

**“Republican Machines”: Franklin, Rush, and the
Manufacture of Civic Virtue in the Early American Republic**

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*The Perfectibility of Man! Ah heaven, what a dreary theme!
The perfectibility of the Ford car! The perfectibility of which
man? I am many men. Which of them are you going to
perfect? I am not a mechanical contrivance.*

D. H. Lawrence, "Benjamin Franklin"

—*Whatever is, is right
Tho' purblind Man Sees but a Part of
The Chain, the nearest Link,
His Eyes, not carrying to the equal Beam
That poizes all, above.*

Benjamin Franklin, misquoting Dryden¹

In a 1786 essay on "The Mode of Education Proper in a Republic," Philadelphia physician Benjamin Rush famously asserted that he "considered it possible to convert men into republican machines," a necessary adaptation "if we expect them to perform their parts properly, in the great machine of the government of the state." Frequently quoted by scholars, Rush's statement carries a sort of modern shock value along with its testament to the eighteenth-century belief in education's transformative potential. That individuals might be trained to take their anonymous public places in a "uniform" and "homogenized" mass, regularly and unquestioningly performing their duties as republican citizens, tends to arouse both surprise and suspicion upon a twenty-first-century reading. Yet I would argue that the meaning of Rush's claim is no longer self-evident; his eighteenth-century "machines" slip so easily and elusively between the literal and the metaphorical that it is difficult to see where one ends and the other begins.²

¹ D. H. Lawrence, *Studies in Classic American Literature* (1924; New York: Penguin, 1977) 15; Benjamin Franklin, *Benjamin Franklin's Autobiography*, ed. J. A. Leo Lemay and P. M. Zall (1771-1790; New York: W. W. Norton, 1986) 46.

² Benjamin Rush, *Essays Literary, Moral and Philosophical*, ed. Michael Meranze (1798; Schenectady, NY: Union College Press, 1988) 9, 5. The typical modern reaction to Rush's enthusiastically mechanistic vocabulary might be exemplified by David Tyack, who, in comparing Rush to Bertolt Brecht, transposes a twentieth-century distrust of totalitarianism onto Rush's eighteenth-century republicanism. Douglas Sloan points out, and I agree, that "If anachronisms are to be avoided, Benjamin Rush's stress upon creating 'republican machines' [. . .] needs to be read in the light of Newtonian mechanics, not Orwellian apocalypics." Some scholars are beginning the task of recontextualization; Wade Williams, for example, has written on the relationship between rhetoric and eighteenth-century mechanism in Rush's work. See David Tyack, "Forming the National Character: Paradox in the Educational Thought of the Revolutionary Generation," *Harvard Educational Review* 36 (1966): 34-35; Douglas Sloan, *The Scottish Enlightenment and the American College Ideal* (New York: Teachers College Press, 1971) 201 n. 61; Wade Williams, "Religion, Science, and Rhetoric in Revolutionary America: The Case of Dr. Benjamin Rush," *RSQ: Rhetoric Society Quarterly* 30.3 (Summer 2000): 55-73.

Contextualizing Rush's vocabulary within the mechanical philosophy that was a hallmark of seventeenth- and eighteenth-century science reveals the ways in which the line between mechanism and *human* nature remained every bit as indistinct as that between the proverbial machine and garden. Mechanical analyses of causation applied as well to questions of physiology and psychology as to astronomy, physics, and chemistry, a scientific approach which located the human—as *l'homme machine*—in the greater structure of the world machine.³ As I will argue, Rush's work illustrates how this complex imbrication of mechanism and biology was put in the service of the Enlightenment's belief in the perfectibility of man, rationalizing methods of pedagogy and moral improvement in the New World as in the Old.

Rush, however, explicitly directs his physiological approach to pedagogy toward republican goals, and his invocation of republican machines thus also draws upon a more politicized and metaphorical discourse of mechanism in early America as well as a scientific one. Where the literature of national founding routinely employs a lexicon of mechanical construction in the representation of beginning the world anew and fashioning an improved "machinery" of government, Rush's phraseology uses the same trope to sketch an individual's exemplary relation to that government. The idea of a citizen-machine dutifully playing his civic part reproduces on a personal level the goals and ideals of America's new political arrangement, whose orderly, hierarchical structure, harmonious, regular motion, and sheer constructability are beautifully epitomized by mechanism's physical qualities and aesthetic appeal. At the same time, however, the contradictions and inconsistencies in Rush's essay suggest that the discourse of mechanism he invokes captures not simply an optimistic rhetoric of national construction but also a means of representing more fundamental political problems at the heart of the nation's founding. Comparing Rush's work to that of his more famous contemporary purveyor of standardized virtue,

³ By the use of "l'homme machine" I do not mean to imply the extreme philosophical materialism expounded in Julien de La Mettrie's 1747 volume of the same name. *L'Homme Machine* generated much controversy even on the Continent when it first appeared, and there is little evidence that the work was known or read in early America (Paul Merrill Spurlin, *The French Enlightenment in America: Essays on the Times of the Founding Fathers* [Athens, GA: U of Georgia P, 1984] 85). I mean only to invoke how Enlightenment science conceptualized both body and mind as functioning machines in its explorations of anatomy and human understanding.

Benjamin Franklin, illuminates the ways in which the concept of a machine perfectly analogizes the fundamental tension between order and liberty at stake in the new republic.

The methods of self-making presented in Franklin's *Autobiography* draw upon the same mechanical vocabularies of early American science and politics found in Rush's writing, but they also, significantly, intersect with Franklin's interest in the pervasive eighteenth-century metaphysical debate over free will and determinism. The image of the machine plays a central figure in this controversy, providing a crucial common point of reference for both philosophical and political concerns about liberty and necessity. Franklin's text subtly juxtaposes the political laws of the machinery of government with the natural laws governing God's clockwork universe. Thus the *Autobiography*, like Rush's essay, exemplifies the enthusiastic and patriotic employment of a discourse of mechanism found in other writings of the early republic, yet I will try to show how Franklin's complicated navigation of and accommodation to the essential paradox at the heart of the discourse exposes the difficult and delicate balance between authority and freedom in an independent America.⁴

Republican Machines

When Rush, a chemistry professor at the College of Philadelphia as well as a practicing physician, advocates the conversion of men into "republican machines," the unheard, unfamiliar emphasis in his familiar phrase falls on "republican" rather than "machines." For Rush, as for so many of his contemporaries, men were already understood to *be* machines, in a scientific tradition tracing back through the Scottish Enlightenment to the seventeenth-century universities of Holland, to Newtonian mechanics, Cartesian philosophy, and, ultimately, to William Harvey's landmark 1628 analysis of the circulation of the blood, which Harvey compared to the pumping of fluid through a system of hydraulic

⁴ The figure of the machine thus offers an alternative trope for revolutionary and republican politics that runs parallel to the more familiar one of familial relations. Jay Fliegelman, Mitchell Breitwieser, and Christopher Looby, for example, have all uncovered the early American tension between order and liberty in a metaphorical vocabulary of patriarchal authority and filial piety. See Jay Fliegelman, *Prodigals and Pilgrims: The American Revolution Against Patriarchal Authority, 1750-1800* (Cambridge: Cambridge UP, 1982); Mitchell Robert Breitwieser, *Cotton Mather and Benjamin Franklin: The Price of Representative Personality* (New York: Cambridge UP, 1984); and Christopher Looby, *Voicing America: Language, Literary Form, and the Origins of the United States* (Chicago: U of Chicago P, 1996).

pipes. Historians of science have fully explicated the development of this mechanistic world view, but it is worth noting here that the idea of the machine accomplished for biology and psychology what it had elsewhere done for astronomy and other fields of natural philosophy, providing, first, natural proof of God's existence and, second, abstract methods of theoretical analysis.⁵

Thus where Harvey's image may strike us now as particularly unlovely, conjuring associations with urban blight and rusty infrastructure, in the seventeenth century it connoted illimitable beauty and wonder, revealing, like the universe itself, a divine master craftsmanship. This sense of religious awe and mechanical skill evoked by the complexly linked forms, tissues, and movements of the human body is expressed by René Descartes when, describing how the corporeal "heat in our hearts" enables blood flow as well as all other bodily movement, he mentions that

This will not seem at all strange to those who know how many kinds of automatons, or moving machines, the skill of man can construct with the use of very few parts, in comparison with the great multitude of bones, muscles, nerves, arteries, veins and all the other parts that are in the body of any animal. For they will regard this body as a machine which, having been made by the hand of God, is incomparably better ordered than any machine that can be devised by man, and contains in itself movements more wonderful than those in any such machine.⁶

Descartes not only took up and extended Harvey's mechanical pump metaphor in his own writings, but also, in categorically distinguishing between body and soul, is generally understood to have provided the philosophical grounds for viewing human physiology purely as a functioning mechanism.⁷

Cartesian philosophy therefore rather ironically prepared the way for more empirical and inductive mechanical analyses of the body. Physiological movements and functions—many of which, such as digestive processes or the beating of one's heart, are beyond conscious human control—were all thought to be explicable through mechanical principles of cause and effect. Herman Boerhaave, a late-

⁵ My account of the seventeenth- and eighteenth-century perception of the human machine relies heavily upon Otto Mayr, *Authority, Liberty, and Automatic Machinery in Early Modern Europe* (Baltimore: Johns Hopkins UP, 1989) 54-92; Richard S. Westfall, *The Construction of Modern Science: Mechanisms and Mechanics* (Cambridge: Cambridge UP, 1977) 82-104; Garry Wills, *Inventing America: Jefferson's Declaration of Independence* (New York: Vintage, 1979) 95-98; David F. Channell, *The Vital Machine: A Study of Technology and Organic Life* (New York: Oxford UP, 1991) 30-45; and Sloan, *Scottish Enlightenment*.

⁶ René Descartes, *Selected Philosophical Writings*, trans. John Cottingham, Robert Stoothoff, and Dugald Murdoch (Cambridge: Cambridge UP, 1988) 221, 44.

⁷ Westfall, *Construction of Modern Science*, 30-34.

seventeenth-century professor of medicine and chemistry at the University of Leyden particularly influential in the English medical and scientific circles of Rush's time, taught that "if some portions of the human body correspond in their structure with mechanical instruments, they must be governed by the same laws. For all the power of these parts is in the motion which they produce; and motion, by whatever body it is performed, takes place according to the universal laws of mechanics."⁸

Rush, trained at Edinburgh along with many of his early American colleagues, initially studied physiology and pathology in Boerhaave's texts.⁹ His reference to men as machines in his essay on education, neither anomalous nor primarily figurative, exemplifies the fundamental analytical assumption of his time that the body can be understood as a predictable working mechanism. In his *Medical Inquiries and Observations* Rush asserts with firm physiological authority that "Life is the *effect* of certain stimuli acting upon the sensibility and excitability which are extended, in different degrees, over every external and internal part of the body. These stimuli are as necessary to its existence, as air is to flame." Much of his medical practice, he avows, was founded upon Dr. William Cullen's early teaching at Edinburgh that "The human body is an automaton, or self-moving machine; but is kept alive and in motion, by the constant action of stimuli upon it."¹⁰

Knowledge of the body's mechanical characteristics was not limited to a narrow professional circle, however. By the mid-eighteenth century, such popular and well-known compendiums as Ephraim Chambers's *Cyclopaedia* (London, 1728) and Diderot's and d'Alembert's *Encyclopédie* (Paris, 1751-1780) typically included the human body as illustrative of mechanical reasoning in general. The *Cyclopaedia* explains that as bodies are merely particular compositions of common matter,

it naturally leads a Person, who trusts to proper Evidences, to consider the several Parts, according to their Figures, Contexture, and Use; either as Wheels, Pullies, Wedges, Levers, Skrews, Chords, Canals, Cisterns, Strainers, and the like; and throughout the whole of such Enquiries, to keep the Mind close in view of the Figures, Magnitudes, and mechanical Powers of every Part or Movement; just in the same manner, as is used, to

⁸ Qtd. in Robert E. Schofield, *Mechanism and Materialism: British Natural Philosophy in An Age of Reason* (Princeton, Princeton UP, 1970) 193.

