

The Depiction of Enlightenment Science in Thomas Pynchon's *Mason & Dixon*

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The Depiction of Enlightenment Science in Thomas Pynchon's *Mason & Dixon*
(Smjer: Književno-kulturološki: amerikanistika)

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Contents

Introduction.....	3
1 The Line.....	8
2 The Network.....	18
3 The Escape.....	29
Conclusion.....	37
Works Cited.....	40
Abstract.....	42

“For of Meridians, and Parallels,
 Man hath weav’d out a net, and this net throwne
 Upon the Heavens, and now they’re his owne”

-John Donne, “An Anatomy of the World”

“You’ll note how very Scientifick we are here,
 Gentlemen.”

-Thomas Pynchon, *Mason & Dixon* (p. 37)

Introduction

It wouldn’t be an overstatement to say that science and technology are among the most salient themes in most of Thomas Pynchon’s fiction. His very first novel, *V.* (1963), revolves around the search for a mysterious woman whose body seems to become increasingly mechanical and machine-like over the decades. In *The Crying of Lot 49* (1966), a housewife-turned-conspiracy-investigator plunges into an intricate world of lawyers, shrinks, engineers and hippies only to come across a scientist obsessed with violating the Second Law of Thermodynamics. In what is arguably his *magnum opus*, *Gravity’s Rainbow* (1973), the central storyline concerns the hunt for a mysterious and ominous rocket designed by Nazi engineers toward the very end of World War II. In his later fiction, too, Pynchon repeatedly turns to technological wonders of the modern world as he writes of the age of marvelous turn-of-the-twentieth-century inventions in *Against the Day* (2006), of the nascent internet technology in *Inherent Vice* (2009), and of that same internet technology as it’s reaching its maturity during the early 2000s in *Bleeding Edge* (2013). And by the same token, it wouldn’t be an overstatement to say that Pynchon’s obsession with such themes reaches its peak in 1997’s *Mason & Dixon*—a 770-page behemoth of a novel

about the two eponymous astronomers who set out to make a line in the earth and in the process partake in the creation of the modern world.

The bulk of the novel is set in the 1760s and follows Jeremiah Dixon and George Mason's adventures as they first visit South Africa in 1761 to observe a transit of Venus, then as they reconnect to survey the border between Pennsylvania and Maryland over the course of almost five years, from 1763 to 1768. The period Pynchon is portraying here, then, is a period of immense change on multiple levels: the revolutionary political fervor is slowly reaching its boiling point and is, as the contemporary reader will know, only a couple of years from erupting into an open conflict; the economic theories of libertarianism to accompany the new political order in the American colonies are slowly taking shape (Adam Smith's *The Wealth of Nations* is only a short decade away); the Enlightenment and the revolution in conceiving and understating the world, both in the natural sciences and the humanistic branches of philosophy, are in full swing. All of these developments are deeply embedded in Pynchon's world of *Mason & Dixon*, and they have all been recognized by various critics since the novel's publication, but the 'scientific' part, for lack of a better word, is the one that gets the most of Pynchon's attention, and which, some kind of logic would dictate, deserves the most attention when approaching the novel from the point of view of the reader. So why, to put it bluntly, is Pynchon so fascinated with the Enlightenment science in the novel, specifically astronomy? Why does he devote entire chapters to in-depth descriptions of the rationale behind Mason's and Dixon's work, and the methodology and instrumentation they employ? Lastly and most importantly, why should the reader care?

In his seminal *Structure of Scientific Revolutions*, Thomas Kuhn notes that scientific progress is a matter of interest only to the scientific world, defined more or less loosely, and he concludes that "outside the laboratory everyday affairs usually continue as before" (111).

Scientific revolutions, one would surmise from this, bear little or no consequence on the world at large. Of course, such a proclamation has its fierce detractors. Yuri Lotman, for example, takes great issue with it:

...today there are few who would subscribe to this good-natured view. There are, of course, constant changes in science and technology that contribute to the slow accumulation of materials for explosions, the echoes of which are heard far outside the walls of laboratories and scientists' offices. Can we say that after the invention of paper or gunpowder or after the scientific mastering of electricity, life "outside the walls of the laboratory" continued along its usual course? [...] Nevertheless, even those changes, the consequences of which have been so great, are only intermediary stages when we look at such vast epochs as the Neolithic revolution, the invention of writing, the invention of printing, and the revolution in science and technology we are experiencing today. (201-2)

