body; somehow comprises the whole form . . . I add something which Boyle seems not to have observed—that the soul is firmly implanted in this flower of substance."⁷⁵ Again, the ultimately small step from an agency|substance *in* the body|matter to an agency|substance that *is* the body|matter is taken. Mather seems to imply something similar when he claims that "our *Nishmath-Chajim* seems to be commensurate unto our Bodies; and our *Bodies* are conformable to the Shape which God our Maker gives to that *plastic Spirit*; (if we may call it so)" (*The Angel of Bethesda* 30). The fact that the *Nishmath* is distributed everywhere in the body [or *is* the body] makes Mather worry "how it fares in the case of *Amputations* on our *Bodies*; Wether like a Flame violently Struck off, what is so, may not nimbly, as by a sort of *Magnetism*, Reunite with what it belongs unto: But then, how far it becomes for the present folded up into it: Or, whether it be not entirely lost, but what remains, may have the power to produce a Recruit, when there shall be a Lodging again provided for it; this also is yett unknown to us" (*ibid.*).⁷⁶

Ultimately, the *Nishmath-Chajim* is the "*Spirit of the Several Parts*, Where it has a Residence; and it is the *Life* by which these Several Parts have their *Faculties* maintained in Exercise. *This* tis, that *Sees*, that *Hears*, that *Feels*; and performs the *Several Digestions* in the *Body*" (*ibid.*)—it is the way the body|matter 'knows,' a knowledge that is unconscious yet productive. And it is in this knowledge of the body that Mather finally sees how the body is regulated: "It is a thing which who can observe without Astonishment? In Every other *Machin*, if anything be out of Order, it will remain so till Some Hand from Abroad shall rectify it; It can do nothing for itself. But the *Humane Body* is a *Machin*, wherein, if anything be out of Order, presently the *Whole Engine*, as under an Alarum, is awakened for the helping of what is amiss, and other parts of the Engine Strangely putt themselves out of their Way that they may send in Help unto it. Whence can this proceed but from a *Nishmath-Chajim* in us" (32). Mather comes to the final conclusion that *because* of the 'plastic spirit in the machine,' *because* of the *Nishmath-Chajim*, the machine can regulate and organize itself. It is not a machine in the mechanistic sense [what Deleuze|Guattari would call an "apparatus"], which depends on some outside power source and control, but a machine in the sense of Leibniz [and Deleuze], in that it is 'infinitely machined.' Like Leibniz, Mather thinks the human body is what Berressem calls a "natural machine that aligns spirit and materiality" ("Of Metal Ducks" 83). In

Mather's natural machine, all the "parts of the Engine," down to the infinitely small level of the finer-than-light particles of the *Nishmath*, are endowed with the capacity for perception—otherwise they could not respond to any "Alarum." The microparticles of Mather's body possess what Deleuze detects as the "microperceptions" (*The Fold* 86) in Leibniz's system of monads. These microperceptions are the way matter/the body perceives, the perceptions that constitute the unconscious. In fact, it can be argued that apperception [which would be a 'macroperception' *above* the threshold of cognition] emerges bottom-up from these microperceptions. What perceives in Leibniz's body are the "monads of heart, liver, knee, eyes, hands" (108). What perceives in Mather's body is the *Nishmath-Chajim* which is [in] the body. For Leibniz, Deleuze argues, "there is no cause to ask if matter thinks or perceives" (ibid.) because Leibniz "displaces this question . . . by keeping matter and intelligence simultaneously together and apart" (Berressem, "Of Metal Ducks" 85). For Mather, matter [at least bodily matter] clearly perceives and 'knows,' although he somehow bypasses another question by being ambiguous about it: whether the *Nishmath* ultimately is a substance *in* the body/matter, or a substance of which the body/matter *consists*, or a *faculty* of the body/matter. Yet the last quotation concerning the self-regulating capabilities of the human body quite clearly points toward the latter option. In a way, Mather moves in the direction of the 'change of metaphors' suggested by what Francisco Varela and Antonio Coutinho have called "immuknowledge"—the immune system not seen as merely a defense against invaders, but as a "*positive* assertion of a molecular identity" (237).

The equivalents of the self-regulating capacities of the body are highlighted in Mather's sermon *Concio ad Populum*, which was published in 1719, when Mather was slowly finishing *The Christian Philosopher*. In this sermon, Mather emphasizes communal action and involvement. For a people in distress—New England—there is only one way out: to take matters into one's own hands: "For Sensible Persons in a *Scattered* way to discern and bewayl our *Distresses*, and not Unite in Endeavours that we may *all get out* of them; This will be but a poor Procedure. For a Sensible Man, to *Sit alone and keep Silence*, or only complain unto a Neighbour as *Unactive* as himself, This may do for *Lamentations* . . . Sirs, You must *Get up and be doing*; But know, that without *United Endeavours*, there will be nothing done to any purpose for our Deliverance, ASSOCIATIONS of well-disposed Men, have had Mighty Successes, and have *done wondrously* . . . *What may be done, to rescue our Land out of the Distresses coming upon it, and render us an Happy People?* . . . Associate your Selves, O ye People, that ye may not be broken in pieces; Take counsel together, that it may not come to nought. If God be with us, you will do so!" (*Concio ad Populum* 8–9). The

Body|Politic's analogue of the body's immune system, for Mather, would be the "SOCIETIES FOR THE RELIEF OF THE PUBLICK DISTRESSES" (9), a self-regulative factor originating in the Body|Politic itself.