⁹ Donald J. D'Elia, *Benjamin Rush: Philosopher of the American Revolution* (Philadelphia: The American Philosophical Society, 1974) 18.

¹⁰ Benjamin Rush, *Medical Inquiries and Observations*, 4th ed. (Philadelphia, 1815) 1:7.

enquire into the Motions and Properties of any other Machine. For which purpose it is frequently found helpful to decypher, or picture out in Diagrams, whatsoever is under consideration, as it is customary in common Geometrical Demonstrations [. . .]¹¹
(Compare Figure 1.)

Mechanical images of anatomy proliferated throughout the seventeenth and eighteenth centuries, adorning mathematical textbooks and medical and philosophical works as well as the newly emerging encyclopedias, rendering “the *mechanism* of the human body” as familiar a concept as the watch in one’s pocket or the clock on the church tower.¹²

Equally important, particularly where education is concerned, are the ways in which the causal analyses of mechanical philosophy informed the eighteenth-century understanding of the human mind. John Locke’s widely influential 1690 *Essay Concerning Human Understanding* promulgated a psychology in which sensory impressions, transmitted through the nervous system, physiologically give rise to ideas in the brain. Locke, trained in medicine, was himself influenced by the “corpuscular” (mechanical) methods of Newton and Boyle.¹³ He compares the operations of the understanding to several mechanical devices, including the printing press and the camera obscura (an optical machine widely used in contemporary science and art which projected in a dark chamber an external image received through a single small opening).¹⁴ Following a mechanical chain of cause and effect, he theorizes, sensations entering through the eye, the ear, touch, etc., imprint themselves on a mind that is otherwise blank, the Lockean *tabula rasa*.¹⁵ The more often a particular sensation is repeated, the deeper and more lasting its impression, ultimately giving rise to those trains of association between experience and ideas responsible

¹¹ Ephraim Chambers, “Mechanical Philosophy,” *Cyclopaedia, or An universal dictionary of arts and sciences* (London, 1728) 2:521.

¹² Denis Diderot and Jean d’Alembert, eds., “Mécanisme,” *Encyclopédie ou Dictionnaire raisonné des sciences, des art et des métiers* (Paris, 1751-80), facsim. ed. (Stuttgart-Bad Cannstatt, Friedrich Frommann Verlag, 1966) 10:226.

¹³ For several detailed discussions of Locke’s relation to contemporary science, see the collection of essays on “Locke and Science” in John W. Yolton, ed., *Philosophy, Religion, and Science in the Seventeenth and Eighteenth Centuries*, Library of the History of Ideas II (Rochester, NY: U of Rochester P, 1990).

¹⁴ John Locke, *Essay Concerning Human Understanding*, ed. Roger Woolhouse (1690; New York, Penguin, 1997) 158. For a compelling account of the camera obscura as a visual and philosophical paradigm in the seventeenth and eighteenth centuries, including its relationship to Locke’s theory of the understanding, see Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (Cambridge, MA: MIT Press, 1990).

¹⁵ Locke, *Essay Concerning Human Understanding* 109f; Schofield, *Mechanism and Materialism* 198-200; Channell, *Vital Machine* 43-44.

for human behavior. This mechanical theory of associationism was more fully elaborated by the eighteenth-century English physician and philosopher David Hartley, who argued both that “*automatic Motions...arise from the Mechanism of the Body*” in a manner resembling “the Motions of *Automata*, or Machines, whose Principle of Motion is within themselves,” and that “Perception...is subjected to the same mechanical Laws as the Motions.”¹⁶

Since Locke believed that the mind, prior to receiving any sense data from its surrounds, is neither vicious nor virtuous, his essay on *Human Understanding* relocates responsibility for a person’s character from nature to the environment.¹⁷ The mind becomes as malleable as any other crafted artifact, its virtuous production utterly dependent upon and determined by the sensations a given environment provides. As Crèvecoeur notes in *Letters from an American Farmer*, “our opinions, vices, and virtues are altogether local: we are machines fashioned by every circumstance around us.” Crèvecoeur’s observation highlights not only the contingent and manufactured qualities of human character, but also, by extension, its potential to be manufactured deliberately. Indeed, Locke’s *Thoughts Concerning Education*, a work fundamentally concerned with the practical and psychological means of inculcating virtue in children, lightheartedly asserts that young minds may be “considered only as white Paper, or Wax, to be moulded and fashioned as one pleases.” Hartley used a nearly identical language of “moulding” and “forming” in his *Observations on Man*, advocating “a right Education, or the imprinting such Associations upon the Minds of Children, as may conduct them safe through the Labyrinths of this World to a happy Futurity.”¹⁸

If one understands the mechanical principles of the human understanding—that is to say, the scientific laws of cause and effect which govern its workings—then theoretically the mind, subject to carefully

¹⁶ David Hartley, *Observations On Man, His Frame, His Duty, And His Expectations* (London, 1749), facsim. ed. (Delmar, NY: Scholars’ Facsimiles & Reprints, 1976) 1:iii, 1:413.

¹⁷ For a full account of Locke’s influence upon education, see John Passmore, *The Perfectibility of Man* (New York: Charles Scribner’s Sons, 1970); Fliegelman, *Prodigals and Pilgrims*.

¹⁸ J. Hector St. John de Crèvecoeur, *Letters From an American Farmer and Sketches of Eighteenth-Century America*, ed. Albert E. Stone (1782; New York: Penguin, 1981) 98; John Locke, *Some Thoughts Concerning Education*, ed. John W. and Jean S. Yolton (1693; Oxford: Clarendon-Oxford UP, 1989) 265; Hartley, *Observations On Man* 2:453, 2:302. Johann Pestalozzi, who in 1800 opened a Swiss school that garnered much attention in the United States, likewise argued that education is essentially a question of “how to bring the elements of every art into harmony with the very nature of the mind, by following the psychological mechanical laws by which mind rises from physical sense impression to clear ideas” (qtd. in Russel Blaine Nye, *The Cultural Life of the New Nation 1776-1830* [New York: Harper & Row, 1960] 166).

controlled experience, can literally be formed into a predictable machine, shaped through training into desirable patterns of thought and behavior, just as mastery of the wedge's mechanical principles enabled Jefferson to design a better plough.

Rush derived a great deal from both Locke and Hartley, and the connection between his pedagogical “republican machines” and philosophy’s mechanical analyses of the mind are further revealed in his “Enquiry Into the Influence of Physical Causes Upon the Moral Faculty,” an address delivered to the American Philosophical Society in 1786. With an epigraph from Locke and a dedication to Benjamin Franklin, “the Friend and Benefactor of Mankind,” Rush’s oration subjects virtue to scientific consideration, describing the “purely mechanical” influence of such physical factors as climate, diet, disease, music, and odors upon a person’s ability to distinguish and choose between good and evil. These “causes,” Rush argues, “act mechanically upon morals” in a manner as predictable and theoretically calculable as natural phenomena. The “stimulus” of vulgar company, for example, sometimes “becomes an exciting cause, and like the stroke of the flint upon steel, renders the sparks of vice both active and visible.”¹⁹ (Rush claims that solitude, by contrast, in removing susceptible individuals from vice-inducing profane society, often leads to moral reform. It should not be surprising that Rush also firmly believed in the reciprocal relation between virtue and a peaceful rural environment that was so much a part of the early American pastoral ethos.)

Full understanding of and control over these sorts of environmental factors, Rush believed—putting the “moral education of youth upon new and mechanical principles”—could aid in the moral perfection of human beings.²⁰ In his concluding remarks to the “Enquiry,” Rush proclaims himself “fully persuaded, that from the combined action of causes, which operate at once upon the reason, the moral faculty, the passions, the senses, the brain, the nerves, the blood and the heart, it is possible to produce such a change in the moral character of man, as shall raise him to a resemblance of angels—nay more, to the likeness of GOD himself.” Significantly, Rush links the pursuit of such moral transformation to the

¹⁹ Benjamin Rush, “An Oration Delivered Before the American Philosophical Society [. . .] Containing An Enquiry Into the Influence of Physical Causes Upon the Moral Faculty” (Philadelphia, 1786) 29-30, 23-24.

²⁰ Qtd. in D’Elia, *Benjamin Rush* 73.

goals of republicanism in this oration as well, reasserting his conviction that “VIRTUE is the living principle of a republic,” rendered “durable” through “proper” education.²¹

Taken together, Rush’s inquiry into the physical causes of morality and his advocacy of republican virtue demonstrate his belief that, given the correct understanding of virtuous cause and effect, the fashioning of character can be codified into a methodical art. His essay on republican education envisions a “uniform system” of schools in the hands of the state because, he argues, “the wills of the people...must be fitted to each other by means of education before they can be made to produce regularity and unison in government.”²² The craft of “fitting” individual wills to one another in a political structure mirrors the standard eighteenth-century artisanal production of clocks and other small machines. Until mechanized mass production made truly interchangeable parts a reality in the mid-nineteenth century, clocks were made singly by hand and assembled piece by piece; wheels and other parts were “put[] one at a time in running order,” individually filed and finished until they fit together properly.²³ Rush’s representation of the dutiful citizen’s mechanistic character and manufacture graphically invokes the intersection of moral training with the scientific principles of causation in the eighteenth century, the ways in which mere human machines might be skillfully converted into thoroughly republican ones.

One might ask at this point what, in fact, constitutes a particularly republican machine? Recent historians have eloquently detailed the republican idealization of a unified socio-political fabric in which private, personal interest is rendered subordinate to the needs of the state. As Gordon Wood argues in *The Creation of the American Republic*, “[t]he sacrifice of individual interests to the greater good of the whole formed the essence of republicanism and comprehended for Americans the idealistic goal of their Revolution.” Disillusioned by an English constitution which still routinely held that “a Part is greater than its Whole,” the Revolutionaries tried to reinvent those social and political forms which would encourage the submission of innumerable selfish wills to that of a single, all-encompassing community, fusing a

²¹ Rush, “Enquiry Into the Influence of Physical Causes” 37, 40.

²² Rush, *Essays* 5, 9.