It is impossible, Lotman further argues, not to see the scientific and the cultural axes of the world as deeply intertwined. As he puts it, "the study of technology shows that great scientific and technical revolutions are inevitably accompanied by semiotic revolutions, which decisively alter the entire system of socio-cultural semiosis" (217). This is an argument quite similar to what Bruno Latour proposes when he states that "we have never been modern" (144)—the separation of the scientific, the rational from the cultural, the ideological, the linguistic and the non-rational that modernity claims to have achieved, has in actuality never taken place. Latour, however, argues from the other side of the coin: it is not only that science impacts culture on a substantial level, but science always operates through culture and inseparably from culture. The claim of describing the natural world completely objectively is just as erroneous as complete cultural relativism. Or as he states, "It is as impossible to universalize nature as it is to reduce it to the narrow framework of

cultural relativism alone” (106). In modern Western societies, or at least societies that claim to be modern, political, social, and economic systems are just as dependent on “material circumstances” and the “experimental science” that ostensibly governs those circumstances, as scientific discourse is dependent on “the speaker” (Pickering 257).

This is a problem which shall be discussed more in-depth later on, but for now let us propose the following: the same blurring of the boundaries between the social and the scientific/technological that Lotman, Latour and the like have been arguing for lies at the core of Pynchon’s text. *Mason & Dixon*, a novel set in the era which virtually gave birth to contemporary science, it shall be argued in the rest of this paper, delineates different ways in which the scientific and the social are co-dependent and intertwined, for better or for worse—mostly the latter in Pynchon’s case. More precisely, the case will be made that this intertwining is what enables the abuse of scientific developments by various political and economic systems, but at the same time what enables these systems to act as the impetus for scientific progress. From such an integrative perspective, Pynchon’s obsession with science is not just an obsession with science, but reveals itself as an interest in 18th century culture as a whole. He writes about the caveats that come with practical applications of scientific progress, and over the course of the novel we thus get an insight into Mason’s and Dixon’s relationships with colonialism, genocide of Native Americans, slavery, political control, real estate commerce, globalization, etc.¹ “It should be noted that technological

¹ In *Gravity’s Rainbow*, this comes across perhaps even more acutely than in *Mason & Dixon*. The novel’s central theme, if *Gravity’s Rainbow* could be said to have such thing as a ‘central theme’, is the way Wernher von Braun’s team of engineers and the V-2 rocket they developed for the Nazis towards the end of World War II affected the war. Moral consequences of aspiring to scientific apoliticism naturally abound in the plot. After von Braun and the engineers were evacuated to the US after the war to work for NACA (NASA’s predecessor) on the nascent American space program, American satirist Tom Lehrer sang in a mock-German accent: “‘Once the rockets are up, who cares where they come down, that’s not my department’ sez Wernher von Braun...”.

progress immediately instilled not only delight but also horror,” writes Lotman (207), and Pynchon’s own sentiment on the matter is hardly any different.

With this in mind, the first two parts of this paper will deal with examples of the specific ways, according to Pynchon, science and technology figured in eighteenth-century political and economic matters. The first and most prominent example is of course the astronomers’ work on the Mason-Dixon Line, to the extent that the entire second part of the novel, “America,” is dedicated to it, and that part one, “Latitudes and Departures,” and part three, “Last Transit,” constitute little more than a lengthy introduction and a coda, respectively. Another crucial example, admittedly one that for the largest part plays out in the background of the novel’s plot and surfaces only so often, is the issue of globalization, of connecting the world’s places, trade routes, institutions (scientific or otherwise) into a network of relations made possible by advances in navigation (via astronomy and horology) and communication systems. The networking of scientific institutions, of course, is precisely what gives them political power, which for the protagonists of the novel plays out in classic Pynchonian bouts of conspiratorial paranoia. Finally, an overview will be given of the more abstract ways in which eighteenth-century science and, if one considers the bigger picture, Enlightened thought clashed with other, less rational, more Romantic and, Pynchon would probably say, freer visions of the world.