Leibniz, by keeping matter and soul simultaneously together *and* apart, paradoxically located the 'plastic force' both *within* and *without* the machine. According to Berressem, Deleuze replaces Leibniz's transcendentalism "by a logic of immanence" ("Of Metal Ducks" 90): "What if one were to fold God, and thus the divine harmony, from the outside into the innermost fold of matter and then were to call this harmony complexity? . . . The algorithm for this operation would be: replace God as the transcendental 'point-at-infinity' with the topological structure of the projective plane" (91). One could subject Mather to a very similar operation, I argue. By clearly situating the 'active force' of the soul *within* matter, Mather [although he is not as consistent in his systematics as Leibniz] moves further than Leibniz in the direction proposed by de La Mettrie, who in 1748 pointed out that "the Leibnizeans . . . have spiritualized matter rather than materialising the soul" (3)—Mather, I argue, tends to go in the direction of materializing the soul. In fact, Mather's conception comes quite close to de La Mettrie's notion that the soul is "clearly nothing but that very organisation" (26) of the body. Here, man is a dynamic machine powered by a vital force *within* matter—a model significantly different from the clockworks of classical mechanist thought.⁷⁷ The forcelfaculty|substance of the *Nishmath-Chajim*, then, enables Mather to regard the body as a kind of autopoietic machine. His view of the body combines mechanism and vitalism, and Mather acknowledges his debt to both strands of thought by extensively quoting from proponents of the two sides [in the case of vitalism, his key sources are van Helmont and George Cheyne, a significant figure in the transition of medicine from mechanism to vitalism in England]. Mather, pushing forward the Puritan transition into the Enlightenment, is curiously also anticipating the transition of the mechanistic worldview of the Enlightenment—which saw matter as endowed with inertia; only reason could account for movement and change—to a view that saw an active force at work *within* matter, body, and society.

Concerning the question of how an open and molecular, almost decentralized machine such as the human body could be regulated, Mather [in his deviation from classical mechanist thought] comes up with a surprising answer: as a dynamic system, the body is composed in such a way as to be self-regulating. Whereas Enlightenment thought stressed the importance of active interventions by God [or active interventions by a rational mind from the *outside*], vitalism suggested an active force *within* the body that was capable of maintaining itself, without external and hylarchic help. And if [as Margaret Jacobs has argued] mechanistic philosophy can be seen as serving

the interest of absolutism,⁷⁸ then vitalism conveys the contrary message of liberalism and self-government. The power of the Body|Politic did not reside in a supreme organ [e.g., the heart or the brain], but in the active force inherent in matter—not in a hierarchical submission to the One, but in a mutual cooperation of the Many. As Otto Mayr correctly points out, this thought was “extremely congenial to a liberal mentality; a system that could balance and regulate itself in full autonomy and independence, without help from a higher authority, would be the foundation of a liberal form of order” (155). Mather, in embracing the vitalist tradition reaching back to van Helmont and Paracelsus and ‘inoculating’ mechanist philosophy with it, repeats a structure that also reveals itself in his political agenda, or vice versa: there seems to be a striking parallel between moving “backwards to the period preceding the triumph of ‘mechanistic natural philosophy’” (Reill 208)⁷⁹ and Mather’s urge to return to the political climate of the Puritan founders. In addition, both steps backward are completed by a step forward,⁸⁰ by elevating ‘tradition’ to a new level—in science, by fusing the vitalist inheritance with mechanism; in politics, by fusing traditional Puritanism with liberalization and secularization. In Mather’s conception, the body [especially the sinful and , in traditional Puritan terminology, the fragmented body] serves as a touchstone for the actual ‘scientific proof’ of the body’s capability of self-regulation, a capability both possible and revealed under ‘good management’ and the rule of the ‘right quantum.’

It can be argued that, even if he brings to light the autopoietic qualities of the Body|Politic, and even if one leaves aside the immensely complex question of the ultimate position of God in this concept, it is still Mather who inoculates, Mather who gives advice, Mather who propagates the forming of associations, etc. One possible answer might lie in the concept of active power itself. As an ‘invisible’ force, being part of matter itself, it is fluid and dynamic, and “cannot be associated with any solid, static body, or when displaced into political language with any established elite” (Reill 212). Still in the grip of traditional ways of thinking about the Body|Politic and eschewing the ultimate consequences of his foray into the field of self-organization, Mather ultimately returns to equating the body’s microperceptions with a ‘rational force’ with which he comes to identify himself—a kind of “educated intelligentsia, . . . a *Stand* above the *Stände*” (ibid.). In line with Mather’s concept of inoculation, the political reading of vitalism emphasized “action and freedom of individual choice, limited, of course, by the imperative to avoid what late Enlightenment thinkers considered the plunge into anarchistic chaos” (ibid.). The rule of the right quantum was Mather’s attempt to inoculate that imperative into the Body|Politic. Consistently thinking through the political implications of vitalism [that is, a vitalism modified by Enlight-