²³ Qtd. in David A. Hounshell, *From the American System to Mass Production, 1800-1932* (Baltimore: The Johns Hopkins UP, 1984) 352.

diverse variety of separate parts into a harmonious “body politic.”²⁴ Rush’s essay on republican education fully endorses this relationship between citizen and state, repeating the common sentiment that “Our country includes family, friends, and property, and should be preferred to them all.” A youth in the new republic should “be taught that he does not belong to himself, but that he is public property. Let him be taught to love his family, but let him be taught, at the same time, that he must forsake, and even forget them, when the welfare of his country requires it.” Rush’s ideal student, perfectly trained in what calls the “public virtue” of the eighteenth century, industriously pursues study and business, practicing economy and amassing wealth, but only in order to improve his ability to serve the nation.²⁵

Wood figures republicanism’s “corporate ideal” in the familiar biological terms of the body politic, contending that “Americans creating a new society could not conceive of the state in any other terms than organic unity.” Yet a vocabulary of parts and wholes belongs equally to a discourse of mechanism; the mechanical and the biological cohere simultaneously in bodies of state as in human bodies, as Hobbes’s *Leviathan* demonstrated long before.²⁶ Rush’s machine analogy amply illustrates that Americans, too, conceived of the republic along these parallel terms. His mechanistic republican vision likewise constructs a polity whose regular and harmonious workings depend upon the coordinated

²⁴ Gordon S. Wood, *The Creation of the American Republic 1776-1787* (1969; Chapel Hill, NC: U of North Carolina P, 1998) 53, 55, 59.

²⁵ Rush, *Essays* 7; Wood, *Creation of the American Republic* 68.

²⁶ Wood, *Creation of the American Republic* 59. Hobbes outlines a particularly detailed correspondence between a conception of the state as an artificial automaton and the even older and more familiar metaphor of the “body politic”: “NATURE (the Art whereby God made and governes the World) is by the *Art* of man, as in many other things, so in this also imitated, that it can make an Artificial Animal. For seeing life is but a motion of Limbs, the beginning whereof is in some principall part within; why may we not say, that all *Automata* (Engines that move themselves by springs and wheeles as doth a watch) have an artificiall life? For what is the *Heart*, but a *Spring*, and the *Nerves*, but so many *Strings*; and the *Joynts*, but so many *Wheeles*, giving motion to the whole Body, such as was intended by the Artificer? *Art* goes yet further, imitating that Rationall and most excellent worke of Nature, *Man*. For by *Art* is created that great LEVIATHAN called a COMMON-WEALTH, or STATE (in latine CIVITAS) which is but an Artificiall Man; though of greater stature and strength than the Naturall, of whose protection and defence it was intended; and in which, the *Soveraignty* is an Artificiall *Soul*, as giving life and motion to the whole body; The *Magistrates*, and other *Officers* of Judicature and Execution, artificiall *Joynts*; *Reward* and *Punishment* (by which fastned to the seate of the *Soveraignty*, every joynt and member is moved to performe his duty) are the *Nerves*, that do the same in the Body Naturall; The *Wealth* and *Riches* of all the particular members, are the *Strength*; *Salus Populi* (the *peoples safety*) its *Businesse*; *Counsellors*, by whom all things needful for it to know, are suggested unto it, are the *Memory*; *Equity* and *Lawes*, an artificiall *Reason* and *Will*; *Concord*, *Health*; *Sedition*, *Sickness*; and *Civill War*, *Death*. Lastly, the *Pacts* and *Covenants*, by which the parts of this Body Politique were at first made, set together and united, resemble that *Fiat*, or the *Let us make man*, pronounced by God in the Creation” (Thomas Hobbes, *Leviathan*, ed. Richard Tuck [1651; Cambridge: Cambridge UP, 1996] 9-10).

integration of its separate components, the subordination of individual parts to the function and movement of the larger mechanism. Once successfully slotted into a smoothly working assembly, the function or “interest” of any single part unquestioningly furthers the interest of the whole; each part might thus be said to be “disinterested” with respect to itself, subordinate to and governed by the mechanical laws of the larger device. The turning of a single gear in the wheel train of a clock accomplishes its particular local function within the mechanism while contributing simultaneously to the whole timepiece’s accurate indication of the hour. Benjamin Franklin’s description of a machine in his youthful *Dissertation on Liberty and Necessity, Pleasure and Pain* explicitly demonstrates the subordination of part to whole in a mechanical system. Franklin explains that the motions of any given piece must be completely determined by the larger mechanism, because otherwise it would be

as if an ingenious Artificer, having fram’d a curious Machine or Clock, and put its many intricate Wheels and Powers in such a Dependance on one another, that the whole might move in the most exact Order and Regularity, had nevertheless plac’d in it several other Wheels endu’d with an independent *Self-Motion*, but ignorant of the general interest of the Clock; and these would every now and then be moving wrong, disordering the true Movement, and making continual Work for the Mender.²⁷

In a well-crafted machine, wheels and gears work in tandem rather than independently to preserve “the general interest” of the system.

The problem of eliminating or at least limiting personal motives in the operation of government occupied a large part of eighteenth-century American political thought, and mechanistic structural solutions appear wherever private interest needed to be submerged in a general will. Alexander Hamilton, for example, observed in 1779 that “The nearer the soldiers approach to machines, perhaps the better.”²⁸ And Jefferson had this theoretical mechanical disinterest in mind when he suggested that mercy should not be at the discretion of a judge, who should instead “be a mere machine” obeying automatically the inexorable injunctions of law. For, he wrote, “[t]he mercies of the law will be dispensed equally & impartially to every description of men; those of the judge, or of the executive power, will be the

²⁷ Benjamin Franklin, *Dissertation on Liberty and Necessity, Pleasure and Pain* (London, 1725), rpt. in Franklin, *Writings*, ed. J. A. Leo Lemay (New York: Library of America, 1987) 61.

²⁸ Qtd. in “Machine,” def. 4d, *Oxford English Dictionary*, University Of Pennsylvania 1998, 22 November 1998, <<http://www.oed.library.upenn.edu/>>.

eccentric impulses of whimsical, capricious designing man.”²⁹ Ultimately the machine metaphor perfectly embodies Rush’s republican state because its coordinated structure, inherently limiting idiosyncratic behavior and therefore merely personal interest, presents a precise analogue for the ideal political relationship between individual and community.

The Art of Virtue

Franklin’s interest in machines and their makers, evident in the extended metaphor cited above, marks a great deal of his written and scientific work. Near the beginning of the *Autobiography*, before his destiny as a printer has been fixed, Franklin remembers how he sometimes walked with his father to see various craftsmen at their trades. While he eventually chose none of them, the experience made a lasting impression. He writes of these occasions that “It has ever since been a Pleasure to me to see good Workmen handle their Tools,” and he learned enough from his observations to maintain his father’s tradition of versatile “mechanical Genius,” “be[ing] able to do little Jobs myself in my House, when a Workman could not readily be got; and to construct little Machines for my Experiments [. . .].” Franklin’s pleasure in the sheer act of craft permeates his narrative, from his myriad mechanical duties as “factotum” or jack-of-all-trades in the printing house to the rigging of scientific apparatus and his invention of a stove.³⁰ These small material acts mirror on a private scale the larger, more public projects the *Autobiography* documents, structures of society and government given shape by the passage of legislation, the improvement of urban streets and lights, the formation of libraries, schools, hospitals, and fire companies. And all the while, against the backdrop of a city’s, a colony’s, a country’s building, Franklin relays the steps of his own self-making, the steady invention of career and character recorded for posterity in the carefully composed pages of his memoirs.

Franklin’s representative self-construction has become a cornerstone of contemporary Franklin scholarship, often focused on the intricate interplay between subjectivity and persona in a socially and

²⁹ Thomas Jefferson, letter to Edmund Pendleton, 26 August 1776, *Writings*, ed. Merrill D. Peterson (New York: Library of America, 1984) 757.

³⁰ Franklin, *Autobiography* 9, 7, 9, 43.

politically charged eighteenth-century print culture.³¹ What interests me here, however, are those echoes of artisanal craftsmanship that haunt the *Autobiography*'s self-making—the ways in which Franklin's imaginative art intersects with the more material “art” of a skilled mechanic. The mechanistic resonances of Franklin's writings are readily perceived, as Franklin extols the rationalization and instrumentalization of every aspect of daily life, from the process of writing to the conduct of business to the acquisition of virtue.³² D. H. Lawrence once voiced his intuition that Franklin's virtuous behavioral precepts transform the human being into a sort of “moral machine...work[ed] with a little set of handles or levers.” Lawrence, fully steeped in the Romantic embrace of nature and spontaneous individuality, inevitably preferred a pre-industrial wilderness to the late eighteenth-century's machinery of the middle landscape, proffering his “dark vast forest” of an original soul in place of Franklin's fenced “kitchen garden” and “unlovely, snuff-colored little ideal, or automaton, of a pattern American.”³³

Yet for Franklin, as for Rush, mechanism was not opposed to human nature but a fundamental part of it. A close reader of Locke and a correspondent of David Hartley, Franklin was clearly familiar with mechanistic theories of human understanding and behavior. Portions of Franklin's deistic *Dissertation* closely parallel the chapter on “Modes of Pleasure and Pain” in Locke's *Essay Concerning Human Understanding*, where Locke explains human behavior as the purely mechanical effect of one's desire to avoid “Pain and Uneasiness.” Franklin recapitulates Locke's argument in remarkably similar language, writing, “Thus is the Machine [man] set on work; this is Life. We are first mov'd by Pain, and the whole succeeding Course of our Lives is but one continu'd Series of Action with a View to be freed from it. As fast as we have excluded one Uneasiness another appears, otherwise the Motion would cease.

³¹ See Breitwieser, *Price of Representative Personality*; Michael Warner, *The Letters of the Republic: Publication and the Public Sphere in Eighteenth-Century America* (Cambridge, MA: Harvard UP, 1990).

³² For an account of the relationship between the Enlightenment and the dominance of “instrumental reason” or rationalization, see Max Horkheimer and Theodor W. Adorno, *Dialectic of Enlightenment* (NY: Continuum, 1991). For some of Franklin's specific practices in this regard, see Max Weber, *The Protestant Ethic and the Spirit of Capitalism* (1930; New York: Routledge, 1993) esp. 47-78.

³³ Lawrence, *Studies in Classic American Literature* 22, 17, 27.

If a continual Weight is not apply'd, the Clock will stop.”³⁴ Although Franklin later regretted some of the *Dissertation*'s philosophical consequences and publicly retracted them, his understanding of the mechanical principles underlying human behavior nonetheless deeply informs his writings on virtue. Indeed, Franklin portrays the acquisition of virtue as a manufacturing process in all its stages: a mechanic craft whose methods exploit the mechanism of the human mind, producing a citizen whose behavior, as Lawrence long ago lamented, bears remarkably automatic features.