1 The Line

Before Mason and Dixon, however, there was King Charles II. After domestic matters were relatively settled with the Restoration of 1660, English colonial expansion, and consequently the interest in the colonies in North America, became important again, as was commercial competition with the Dutch (Danson 12). Much of the American wilderness, at this point in time still of unknown size, was up-for-grabs and seizing control and populating it with English men and women was among the chief concerns of the crown, to the point that granting land to settlers who were willing to colonize the new continent was a “royal prerogative,” as Danson says (10). Populating the lands previously seized by the Tudor and Stewart monarchies was also necessary to secure manpower for expansion into other areas. The Tudors and Stewarts, however, had “failed to map accurately their new lands, and what few maps existed were unreliable” (Danson 10). So, when Charles II, in order to settle the £16,000 of debt he had with the Penn family, granted land to William Penn west of New York and New Jersey and north of Maryland, whose northern border was the forty-degree parallel, plus a “a Circle drawne at twelve miles distance from Newcastle... to the beginning of the fortieth degree” (qtd. in Danson 14)—this was a more problematic gesture than one would assume. According to the existing maps, New Castle was just below the 40th parallel, and the twelve-mile circle would at a certain point meet it, from where the border would resume westward along the parallel. The issue was that New Castle, as was discovered in 1681, was considerably south of the 40th parallel, much more than previously assumed, and the circle around it never approached the parallel even remotely, leaving Penn free to interpret the somewhat ambiguous charter in a way which granted him some of Maryland’s land, too. The Calvert family, the proprietors of the province of Maryland since Charles I granted them land in 1632, naturally

objected, and thus began the border dispute which went on for a better part of a century (Danson 14-15).²

In the 1730s, a new proposal for the border came up, one that defined the border as a straight line running exactly fifteen miles below Philadelphia, at which point the matter was referred to English courts, and what followed was two decades of litigation known today as the Great Chancery Suit (Danson 22-23). Once the matter was more or less legally settled by the late 1750s, attempts were made by teams of surveyors jointly composed of Marylanders and Pennsylvanians to survey the new border, but poor instrumentation and lack of skilled surveyors in the colonies made progress awfully slow and difficult, and a request for professional assistance was sent to London, who in their turn sent George Mason and Jeremiah Dixon to do the job (Danson 25-30).³

This is the point at which the dispute narrative meets Pynchon's narrative. The astronomers, after their voyage to the Cape of Good Hope to observe the 1761 transit of Venus, are now stationed on St. Helena, where they meet Rev. Nevil Maskelyne, an up-and-coming young astronomer and *protégé* of the Astronomer Royal, James Bradley. Maskelyne, intimating his scientific and political clout, is the first one to divulge to the protagonists rumors about America:

² The dispute erupted into open conflict in the early 1730s for a number of years known today as Cresap's War, after William Cresap, a Maryland trader who served as a "justice of the peace" in Baltimore County, and who set out to rid northern Maryland of Pennsylvanian squatters and Indians, partly to establish clear east-west trade routes along the border all the way to the sea in the east. The conflict was quelled on behest of King George II in 1738. For a detailed account, see: Doutrich, Paul. "Cresap's War: Expansion and Conflict in the Susquehanna Valley." *Pennsylvania History: A Journal of Mid-Atlantic Studies*, vol. 53, no. 2, 1986, pp. 89-104.

³ Of course, the overview of the dispute presented here is a much simplified version of events. There were numerous other problems which affected the eventual outcome, including, but not limited to, battles fought with the Dutch over lands east of the Delaware river, the ensuing formation of the province of Delaware, the exact point in New Castle from which the circle was to be drawn, etc. This, as well as the actual history (for Pynchon, despite the postmodern blurring of lines between fact and fiction, is after all a novelist) behind Mason's and Dixon's endeavor, is definitively described in: Danson, Edwin. *Drawing the Line: How Mason and Dixon Surveyed the Most Famous Border in America*. John Wiley & Sons, 2001.

Through his Correspondence, Maskelyne has heard of one Possibility, tho' 'tis far from a Reduction to Certainty. Following the Chancery decision the year before, as to the Boundaries between the American Provinces of Pennsylvania and Maryland, both Proprietors have petition'd the Astronomer Royal for assistance, using the most modern means available, in marking these out,— one of them being a Parallel of Latitude, five degrees, an Hundred Leagues, of Wilderness East to West. (182)

Mason and Dixon, naturally wary of the rumors—“Why would Maskelyne tell us of this?” immediately asks Dixon (182)—soon find themselves back in England, where they find out that the Royal Society indeed wants to send the two of them to the colonies to survey the new border. “I cannot sound why they’ve hir’d us again...?” Dixon once again wonders, to which Mason replies, “Nor I. They believe, however, that *we* do know why. In London, they credit us with a Depth of Motive at least equal to their own” (250). Circumstances are all around mysterious, to say the least, but the two take the job and sail to Philadelphia, where they arrive in November 1763, and where they establish their base of operations for the next five years.