enment science], he found its liberating power still to be limited, since the active force “was seen to operate within the parameters of polar opposition” (211)—note the complementary movements of systole and diastole, inhalation and exhalation, antigens and antibodies, and so forth. The perfect constitution of the Body/Politic would consist of a harmony between extremes. Yet the harmony then would be not one of unison, but one of antagonistic forces, of dissonances, of differences. As a consequence, Reill continues, “in both the natural and the social world the symbol of a static, preestablished harmonic perfection is transformed into one of a perfection in becoming” (ibid.).⁸¹ Mather, with his strategy of ‘inoculation’ and the ‘right dose,’ goes even further. Far from seeing the harmony between extremes as a kind of equilibrium, he locates this antagonism not only on a deeper [that is, a molecular] structure, but his concept also seems to strive not for a closure of that antagonism, but for a way to make that antagonistic force work for the ultimate benefit of the Body/Politic as a semistable yet dynamic system, the perfect balance of what René Thom would call “structural stability and morphogenesis.”⁸²

Christopher Langton, a researcher in complex systems and artificial life, has noted that “biology has traditionally started at the top, viewing a living organism as a complex biochemical machine, and worked *analytically* downwards from there—through organs, tissues, cells, organelles, membranes, and finally molecules—in its pursuit of the mechanics of life” (2). By concentrating on the self-regulating properties of bodies, antibodies, and the *Nishmath*, Mather [at least cautiously] moves from bottom to top, which is the only way that new properties—*life*—can emerge. Mather shows that the machinic body, like “every species of machine, is always at the junction of the finite and infinite, at this point of negotiation between complexity and chaos” (Guattari, *Chaosmosis* 111), not only functioning according to [cultural] imperatives, but also according to its own systemic laws and material capacities.

I want to conclude with a final image of that structural stability and morphogenesis. In a lecture on man’s mortality, Mather claims that “man is like a *Bubble* rising on the Top of the Water, and there taking a Dance or two, perhaps with some lesser ones about it. *In a moment*, it bursts asunder, and immediately the Bubble shrinks into its first Principles” (*Short Life* 13). And although in the theological framework this image clearly makes sense as a memento mori, it also fits into the referential frame elaborated so far, as an example of the Deleuzian credo that forms and structures are not [only] imposed from an outside, but inherent to the material itself. In De Landa’s description, the perfectly spherical shape of a bubble “emerges out of the interactions among its constituent molecules as these are constrained

energetically to ‘seek’ the point at which surface tension is minimized” (“Deleuze and the Open-ended Becoming”). Like the bubble, the subject is subjected to various attractors that keep it ‘in place.’ It is not a question of an ideal form externally imposed, but of a dynamic and semistable position within a force field of different powers, both cultural and material. In the case of the bubble, “an endogenous topological form (a point in the space of energetic possibilities for this molecular assemblage) governs the collective behavior of the individual . . . molecules, and results in the emergence of a spherical shape” (ibid.). As with the bubble, the permanence of ‘man’ is a matter of process, not of substance. As Hans Jonas—who compares the body with a flame [not a bubble, though I should add that Mather, after the ‘bubble’ example, also compares man to a “young spark” (*A Short Life* 13)]—observes, this permanence of process is one like “in a burning candle, . . . in which at each moment the ‘body’ with its ‘structure’ of inner and outer layers is reconstituted of materials different from the previous and the following ones so the living organism exists as a constant exchange of its own constituents and has its permanence and identity in the continuity of this process” (55).

Mather’s scientific preoccupation with the body and its workings provided him with a plethora of facts that could be read as political analogies and could add up to a preliminary theory of the Body|Politic: the Body|Politic possesses qualities inherent in its own material. In line with his antimonarchism—Governor Joseph Dudley concludes that Mather’s “Actions . . . will *Everlastingly* be *Opposite* to Government, even though it were *Angelical*” (15)—Mather can be seen as arguing for a self-government of the Body|Politic [separation from England], and a self-regulation of that Body|Politic itself, which accepts moderately democratic forces *within* the general order provided by a return to the principles of the first generation of Puritan settlers. This is not the place to debate whether Mather was trying to prove his theory of the right quantum by the procedure of inoculation, or whether his research into inoculation actually triggered his politics. In either case, inoculation provided Mather with not only a method of treatment, but also a rich political metaphor: under the auspices of a good doctor/good governance, the Body|Politic can be brought to organize and regulate itself, with the ultimate consequence that the self-regulating capacities of the body—its immune system—finally can do without the doctor. Mather can be counted as part of a revolutionary tradition that would reach its culmination in 1776.