Franklin's treatment of virtue as a systematic body of knowledge reaches back to an early *Pennsylvania Gazette* essay, where he suggests that a man might acquire “the Science of Virtue” just as he might learn any other science. In a famous letter to Henry Home Kames twenty-five years later he argues more familiarly that virtue is “as properly an Art, as Painting, Navigation, or Architecture.” He particularly stresses that it is insufficient simply to exhort people to be good; one must also show them how to be so. As with any other craft, the art of virtue has to be learned. Franklin explains that “If a Man would become a Painter, Navigator, or Architect, it is not enough that he [. . .] resolves to be one, but he must also be taught the Principles of the Art, be shewn all the Methods of Working, and how to acquire the Habits of using properly all the Instruments; and thus regularly and gradually he arrives by Practice at some Perfection in the Art.”³⁵

Franklin's presentation of virtue as a mechanic art pays a deistic and peculiarly American compliment to the status of ethics. Noting that “Man is a Part of this great machine, the Universe,” Franklin exclaims in the *Dissertation* over the beauty and skill evident in God's orderly creation. He admires the exactness, regularity, and harmony of nature, so “wisely in every Part contriv'd!” This is the work of an artisan God, or as Franklin said many years later in *Information to Those Who Would Remove to America*, “The People have a Saying, that God Almighty is himself a Mechanic, the greatest in the Universe; and he is respected and admired more for the Variety, Ingenuity and Utility of his Handiworks,

³⁴ Franklin, *Dissertation on Liberty and Necessity* 62-63; cf. Locke, *Essay Concerning Human Understanding* 216-19.

³⁵ Benjamin Franklin, “A Man of Sense,” 11 Feb. 1734/35, *Writings* 248; Benjamin Franklin, letter to Lord Kames, 3 May 1760, *Writings* 766.

than for the Antiquity of his Family.”³⁶ Utility and skill are respected wherever they are found, Franklin writes, Americans being more interested in what a man can do than in the quality of his birth. For Franklin, mechanic art in America is valuable—almost spiritual—in and of itself, echoing on some earthly level the creative work of divinity, and he takes discernible pride in his own material skill as a craftsman.

Franklin advocated that any good craftsman sketch out a proposed project before undertaking its actual construction. In his *Proposals Relating to the Education of Youth in Pensilvania* (a piece in which he quotes liberally from Locke’s thoughts on education), he argues that “*Drawing* is no less useful to a *Mechanic* than to a Gentleman. [. . .] By a little Skill of this kind, the Workman may perfect his own Idea of the Thing to be done, before he begins to work. A draft template of the ethical self is no less important to the art of virtue. Franklin revised several as he sought to perfect his project of moral perfection, beginning with the “design” which he sketched in his Journal as a young man, a “regular plan” for conduct intended to enable him to “live in all respects like a rational creature.” This exemplary plan of conduct, outlined briefly for his own resolution in 1726 and intended for full delineation in a comprehensive work of its own, the projected but never-materialized *Art of Virtue*, was finally expanded for public consumption and utility in the 1780s text of the *Autobiography*. The record of Franklin’s life—complete with charts—provides just that model sketch for a virtuous character, that “*pattern* for all youth” as his friend Benjamin Vaughan admirably put it, whose implications of mass production Lawrence so despised.³⁷ Like the pamphlet written to promote his new and improved Pennsylvania fireplaces, Franklin’s *Autobiography* provides an explanation of how his method is superior to its predecessors, an illustrated design for the Franklinian model, and instructions for its assembly and use.

The virtuous character for which Franklin provides a pattern, however, is more closely related to a clock than to a fireplace. Franklin had a lifelong interest in clocks and clock mechanisms only hinted at

³⁶ Franklin, *Dissertation on Liberty and Necessity* 61; Benjamin Franklin, *Information to Those Who Would Remove to America* (Passy, 1784), rpt. in *Writings* 977.

³⁷ Benjamin Franklin, *Proposals Relating to the Education of Youth in Pensilvania* (Philadelphia, 1749), rpt. in *Writings* 329; Benjamin Franklin, “Plan of Conduct” (1726), *Writings* 72; Franklin, *Autobiography* 61, emphasis added.

in the *Autobiography*, where he early makes special note of showing off his new watch—an impressive indicator of status throughout the 1700s—before his brother James and his former fellow journeymen.³⁸ Franklin in fact designed a clock of his own which had three internal wheels governed by a pulley and whose two dials indicated minutes, hours, and seconds (Figure 2). James Ferguson declared it an “ingenious plan” and verified that he had seen a clock built to its specifications, “which measures time exceedingly well.” Brooke Hindle, a historian of technology, has observed that the manufacture of clocks and watches “in eighteenth-century Pennsylvania was the most precise and stimulating craft open to boys with a bent for mechanics.”³⁹ Franklin’s detailed account of his labors in the art of virtue suggests that the construction of the self presents as great a technical challenge, demands as great a skill, as the manufacture of a timepiece. And indeed, the two crafts had identical goals: the regulation of behavior.

Timekeeping accuracy represented the holy grail of clock-making during this period. One early artisan advertised in the *Gazette* his “true Method of bringing a Watch to go nearly exact, whether hanging, moving, or lying flat; whereas the Difference is commonly very considerable.”⁴⁰ The problem was rendered particularly acute in navigation and astronomy, as published scientific accounts of the transits of Venus in 1761 and 1769, and the £20,000 reward offered by the British Parliament for a practical method of determining longitude, publicly demonstrated.⁴¹ Improved precision depended on better control of the rate at which the wheel train expended its motion, typically accomplished in a clock by the escapement, a mechanism that simultaneously arrests the movement of the wheel train at regular intervals and drives the hands on a clock face (Figure 3).⁴² The key concept here is that of a regular

³⁸ For a brief discussion of clocks and watches as status objects, see Samuel L. Macey, *Clocks and the Cosmos: Time in Western Life and Thought* (Hamden, CT: Archon Books, 1980) 49-54.

³⁹ James Ferguson, *Select Mechanical Exercises: Shewing how to construct different Clocks, Orreries, and Sun-Dials, on Plain and Easy Principles* [. . .] (London, 1773) 3; Brooke Hindle, *David Rittenhouse* (1964; New York: Arno Press, 1980) 15-16.

⁴⁰ *The Pennsylvania Gazette*, 4 Feb. 1735, Accessible Archives Full-Text Database, <<http://srch.accessible.com/>>.

⁴¹ See David S. Landes, *Revolution in Time: Clocks and the Making of the Modern World* (Cambridge, MA: Belknap/Harvard University Press, 2000) 155-179; Dava Sobel, *Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time* (New York: Penguin, 1995); Brooke Hindle, *The Pursuit of Science in Revolutionary America 1735-1789* (Chapel Hill, NC: U of North Carolina P for The Institute of Early American History and Culture, 1956); *The Pennsylvania Gazette*, 15 June 1769 and 20 December 1780.

⁴² For an excellent technical discussion, see Landes, *Revolution in Time* esp. 118-142 and “Appendix A: Escapements,” 397-415.

interval; the accuracy of a clock depended upon its going at a steady rate, the proper regulation of its motion by means of its mechanical design. Watches came with “regulating keys” for winding, and reports of “lost or stolen” watches routinely described identifying marks on the “regulating dial,” or watch face. Franklin’s mid-century advertisements for Poor Richard’s *Almanack* list among its useful information “A correct Table for Equating of Time, or of the Inequality of Solar Days, for the regulating of CLOCKS and WATCHES; exactly calculated to every Minute of Variation, or Difference in Time.”⁴³

Although Franklin is not known to have written an account of his own clock, we might infer from Ferguson’s remarks that it attempted to improve timekeeping in two ways. The first involved the owner’s ability to read the clock face accurately: The minute hand *A* (as depicted in Figure 2), makes a complete revolution every four hours, so that the time, as indicated in the figure, might be “either 32 1/2 minutes past XII, or past III, or past VIII; [. . .] Now,” Ferguson says, “as one can hardly be four hours mistaken in estimating the time, he can always tell the true hour and minute, by looking at the clock, from the time he rises till the time he goes to bed.” (Ferguson notes, however, that one might possibly misread the clock upon waking in the middle of the night, not being able to tell, for example, if it is one o’clock or five o’clock in the morning.) In the second place, the very simplicity of the clock’s internal design seems to have increased the accuracy of its motion. Ferguson contends that “The simpler that any machine is, the better it will be allowed to be, by every man of science,” yet he also disliked the consequence of having to wind the clock more than once a week.⁴⁴ Ferguson modified Franklin’s design to improve upon what he considered its faults, but his alterations, he admitted, rendered it less accurate than either Franklin’s invention or a more conventional clock.

Franklin appears to have designed his three-wheel clock in the mid-1750s, shortly before he began to elaborate his art of virtue to Lord Kames.⁴⁵ The two ideas are linked in conception as well as chronology; Franklin connects virtuous human behavior to good clockwork through his rhetorical use of

⁴³ *The Pennsylvania Gazette*, 4 February 1735; 22 September 1763; 29 November 1750.

⁴⁴ Ferguson, *Select Mechanical Exercises* 1-2, 4.

⁴⁵ The editors of Franklin’s *Papers* assign this date on the basis of James Ferguson’s biography. See *The Papers of Benjamin Franklin*, ed. Leonard W. Labaree, et. al. (New Haven: Yale UP, 1959-) 8:216.

“regulation.” In the *Autobiography* he refers to the virtuous plan recorded in his Journal as that “which I formed at Sea for regulating my future Conduct in Life,” while Benjamin Vaughan, in his letter entreating Franklin to continue his memoirs, stresses “the importance of regulating our minds.” As even the earliest wording for his “regular plan” of conduct indicates, Franklin’s method aims for a mechanical regularity of behavior, a certain standard of ethical action, which is measured, even, and predictable. Franklin notes “that the mere speculative Conviction that it was our Interest to be completely virtuous, was not sufficient to prevent our Slipping, and that the contrary Habits must be broken and good Ones acquired and established before we can have any Dependence on a steady uniform Rectitude of Conduct.”⁴⁶ Steadiness and uniformity here represent the self-regulatory ideal, marks of well-formed individuals who neither “slip” nor vary from the set standards of virtue. It reproduces on a private and personal level that public “regularity and unison in government” Rush hopes for from his republican machines.