What they find in the field is, geographically speaking, chaos. Land disputes, inconsistent and shoddily surveyed borders between neighboring estates, geometric inconveniences, exploitation of ambiguous claims and maps all around, not to mention untarnished American wilderness which hasn’t even been settled yet. There is, for example, the subplot with Capt. Shelby, a surveyor who, in Pynchon’s typical comic fashion, “exhibits signs of mania upon the topic of Land-Disputes, being often preoccupied from well before sun-up till far into the early Darkneses with litigations great and petty, engrossments Ditto, with Boundary issues a particular Passion,— a fallen Tree, a wand’ring Chicken, the meanders of a Stream, any pretext, any least scent of Inconvenience, will do” (585). When an opportunity to seize extra land presents itself, anything

will pass muster as valuable evidence. Similarly, there is the example of Frau Redzinger, a German immigrant who is facing eviction from her farm for paying Taxes to the Pennsylvanian government, but not to Maryland. Grodt, her neighbor who has been vying for her land for some time, is now claiming that the farm is actually in Maryland, and that she “owes more back taxes there than she can ever pay”—transferring the land back to the proprietor, and making it cheaply available to him (360). Such acts of “Land-Jobbery,” as Pynchon calls it, only show the need to establish a clear boundary: “Many were the elephantine tracts swallowed at one nibble, in those times, by the country Mice thereabouts” (360). Mason’s and Dixon’s task is, to put it simply, to put an end to such problems.

“There is a love of complexity, here in America,” says Shelby, “pure Space waits the Surveyor,— no previous Lines, no fences, no streets to constrain polygony however extravagant...warranted properties may possess hundreds of sides...— all Sides zigging and zagging, going ahead and doubling back, making Loops inside Loops” (586). Already we can note a spatial hierarchy: first there is wilderness, a product of millennia upon millennia of geological and biological processes, in all its natural glory; then, the natural layer is overlain with a collection of more-or-less arbitrary lines, that is, with the legal organization of land, private or otherwise, recognized in the court of law as property. These borders, problematically, despite being essentially imaginary, are often modelled after already existing natural markers⁴ and, as a result, are so extremely convoluted (“zigging and zagging”) that for Mason and Dixon they are as irrelevant and “pure” as actual nature. The new line of Mason and Dixon, surveyed with the most

⁴ Before modern surveying techniques were developed, land was described using natural markers (even the Calverts’ charter stipulates, for simplicity’s sake, that the southern border of Maryland was to be the Potomac river) and markers that were already available in the field. A fifteenth-century survey, verbal in nature, would go like this: the land “lyeth between the mill on the north side, and the South Field on the south, butteth upon the highway, and contyneth xii [12] perches [a measure of 16.5 feet] and x [10] fote [feet] in bredthe by the hyway, and ix [9] perches in length...” (Linklater 1-2).

modern techniques and instruments available, will resolve this; it is here to impose strict geometric order onto nature, to structure natural chaos and create a geographical palimpsest out of it. As a consequence, the line, bluntly speaking, is here to simplify land ownership. Where there are no settlers just yet, the matter is even more straightforward, as the division of land among owners isn't simplified—it's straight out *created*. Rev. Cherrycoke, the novel's primary narrator, attests to this himself:

...there exists no "Maryland" beyond an Abstraction, a Frame of right lines drawn to enclose and square off the great Bay in its unimagined Fecundity, its shoreline tending to Infinite Length, ultimately unmappable,— no more, to be fair, than there exists any "Pennsylvania" but a chronicle of Frauds committed serially against the Indians dwelling there... (354)

Going any further into spatial philosophy would be out of place in this paper, but let us recognize that such 'organization' of nature, for lack of a better term, and the creation of "Abstractions" that have economic value, is done not by economists or politicians, but by scientists, astronomers, surveyors. This fact has been recognized by Tiina Käkälä, who claims that "the making of the line is in itself an appropriation of the land, in which the land-surveyors participate through their outwardly disinterested scientific work" (389). The land exists independently of property, she argues, and is appropriated to *become* property, which is in itself a "symbolic pact" (Käkälä 390). Importantly, to go back to Thomas Kuhn and Yuri Lotman, the "outwardly disinterested" scientific work, though striving towards politico-economic independence ("inside the laboratory"), necessarily has consequences in other spheres of life.