The content of Franklin’s virtuous precepts, comprised largely of temperate behavior, has as much in common with mechanical regulation as their more formal qualities. A cardinal virtue, temperance encompassed the practice of restraint and self-control in any activity—in discourse; the indulgence of anger, desire, or other passions; consumption; “venery,” etc. The resolutions in Franklin’s early plan of conduct—frugality, truthfulness, industriousness, and speaking only good of others—tend to enumerate different aspects of temperance, as does the longer list of virtues outlined in the *Autobiography*. In the later text, however, Franklin complains about the way the general idea of “temperance” can confusingly refer to as wide or narrow a range of behavior as one pleases. He prefers to “use rather more Names with fewer Ideas annex’d to each, than a few Names with more Ideas,” attaching the label “temperance” to restraint at table and “moderation” to the control of such extreme passions as anger. Yet his “silence” amounts to restraint in speaking, just as “frugality,” “tranquility,” and “chastity” stand for moderation in expenditure, emotion, and sex, respectively. Franklin’s recommendation that one “Rarely use Venery but for Health or Offspring; Never to Dulness, Weakness, or the Injury of your own or another’s Peace or Reputation” perfectly captures the essence of both Franklinian and Aristotelian ethics: moderation, or

⁴⁶ Franklin, *Autobiography* 40, 61, 66.

virtue as the “golden mean.” Franklin’s exhortation to “temperance,” defined for himself as “Eat not to Dulness. Drink not to Elevation” is given pride of place at the head of his list of virtues since “it tends to procure that Coolness and Clearness of Head, which is so necessary” to maintaining one’s discipline in the face of temptation. For Franklin it is thus an eminently rational virtue, enabling efficient and logical thinking, and its appearance in boldface at the head of a sample page from his little book of virtues stresses the instrumental relation of TEMPERANCE to Franklin’s wholly methodical system of ethics.⁴⁷

Temperance reproduces on an moral level the mechanical regularity of a clock’s action, constrained to proceed at a measured, even, and predictable pace, neither too fast nor too slow but exactly in keeping with the standards set by God’s natural law. Lynn White, Jr., another historian of technology, has demonstrated the association of temperance with timekeeping in a tradition dating back to the fourteenth century, shortly after the invention of the mechanical clock. Medieval iconography depicts the Christian virtue of temperance, rooted in a chivalric notion of *mesure* or measure, with hourglasses, clocks, and other timekeepers (Figure 4). In a treatise about the education of young aristocrats written around 1400, Christine de Pisan instructs that “because our human body is made up of many parts and should be regulated by reason, it may be represented as a clock in which there are several wheels and measures. And just as the clock is worth nothing unless it is regulated, so our human body does not work unless Temperance orders it.”⁴⁸ The two earliest manuscripts of de Pisan’s work are illustrated “with pictures of Temperance adjusting a large mechanical clock.” White notes that by the mid-fifteenth century, “The [clock] mechanism ha[d] become the icon of the Christian life.”⁴⁹

Such eighteenth-century artists as William Hogarth still sometimes portrayed the iconographic convergence of timekeeping with temperate behavior, while written works such as Franklin’s bear

⁴⁷ Franklin, *Autobiography*, 67-69.

⁴⁸ Qtd. in Lynn White, Jr., “The Iconography of *Temperantia* and the Virtuousness of Technology,” *Action and Conviction in Early Modern Europe*, ed. Theodore K. Rabb and Jerrold E. Seigel (Princeton, NJ: Princeton UP, 1969) 209.

⁴⁹ White, “Iconography of *Temperantia*” 213.

rhetorical traces of the connection.⁵⁰ A 1735 essay in Franklin's *Gazette*, for example, subtly links temperance to the ordered regularity of mechanism. Arguing that "true Happiness" is rooted in virtue, the writer declares that "Virtue is the best Preservation of Health, as it prescribes Temperance, and such a Regulation of our Passions as is most conducive to the Well-being of the Animal Oeconomy." Temperate self-control, the essay suggests, reproduces in the individual that beautiful regularity so cherished by deists and the Enlightenment in general: "It is impossible ever to enjoy ourselves rightly, if our Conducts are not such, as to preserve the Harmony and Order of our Faculties, and the original Frame and Constitution of our Minds. All true Happiness, as all that is truly beautiful, can only result from Order."⁵¹ The seventeenth- and eighteenth-century use of the term "regulate" for governing both objects and bodies thus vividly reveals the conjunction of the human and the mechanical in the service of virtue.

Franklin, in addition to ordering his mind and passions, strives to give his daily existence a regular "Order," the virtue, ironically, to which he confesses the most difficulty. The second table reproduced in the *Autobiography* from Franklin's private book of virtues contains his "Scheme of Employment for the Twenty-four Hours of a natural Day," since "The Precept of *Order* requir[ed] that *every Part of my Business should have its allotted Time.*"⁵² Historians and sociologists such as E. P. Thompson and Max Weber have provided brilliant analyses of the relationship between mechanical timekeeping and the disciplinary ethos of industrial capitalism, but this particular chart illustrates far more than Poor Richard's maxim that "Early to Bed, and early to rise, makes a Man healthy, wealthy, and wise."⁵³ Franklin's timetable marks off at intervals every hour of his day with its corresponding business, fusing the concept of virtue to the even periodicity of hands sweeping around a clock face. His plan, while demonstrating, as many have noted, how industry is maximized and no time wasted, also presumes access to an accurate timekeeper and envisions one steadily making one's measured way around the dial.

⁵⁰ See Samuel L. Macey, "Hogarth and the Iconography of Time," *Studies in Eighteenth Century Culture* 5 (1976): 41-53.

⁵¹ *The Pennsylvania Gazette*, 20 November 1735.

⁵² Franklin, *Autobiography* 71, emphasis in original.

⁵³ See E. P. Thompson, "Time, Work-Discipline, and Industrial Capitalism," *Past and Present* 38 (December 1967): 56-97; Weber, *Protestant Ethic and the Spirit of Capitalism*.

Franklin literally maps a virtuous order onto the accurate regulation of time, charting a uniform progression not just through a single twenty-four hour period but also through a predictable repetition day after day after month after year. As the clock's motion makes manifest the divine regularity of the planet's motion, so Franklin's virtue allows human behavior to harmonize with the orderliness of nature's law.

The uniform clockwork regulation of one's soul, the ordering of one's day to accord with the regularity of the universe—Franklin's ethical art reproduces on numerous levels the steady, repetitive motions of mechanism so exemplary of both Christian morals and Enlightenment aesthetics. This alignment of human with machine is finally epitomized in the *Autobiography* by an anecdote Franklin relates regarding his struggle to attain the virtue of order. The anecdote is worth quoting at length, for Franklin had such trouble with this virtue that he was nearly resigned to “a faulty Character,” comparing himself to

the Man who in buying an Axe of a Smith my Neighbor, desired to have the whole of its Surface as bright as the Edge; the Smith consented to grind it bright for him if he would turn the Wheel. He turn'd while the Smith press'd the broad Face of the Axe hard and heavily on the Stone, which made the Turning of it very fatiguing. The Man came every now and then from the Wheel to see how the Work went on; and at length would take the axe as it was without farther Grinding. No, says the Smith, Turn on, turn on; we shall have it bright by and by; as yet 'tis only speckled. Yes, says the Man; but—I think I like a speckled Axe best.—And I believe this may have been the Case with many who having for want of such Means as I employ'd found the Difficulty of obtaining good, and breaking bad Habits, in other Points of Vice and Virtue, have given up the Struggle, and concluded that a speckled Axe was best.⁵⁴

Franklin's tale captures the sheer instrumentality of the craftsman's final product. The perfection of the self is allegorized as the finishing of a tool, illuminating the ways in which Franklin's art of virtue truly manufactures an improved human machine.

The turning and turning of the machine—the grindstone—also suggests the repetitive methods that were integral to Franklin's method of inculcating virtue. Voltaire observed in an essay on Locke that “'tis of little Importance to Religion, which only requires the Soul to be virtuous, what Substance it may be made of. 'Tis a Clock which is given us to regulate, but the Artist has not told us of what Materials the

⁵⁴ Franklin, *Autobiography* 73.

Spring of this Clock is compos'd."⁵⁵ For Franklin, the composition of the spring was undoubtedly Lockean; his moral craft draws heavily upon the mechanical principles of the Lockean mind. As Norman Fiering has shown, the most important principle in Franklin's ethical toolkit, as in Locke's before him, is habit. He reiterates in the *Autobiography* Locke's position that habit is even stronger than reason in controlling behavior. Franklin wishes to break old, vicious habits and learn new ones—his stated intention is “to acquire the *Habitude*” of all the virtues on his list. The list itself maintains a careful sequence, as Franklin hopes that, working consecutively through the thirteen virtues in his table, the acquired habits of the early virtues will hasten the learning of subsequent ones. He records how he continually reinscribes and perfects the self in his blank sheets of virtue, wiping the pages clean, repeating the process, working through the tables over and over again, one “Course complete in Thirteen Weeks, and four Courses in a Year,” a ceaseless cycle of improvement. The metaphor of ax-grinding demonstrates the arduousness of habit formation, a process which, in keeping with the theory of associationist psychology, relies on brute repetition: recurring chains of sense data, ideas, and behavior are impressed ever more deeply upon the mind. Thus Locke instructs that children should be made to perform an action “over and over again, till they are perfect [. . . B]y repeating the same Action, till it be grown habitual in them, the Performance will not depend on Memory, or Reflection, the Concomitant of Prudence and Age, and not of Childhood; but will be natural in them.”⁵⁶

Locke here uses the word “natural” to describe habitual action, a rhetorical strategy that, as Jay Fliegelman has suggested, “was to make it more than a reasoned act or an emotional response, it was to make it instinctual, ‘woven into the very Principles of his Nature’ [. . .] second nature. It was by habituation that education more than formed man, it renatured him.” But “forming” and “renaturing” are identical processes when a human is, by nature, a machine. It is difficult to tell where instinct leaves off and automatism sets in—behavior unaided by reason or even conscious thought. Rush asserts in his

⁵⁵ Voltaire, *Letters Concerning the English Nation*, ed. Nicholas Cronk (1733; New York: Oxford UP, 1999) 58.

⁵⁶ See Norman S. Fiering, “Benjamin Franklin and the Way to Virtue,” *American Quarterly* 30.2 (Summer 1978): 199-223, 9 June 2001 <<http://www.jstor.org>>. Franklin, *Autobiography* 68, 70; Locke, *Some Thoughts Concerning Education* 120.

Medical Inquiries, “That an action originally involuntary may become voluntary, and that actions originally voluntary may become involuntary, from habit, is obvious from many facts.” Arguably nature and automatism are one and the same, much as Descartes illustrates the human *machine* by the eye’s instinctive blinking when a fist threatens: a mechanical chain of cause and effect.⁵⁷

The *Autobiography* calls attention to the relation between habit and mechanism during a brief description of a near-collision at sea. Franklin records that the Watchman in the ship’s bow, “to whom they often call’d, *Look well out befor’e there*; and he as often answer’d *Aye, Aye!* [. . .] perhaps [. . .] had his Eyes shut, and was half asleep at the time: they sometimes answering as is said mechanically: For he did not see a Light just before us [. . .].” The adverb “mechanically” here clearly connotes a form of automatic response associated with unthinking, habitual behavior. It is equally clear that the watchman’s mechanical behavior is misplaced, as his duties call for active judgment rather than habitual reply. The incident therefore substantiates another of Franklin’s points with regard to the art of virtue, that vicious habits can be as automatic and compulsory as virtuous ones, often taking “the Advantage of Inattention” or overwhelming reason. His goal is to substitute good habits for bad, rendering virtue as far as possible a reflexive, often unthinking response. Virtue, for Franklin, does not consist in the conscious resistance of temptation; his methodology depends on the idea that the deliberate inculcation of habitual virtue can so govern behavior that “at length Temptation has no Force, or entirely vanishes.”⁵⁸

Where virtue is concerned, however, the slippage between “natural” and “mechanical” habits can potentially be problematic, introducing the danger of hypocrisy. Rush, for example, speculating about “the mechanical effects of HABIT upon virtue,” insists, “There are [. . .] many instances, where virtues have been assumed by accident, or necessity, which have become real from habit, and afterwards derived

⁵⁷ Fliegelman, *Prodigals and Pilgrims* 181; Rush, *Medical Inquiries* 1:10. Descartes writes: “If someone suddenly thrusts his hand in front of our eyes as if to strike us, then even if we know that he is our friend, that he is doing this only in fun, and that he will take care not to harm us, we still find it difficult to prevent ourselves from closing our eyes. This shows that it is not through the mediation of our soul that they close, since this action is contrary to our volition, which is the only, or at least the principal, activity of the soul. They close rather because the mechanism of our body is so composed that the movement of the hand towards our eyes produces another movement in our brain, which directs the animal spirits into the muscles that make our eyelids drop” (Descartes, *Selected Philosophical Writings* 223-24).

⁵⁸ Franklin, *Autobiography* 142; Benjamin Franklin, “Self-Denial Not the Essence of Virtue” (1734/35), *Writings* 242.

their nourishment from the heart.” Rush not surprisingly makes a distinction between habit itself and “real,” emotional virtue: the latter has a spiritual, primarily Christian dimension in keeping with Rush’s pronounced religiosity, while the former he types as disingenuous.⁵⁹ It is particularly useful at this point to compare Rush’s pedagogical theory with Franklin’s, for the question of religion, and its concomitant implications for the will, is precisely that wherein the educational machinery of Rush and Franklin differ.

The Appearance of Necessity

Franklin’s early *Dissertation on Liberty and Necessity, Pleasure and Pain* contributed to what Samuel Stanhope Smith, professor of moral philosophy at the College of New Jersey (now Princeton), described as “that knotty question of *liberty & necessity* that has so much embarrassed philosophers, & has raised such furious war among divines.” In a letter to James Madison written in the late 1770s, Smith neatly summarizes the range of eighteenth-century argument, from those who “maintain[] that all our actions are governed by the laws of necessity and fate” to those “patrons of liberty who maintain that we are accountable for our actions, & that in order to [be] this we must be under no constraint or compulsion.” In between these extremes lie several mediating positions that embrace varying degrees and combinations of fatalism and free will.⁶⁰

⁵⁹ Rush, “Enquiry Into the Influence of Physical Causes” 30. Fiering also distrusts the potential hypocrisy of pure mechanism, and he stresses the idea that, traditionally, ethical habit implies not mere automatism but both a degree of consciousness and an inner benevolence, an inclination to virtue for its own sake. Observing that Franklin’s characterization of virtue as an acquired art finds its conceptual parallel in the *Nichomachean Ethics*, Fiering notes that “Aristotle moved quickly to check the misconception that he was proclaiming a reductionist thesis that would be as applicable to robots as to men. Works of art, Aristotle said, have their merit entirely in themselves, so the character of the performer or the artist is irrelevant to our judgment of the result. Craftsmen can well be machines, in other words,” *except* in the case of moral virtue, where, among other things, “the act must spring from a fixed and permanent disposition of character.” Not surprisingly, Fiering is troubled by Franklin’s “fail[ure] to introduce such qualifications” into his own moral scheme, which appears “strikingly automatized” and explicitly values the simple outward appearance of virtue as much as any interior experience of it. Fiering clearly wants to rescue Franklin from charges of shallow automatism, rehabilitating him as an authentically altruistic philanthropist, but he is forced to admit that “there is no reason to assume that Franklin believed that the foundations of any of the virtues lay in anything other than mechanically acquired habits.” Franklin’s moral conduct is thus reduced to a coldly intellectual utilitarianism divorced from any real feeling, in contrast to the heart-based evangelical morality of someone like Jonathan Edwards (Fiering, “Benjamin Franklin and the Way to Virtue” 204, 215, 219, 222-23).

⁶⁰ Samuel Stanhope Smith, letter to James Madison, [November 1777-August 1778], *The Papers of James Madison*, ed. William T. Hutchinson and William M. E. Rachal, (Chicago: U of Chicago P, 1962-) 1:194, 1:199. Jon Pahl has constructed a table of these “ideologies of providence” which, although somewhat reductive and schematic, nevertheless provides a useful framework for thinking about the problem in the eighteenth century. Pahl identifies three mediating positions of particular importance: “inclining necessity,” in which humans have a limited degree of liberty, “innate liberty,” which is close to complete liberty but contains a smattering of providence, and “free

Franklin originally published the *Dissertation* in defense of an absolutely deterministic metaphysics; his invocation of the clock metaphor—a standard deistic and determinist paradigm—is intended to prove that the will of God completely circumscribes human agency. “As Man is a Part of this great Machine, the Universe,” he argues, “his regular Acting is requisite to the regular moving of the whole.” A wrong action by a single person constitutes nothing less than a defect in God’s universal design, an unimaginable flaw given his ineffable wisdom and foresight. The *Dissertation*’s initial premise, however—that human will is entirely governed by that of an omniscient Creator—subsequently requires Franklin to explain away the existence of evil in order to preserve God’s goodness as well as his power. He accomplishes this by eliminating the distinction between virtue and vice, contending that “there can be neither Merit nor Demerit in Creatures” who have no free will, a philosophical consequence that Smith notes as well. In essence, the doctrine of necessity logically removes all individual accountability for one’s actions, which is the primary reason why Franklin later recants this position. In the *Autobiography*, he characterizes the printing of the *Dissertation* as one of the “errata” of his life, in part because his deistic arguments “perverted” some of his friends, who later painfully wronged him without conscience or remorse.⁶¹

The more experienced Franklin retreats from a stance of extreme necessity toward one that permits some degree of human agency. In an essay exploring the role of God in human affairs written five years after the *Dissertation*, Franklin rejects a wholly deterministic universe in which God “unchangeably decreed and appointed every Thing that comes to pass.” He argues instead for a system in which “nature,” human will, and Providence interact. God, he reasons, sometimes “interferes” in his own machine and “sets aside the Effects” of either the course of nature or free human agency, but he does not always do so.

choice,” in which humans are free to choose their actions but the ability to choose—shaped by reason, affection, providence, etc.—is also a gift. In Pahl’s view, “by 1760 ‘free choice’ was the predominant ideology of providence in the colonies,” exemplified by the “public theologies” of Franklin on the one hand, in a primarily secular, democratic, and legal strain, and Edwards’s spiritual “aristocracy of grace” on the other. Pahl suggests, and I agree, that there is “a fundamental congruity” between these debates over free will and the political vocabulary and ideology of the republic’s founding (Jon Pahl, *Paradox Lost: Free Will and Political Liberty in American Culture, 1630-1760* [Baltimore: Johns Hopkins UP, 1992] 12, 7-8, 13).

⁶¹ Franklin, *Dissertation on Liberty and Necessity* 61, 62; Smith, letter to James Madison 1:197, 1:199; Franklin, *Autobiography* 45.

Thus the 1780s *Autobiography* repeatedly asserts that men have limited free choice; one succeeds with the help of both industrious personal agency *and* God's beneficence. Franklin thanks "the kind hand of Providence, or some guardian Angel, or accidental favorable Circumstances and Situations" for preserving him "thro' this dangerous Time of Youth" "without any *willful* gross Immorality or Injustice that might have been expected from my Want of Religion. I say *willful*, because the Instances I have mentioned, had something of *Necessity* in them, from my Youth, Inexperience, and the Knavery of others." Even a successful self-fashioning requires God's consent. As Franklin says of his method of establishing virtue, "to this little Artifice, with the Blessing of God, [he] ow'd the constant Felicity of his Life down to his 79th Year in which this is written. What Reverses may attend the Remainder is in the Hand of Providence."⁶²

Rush, on the other hand, maintained a staunchly Calvinist faith in a predetermining providence. God, Rush believed, did not create a machine and then set it in motion, but "His providence is one continued act of creating power."⁶³ The "Being that created our world never takes his hand, nor his eye, for a single moment, from any part of it."⁶⁴ Significantly, Rush's pedagogy relies upon a rhetorical process of "conversion," as in "convert[ing] men into republican machines." He advocates religious training—"the only foundation for a useful education in a republic"—alongside instruction in morals and politics.⁶⁵ The values and ideals of Christianity in particular, he argues, coincide in every respect with those of republicanism. While Rush claims awareness of his "dissent" from modern opinion "that it is improper to fill the minds of youth with religious prejudices of any kind, and that they should be left to choose their own principles, after they have arrived at an age in which they are capable of judging for themselves," he nonetheless invokes the mechanical qualities of the Lockean mind as precisely the reason why one should instill desirable religious beliefs. "Could we preserve the mind in childhood and youth a perfect blank," he writes, leaving children to judge for themselves in the due course of time "would have

⁶² Franklin, "On the Providence of God in the Government of the World" (1730), *Writings* 165; Franklin, *Autobiography* 46, 73-74.

⁶³ Rush, *Medical Inquiries* 1:53.

⁶⁴ Qtd. in Henry F. May, *The Enlightenment in America* (New York: Oxford UP, 1976) 209.

⁶⁵ Rush, *Essays* 6.

more to recommend it; but this we know to be impossible. The human mind runs as naturally into principles as it does after facts.”⁶⁶

The malleability of the mind, in Rush’s view, demands that one take charge of its early molding or run the risk of corruption by default. “Conversion” to republicanism implies such a thorough fashioning of the mind as to produce an unshakeable faith in and commitment to republican tenets, leaving little room for questioning or alteration. One must remember how Franklin’s description, in the *Dissertation*, of the intricate interdependence of a clock’s movement reveals, in fact, how very fragile such a mechanism actually is, and the “disorder” that might result from the “independent *Self-Motion*” of any single part.⁶⁷ Yet republican ideology depends upon the *voluntary* submersion of one’s individual will to that of the governing structure. At a very basic level, Rush’s scheme for republican education attempts to bolster the republic’s “durability” by circumventing its reliance on voluntarism as much as possible, prescribing education to condition the wills of the people. The “wills” of properly educated citizens ideally conform automatically to the interests of the republic.

For Rush the idea of “regulation” thus tends more toward its authoritative than its mechanistic sense. The idea of regulation obviously means more than the adjustment of something—such as clocks or virtue—in accord with a given standard; “regular” and “regulate” both stem from the same Latin root, *regula*, meaning “to rule.”⁶⁸ One might say that the escapement, in regulating a clock’s motion, functions as a clock’s *governing* mechanism, just as the regulation of human conduct coincides with the governing of behavior—most obviously through actual governmental regulations restricting by law what an individual can and cannot do. Rush makes an explicit connection between virtue and government in his inquiry into physical influences upon morality, declaring that “The moral faculty is what the schoolmen call ‘regula regulans,’—the conscience is their ‘regula regulata.’ Or, to speak in more modern terms, the

⁶⁶ Rush, *Essays* 6.

⁶⁷ Franklin, *Dissertation on Liberty and Necessity* 61.