Mason and Dixon, after completing some preliminary work,⁵ start the work on “the West Line,” from the “Post Mark’d West” on 5 April 1765: “To stand at the Post Mark'd West, and turn to face West, can be a trial for those sentimentally inclin'd, as well as for ev'ryone nearby. It is possible to feel the combin'd force, in perfect Enfilade, of ev'ry future second unelaps'd, ev'ry Chain yet to be stretch'd, every unknown Event to be undergone,— the unmodified Terror of keeping one's Latitude” (444). The pair go about their work equipped with the best instruments available at the time, like the zenith sector constructed by John Bird, the foremost instrument maker of the day, or a clock by John Dollond, an eminent English 18th century clockmaker (“None but the best for this Party,” as Mason writes in a letter to Dixon [13]). The process is simple enough, but requires, aside from their collection of astronomers’ gadgets, endurance, patience and precision. Every twelve miles, they calculate their current latitude by the stars, proceed west in as straight line as they could manage and after another twelve miles repeat the process.⁶ They do this, along with a posse of axmen to clear their path in the woods, cooks, assistants and tag-alongs of every variety, for the next three and a half years, all the way up to autumn 1768, retreating every winter back to Philadelphia for a break until the snow melts. Their work, then, also symbolically epitomizes the movement westward and the conquering of seemingly endless continental

⁵ First, they needed to establish the exact southern limit of Philadelphia, where an observatory was erected, then measure exactly 15 miles south to the latitude their line would run along (Chapter 30 in the novel). Then, a line had to be surveyed which virtually split the Delaware peninsula in half, and which met the 12-mile-radius circle around New Castle as its tangent—the Tangent Line. Finally, from the point of tangency (southwest of New Castle) another line, the North Line, had to be surveyed exactly northward, so it met the West Line at a right angle. The Tangent Line and the North Line were determined, and still stand today, as the border between Delaware and Maryland.

⁶ The reality is, again, a little more complicated on account of the curvature of the Earth. Running constantly at a 90-degree angle westward from a celestially-determined north wouldn't respect the fact that parallels are, in fact, curves around the globe and that the 'west' is at a constantly shifting angle. Angular compensation is thus needed. Robert Mentzer writes: “Mason calculated that if he started out at an angle of 89° 55' 51” west of north he would be following a great circle that would recross the parallel in about 12 miles. The parallel would curve away from him to the south to a maximum of about 20 feet before curving back to the straight-line great circle after 12 miles.”

wilderness so often associated with American cultural identity, at least in its traditional formulation.

The Mason-Dixon Line, however, only set the precedent for what was to come in grander, more pervasive ways. Throughout the rest of the 18th century and well into the 19th, land-surveying projects by parties both public and private grew to immense proportions, and some would even consider the surveying of the continent to be the very basis of westward movement. For example, Andro Linklater writes: “Yet for all the academic scorn, the [Frontier Thesis] refuses to die, simply because a distinctive, utterly American spirit did indeed arise from the expansion into the west. To most of foreign observers, the origin of that spirit was obvious. It had nothing to do with the frontier family’s encounter with the wilderness, and everything to do with their acquisition of landed property” (190). Surveying the wilderness, the creation of the ‘grid’ of squares six miles wide and six long, and the division of the resulting square into 36 one-square-mile lots, which are then cut into smaller, one-fourth, one-eighth, and one-sixteenth of a square mile lots that were sold to settlers is what drove the expansion (Linklater 175-7). Later, many a western city were erected on such lots (which are still visible in their urban plans), the railroad was built along the lines of bought property, then more property bought along the railroad, and the East Coast was gradually connected with the West.

Pynchon’s text, though admittedly concerned with earlier, more eastern and indeed more modest attempts at taming the wilderness with geometry, nevertheless intimates what is to come. Even before the duo start their work on the Line, they encounter various parties curiously interested in their work, not the least of which is a young Colonel by the name of George Washington. Without beating around the bush, Pynchon immediately makes Washington’s interests clear: “Out

on the white-column'd porch, tumbler in fist, the large Virginian wants to talk real estate" (276). Before the astronomers, Washington orates thus:

Sometimes a man must act quickly upon an opportunity, for in volatile times the chance may never come again. Just for example,— there is a parcel out past the South Mountain I'd like you to take a look at when you go by,— your Line, as I project it, passing quite close. Spotted it early in the War, kept it in mind ever since.... No reason you fellows shouldn't turn a Shilling or two whilst you're over here...and have ye consider'd how much free surveying ye'll be giving away,— as the West Line must contribute North and South Boundaries to Pieces innumerable? (276)