⁶⁸ Under “regulate,” the *Oxford English Dictionary* gives both “To control, govern, or direct by rule or regulations; to subject to guidance or restrictions; to adapt to circumstances or surroundings” and “To adjust, in respect of time, quantity, force, etc., with reference to some standard or purpose; esp. to adjust (a clock or other machine) so that the working may be accurate.” See “regulate,” def. 1a and 2, *Oxford English Dictionary*, Oxford University Press, c. 2000, 21 February 2001, <<http://dictionary.oed.com>>.

moral faculty performs the office of a law-giver, while the business of conscience is to perform the duty of a judge.” This governmental conception of regulation links virtue to pedagogy by way of the teacher. Fliegelman points out that as “regulation,” government in the eighteenth century was closely aligned with guidance, direction, and, ultimately, education. He writes, “a ‘governor’ in the seventeenth and eighteenth centuries referred to a tutor in charge of a young man’s education as much as it did to an officer of the state.” When Locke asserts in *Some Thoughts Concerning Education* that “The great Work of a *Governour* is to fashion the Carriage, and form the Mind,” he implies that education enables the governing of thought and action by proxy; through education the mind may be regulated, formed to behave in desirable and predictable ways.⁶⁹ The teacher is here responsible for governing and regulating the student’s behavior.

Rush’s inculcation of republican ideology, imposed, as it were, from the top down by a uniform system of state education, presumes the polished manufacture of a predetermined civic product. Rush contrives to fit his republican machines smoothly into the set motions of an already extant and solidifying political structure. Ideal republican citizens, subordinating private interest to that of the larger system, move according to the interest or “will” of the whole machine and, by implication, to the will of its founding architects. The potential for disaster when the mechanics are human rather than divine and therefore subject to human error (or, to use Jefferson’s word again, “caprice”), lies at the heart of Charles Brockden Brown’s *Wieland* (1798), a novel exhibiting profound distrust of both the republican machinery set in motion by the Revolution and its Lockean foundations. The very nature of a machine—its constructability and subsequent inexorability—suggests the problematic question of authority effaced by the presumption of republican good in Rush’s essay: the relation between who designs the machinery of government and who merely performs his designated part—always a delicate balance between authority and liberty.

Michael Warner has labeled this slippage “[t]he problem of the self-erasing center” in the early

⁶⁹Rush, “Enquiry Into the Influence of Physical Causes” 2; Fliegelman, *Prodigals and Pilgrims* 13; Locke, *Some Thoughts Concerning Education* 156.

republic's patriotic call for a mass diffusion of public knowledge and education. Quoting Rush's statement about republican machines in full, Warner notes that "the same rhetoric that claims to base government on 'the wills of the people' is the rhetoric that conceives itself as mechanically fitting those wills together. The people appear active with respect to the public sphere, but passive with respect to the institution of letters."⁷⁰ This conflict between "activity" and "passivity" in Warner's formulation points to what Fliegelman describes, following Rousseau, as "the hidden hand" of the new eighteenth-century education, the "artifice" by which education is made to appear "natural." "The new pedagogical ideal of authority," writes Fliegelman, "transformed coercion into conditioning," causing an essentially predetermined behavior to appear voluntary.⁷¹

Franklin, in contrast, strives to make an essentially voluntary behavior appear predetermined, and his development of the art of virtue parallels his shift away from a belief in absolute determinism and toward a degree of free will. According to the *Autobiography*, Franklin outlines his first plan of conduct in his Journal just after his ill use by Collins, Ralph, and Governor Keith. "I grew convinc'd," Franklin writes, "that *Truth, Sincerity and Integrity* in Dealings between Man and Man, were of the utmost Importance to the Felicity of Life." Or, as he had written in *The Pennsylvania Gazette* nearly ten years after the *Dissertation*, "the vicious Man, tho' Master of many Sciences [. . .] is ignorant that the SCIENCE OF VIRTUE is of more worth, and of more consequence to his happiness than all the rest put together."⁷² The resolutions in Franklin's Journal, the characterization of virtue as a science—these comprise the early frameworks for a more formalized ethical art. Franklin, in other words, only begins to construct his art of virtue when his admission of limited free will makes such *self*-construction an actual

⁷⁰ Warner, *Letters of the Republic* 129.

⁷¹ Fliegelman, *Prodigals and Pilgrims* 30-31, 35. Fliegelman describes this as the "domestic" version of Jonathan Edwards's argument in *The Freedom of the Will*. As Fliegelman puts it, "Man has the freedom to do as he pleases, although he has no control over those influences that determine what it is he finds pleasurable. He may do as he will, but he does not determine his will" (*Prodigals and Pilgrims* 35). For Edwards, men specifically are not "mere machines" for they have volition and choice, but the will is nonetheless "guided" by human reason or understanding, which itself owes its existence and determination to a "first cause," the Creator (Pahl, *Paradox Lost* 152-155). While necessity and freedom are held to coexist, the freedom of the will is limited to what Elisa New has characterized as essentially "executive" rather than originating: humans make choices, but in doing so they do not originate action but rather perform "a linked movement in a larger choreography of possibilities" (Elisa New, *The Line's Eye: Poetic Experience, American Sight* [Cambridge, MA: Harvard UP, 1998] 55).

⁷² Franklin, *Autobiography* 46; Franklin, "Man of Sense" 248.

possibility.⁷³ Franklin's virtue remains fully and even ironically conscious of itself as art—in fact, advertises itself as such—and, while widely extolled and exhibited as a model, it nonetheless remains freely chosen by its practitioners. As a *self*-educational apparatus Franklin's art of virtue enables individuals to help create the very mechanical patterns of behavior to which they in the end subordinate themselves. The *Autobiography* significantly establishes a way for a person to take both active and passive roles with respect to education and self-government.

Even as Franklin recants the determinist position on the basis of its inutility as a guide for virtuous behavior, the order associated with both the clockwork universe and an authoritative civic government remains eminently desirable. Quoting again in the *Autobiography* the lines from Dryden which serve as the *Dissertation*'s epigraph, Franklin regretfully expresses his sense that the "Doctrine" of mechanical Deism, "tho' it might be true, was not very useful." He then erects a more useful (although perhaps less true) theory of combined human and divine artisanship, one whose mechanistic aspects enable man to remain "a Part of this great Machine, the Universe" while assuming some responsibility for its construction, for "his regular Acting" and "the regular moving of the whole."⁷⁴ Franklin's habit, then, has less to do with Rush's emotion or true character than with the way it causes voluntary virtue to resemble necessity, as Samuel Stanhope Smith's lengthy dilation upon the importance of habit to ethical behavior will help illuminate.

Smith, like Franklin, supports the idea of free will at least in part to enable a distinction between vice and virtue, and he also discusses human behavior in terms of the associationist "machinery of reason;" he characterizes the power of the will as one which can interrupt and suspend one "train of ideas & motives" in order to give it "a new direction," "engaging...a new train." Repeated exertion of the will can overcome habitual vice "again & again untill after repeated struggles, & many foils [virtuous motives] at length acquire the habitual superiority." Smith's point is that although habits of both virtue

⁷³ Henry May has noted the odd affection of determinists and materialists during the Enlightenment for projects of human improvement. "Acute thinkers," he writes, "could not help seeing the inconsistency between a taste for improvement and a belief in determinism," a remark which helps explain why Franklin's interest in the art of virtue arose when it did (May, *The Enlightenment in America* 110).

⁷⁴ Franklin, *Autobiography* 46, 61.

and vice may be so strong as to seem deterministic, in either case one nonetheless retains one's "moral freedom":

virtue may acquire such a stable habit that the ideas of vice may be attended with so much abhorrence as for ever to seem a necessary barrier against its practice: so many vicious inclinations proceed by indulgence to such a degree as to possess at least all the *appearances of necessity*: & every repetition of vice from the first infraction of the boundaries of innocence to that fatal period, is one step more towards necessity & increases the difficulty of a return to virtue. But if vice ever becomes too powerful for the feeble exertions of duty; if it should even increase to a necessary & irresistible force, that doth not take off the guilt, as if we had been created subject to the laws of fatalism, because it is a necessity induced by a voluntary wickedness.⁷⁵

Innocence, of course, and likewise habitual virtue, can also have the appearance of necessity, but Smith only needs to counteract the claims of those who justify vice with the excuse of determinism, as Collins and Ralph do in Franklin's narrative. (One usually wants full credit for one's good behavior!)

Through habit one may choose to make liberty resemble necessity as nearly as possible; the habit of virtue represents a form of deterministic self-government. The appearance of virtue, as Franklin says, counts for more than its reality—a frank recapitulation of the *Dissertation's* disregard for the moral content of virtue and vice as categories per se. And Franklin's art of virtue, in rendering virtue more and more "necessary" through the inculcation of habit, can be seen to bind the liberty of self-fashioning ever more closely to a fully Providential—i.e., mechanistic—universe. The machine itself never drops out Franklin's method, for in establishing the principles of "art" by which an individual becomes the craftsman of his own virtue, Franklin simply substitutes a partially manmade machine for one constructed wholly by God. In the *Dissertation* Franklin links the mechanical regularity of natural law to God's perfect governing: all "our Actions should be over-rul'd and govern'd by an all-wise Providence," just as "All the heavenly Bodies, the Stars and Planets, are regulated with the utmost Wisdom!"⁷⁶ In Franklin's art of virtue, self-fashioned habit takes the place of natural law in determining one's behavior; the well-trained individual ideally obeys his ethical habits as mechanically as the planets follow natural law in their rotations around the sun. Habit enables that virtuous self-regulation which approximates on a

⁷⁵ Smith, letter to James Madison 1:199, 1:208, 1:208-09 (emphasis in original).

⁷⁶ Franklin, *Dissertation on Liberty and Necessity* 61.

voluntary, human scale the well-regulated clockwork universe of God.

Habit also makes a virtuous course of action appear as the only possible one, eliminating the need for active behavioral choice. In liberating individuals from the burden of a continuous and conscious struggle against vice or personal inclination, the constraints of mechanical habit paradoxically free them to reap the happy fruits of a virtuous life, much as John Seelye explains the republican view that canals enable water “to flow more freely by enclosing it, a notion of liberty completely in accord with neoclassical ideals of aesthetic order. As Governor John Winthrop observed, it is laws that make men free, whether figured as necessary constraints or mutual consent to be ruled.” Franklin’s habit significantly calls attention to the ways in which “consent” and “necessary constraint” ideally operate simultaneously. Franklin himself offers evidence of this simultaneity when he recounts his struggle with the virtue of humility. Softening his rhetoric so as to present his opinions more modestly, Franklin finds them more readily received. He observes that “this Mode, which I at first put on, with some violence to natural Inclination, became at length so easy and so habitual to me, that perhaps for these Fifty Years no one has ever heard a dogmatical Expression escape me.”⁷⁷ Behavior that began as a conscious and voluntary restraint upon desire becomes involuntary, regular, and predictable through repetition.

This particular example illustrates, moreover, how Franklin, like water in a canal, can operate more freely by submitting to the mechanical constraints of virtuous self-regulation. Franklin’s habitual “*Appearance*” of humility notoriously furthers his manipulation of others to get what he wants.⁷⁸ Subordination to and participation in Franklin’s mechanical system of virtue enables one to construct, in turn, other authoritative systems—the various civic institutions that mark Franklin’s lasting contribution to the “machinery” of government.⁷⁹ Here Franklin more closely resembles the hidden hand of Lockean (and Rush’s) pedagogy. As Fliegelman notes, Franklin “quotes Pope with Rousseauistic approval”: “Men

⁷⁷ John Seelye, *Beautiful Machine: Rivers and the Republican Plan, 1755-1825* (New York: Oxford UP, 1991) 8; Franklin, *Autobiography* 75-76.

⁷⁸ Franklin, *Autobiography* 75.

⁷⁹ For a provocative explication of the way in which Franklin’s position inside particular institutional infrastructures, such as the Junto, enables him to inculcate his values in others, see Edward White, “Urbane Bifocals: The Federalist Sociology of Franklin’s *Autobiography*,” *American Literary History* 11.1 (Spring 1999): 1-33.

should be taught as if you taught them not, / And things unknown propos'd as things forgot." Ultimately Franklin illustrates that performing one's subordinate role in the greater interest of the public machine—republican or otherwise—does, in fact, further one's own interests at the same time. As Franklin's anecdote about the ax materially suggests the fundamental instrumentality of the virtuous human being, so the instrumentality of virtue is a two-way street, at once useful to oneself and to others. Franklin notes that he had wished, in his unfinished *Art of Virtue*, to explain

That it was therefore in every one's Interest to be virtuous, who wish'd to be happy even in this World. And I should from this Circumstance (there being always in the World a Number of rich Merchants, Nobility, States and Princes, who have need of honest Instruments for the Management of their Affairs, and such being so rare) have endeavoured to convince young Persons, that no Qualities were so likely to make a poor Man's Fortune as those of Probity and Integrity.⁸⁰

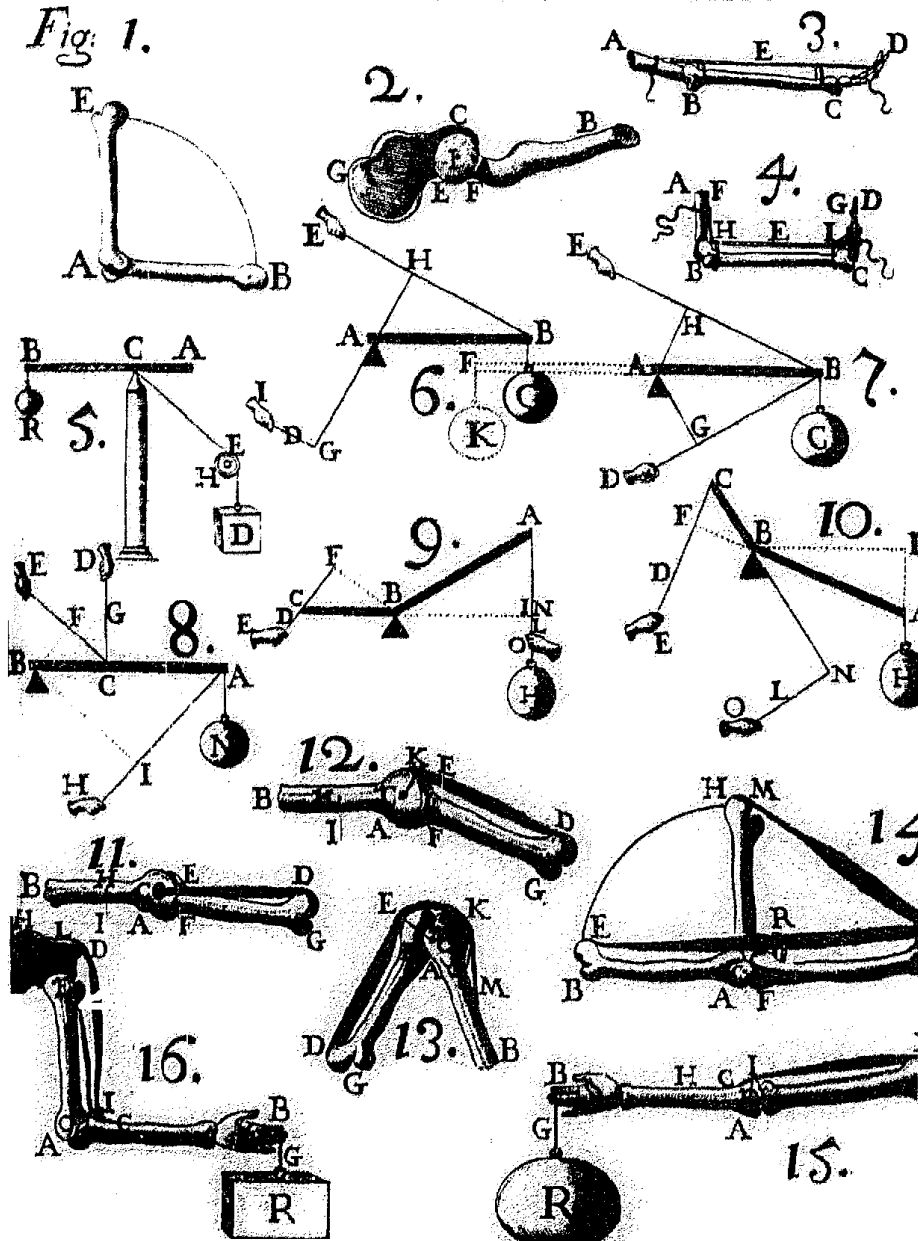
If the rich make use of the virtuous poor, and both, in the process, become richer, then virtue is truly "in every one's Interest," although interest admittedly has a particularly economic shade here.

We might say that where Rush educates men simply to perform their parts in the socio-political machinery, Franklin educates men to create the machinery as well as participate in it. Franklin's method of self-making produces men who can *be* the Lockes, Rousseaus, and Rushes of the world, men who stand simultaneously inside and outside of the machine. This duality is finally manifest in Franklin's position as both author of his text *and* that text itself; Franklin's life appears as that Lockean tabula rasa for which he earnestly desires the opportunity of rewriting a second edition. Franklin constructs, reconstructs, and improves texts as he would a mechanical device, a civic institution, a piece of legislation, a citizen. In his representation, the process of writing is as much an acquired "art" or skill as the art of virtue. The *Autobiography*, in the end, displays that conjunction of authorship with artisanship in the figurative construction of nation and self which is so characteristic of the discourse of mechanism. And where the *Autobiography* encodes an iterable process, circulating a representative pattern for the further reproduction of citizens in the Franklinian mold, the text itself becomes a machine for the manufacture of virtue.

⁸⁰ Fliegelman, *Prodigals and Pilgrims* 111; Franklin, *Autobiography* 14, 75.

TABVLA SECVNDA.

Fig. 1.

Figure 1. Plate from Alphonsi Borelli, *De Motu Animalium* (Rome, 1680).

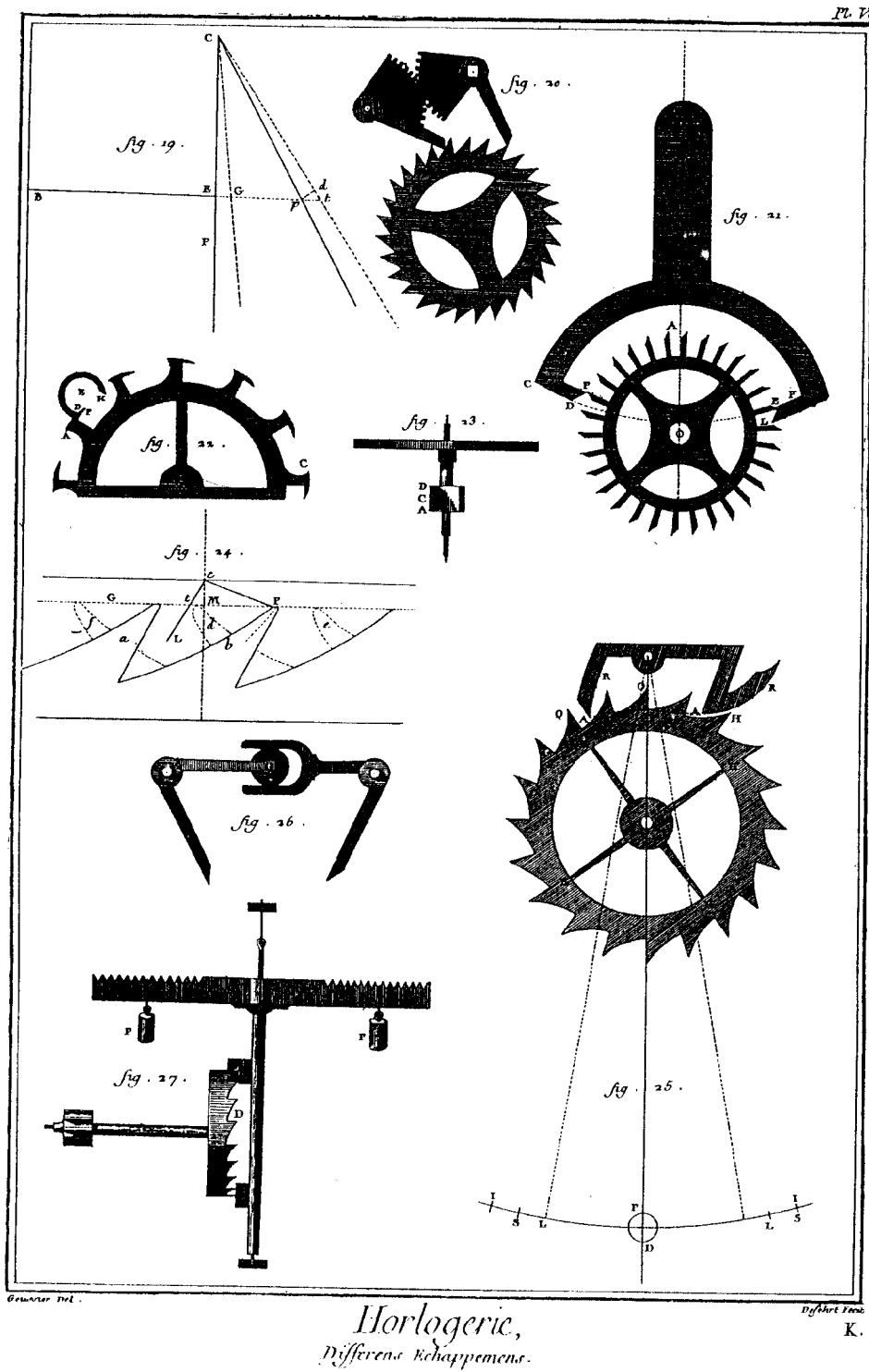


Figure 3. Plate from Diderot's *Encyclopédie* illustrating various escapement mechanisms.



Figure 4. Illustration from Christine de Pisan's *L'epître d'Othéa*, ca. 1400 showing Temperance adjusting a clock. Reproduced from White, "The Iconography of *Temperantia*," n.p.