The interests of arguably the most famous American personage of the 18th century, no less a Founding Father, are revealed to be concerned with more or less one thing: land. That the Colonel is looking westward into the future is here only hinted at, and his awareness of the spatial-economic dynamics of the decades to come is made explicit later in the same conversation when he brings up the Ohio Company, surely the biggest land speculation company of the era and “a joint adventure in which [his] late brothers had a few small shares” (281). The Company, he continues, performs a “weaving” of “order...in Chaos. Markets appearing, with their unwritten Laws, upon ev'ry patch of open ground, power beginning to sort itself out, Line and Staff,—“ (281). The allusion to Smith's Invisible Hand (“unwritten Laws”) is not amiss, nor is the mention of “power”—political, economic, social, cultural.

Similarly to Washington, later a young Thomas Jefferson, whose own father was a surveyor and who therefore “takes a *Relative* interest in West Lines” (395), makes an appearance, only to comment on the societal role borders often take, especially the problems that spring up due to a “difference in Latitude” (396). The reference to the cultural role the Line would acquire in the

century to follow as a symbolic boundary between the slave-holding South and the abolitionist North is obvious, but Jefferson's, as well as Washington's, appearance also points to the greater way in which the division of land informs political matters.⁷ Control of land, Pynchon seems to be saying by portraying the Founding Fathers as so interested in it, has tremendous political potential in the revolutionary thrust that is building up more or less simultaneously with the creation of the line. As Washington's servant (slave?) in the novel, Gershom, comments, British land grants in the New World "were more like fantastickal Tales, drafted in the days of some Kings who were not altogether real themselves. 'Twas a world of Masquing then, Fictions of faraway lands, what did they care?" (282) What right do these royals on the other side of the ocean, the argument goes, have to dictate American land control? The issue becomes even plainer when one remembers that in October 1763 the British imposed a royal veto⁸ on Americans acquiring any land beyond the Alleghenies, and that as a result, pushing westward by surveying and selling the created property, creating "Abstractions" that overwrite nature, possibly takes on a revolutionary dimension. The New World is not, or should not be, as Mason supposes before arriving on the continent, just a "Patch of England, at a three-thousand-Mile Off-set" (248).

Ironically yet quite naturally, this geographical quest for liberty, partly and indirectly by way of the astronomers' work, happens at the expense of Native Americans, as seen in the novel on multiple occasions—the Paxton Boys' 1764 massacre in Conestoga (306), General Bouquet's

⁷ On top of that, David Cowart rightfully points out that there is also a religious dimension to the border between Pennsylvania and Maryland. He says: "In the century of its laying out, the Line was perceived as dividing Calverts from Penns, Maryland from Pennsylvania, locally Protestant from locally Catholic ('locally' because farther north, in former French Canada, were more Catholics, and farther south, in Virginia and the Carolinas, were more Protestants)" (355).

⁸ George III declared it "to be our Royal Will and Pleasure... that no Governor or Commander in Chief of any of our Colonies or Plantations in America do presume for the present, and until our further Pleasure be Known, to grant Warrants of Survey, or pass Patents for any Lands beyond the Heads or Sources of any of the Rivers which fall into the Atlantic Ocean from the West and North West" (qtd. in Linklater 41).

order to distribute small-pox-infected blankets among the Natives (307), the solicitations of William Johnson to obtain Native land (636, 646), etc. But at the same time, the process of creating surveyed property doesn't seem to suit ordinary settlers any better, for they are "moving West into instant control" (617), as Capt. Zhang tells the astronomers. The settlers increasingly fall prey to real estate agents, or the "Metropolitan cabal," Zhang later continues, that "goes upon the hope of the next Purchase of the Indians, of as much trans-Alleghenian Land as possible. The settlers having been serv'd Eviction Notices last year by Capt. Mackay and the Highland Forty second..." (658). Where is, then, the liberty that Washington et. al. are hoping to achieve by taking the land from the British? Where is the result of clearing up chaotic land disputes? It was born and remained a hopeful ideal. In reality, the Line, as Zhang concludes and as Mason and Dixon eventually come to realize themselves, is "a conduit for Evil" (617) that only enables the transfer of power from one "repressive system of control" (Edwards 22) to another. The rationalist hopes and the scientific progress of the Enlightenment, represented by the protagonists of the novel, are thus tragically co-opted and exploited by other interested parties. Or, as per Lotman, such progress "instilled not only delight but also horror" (207). Finally, Zhang poses the ultimate question:

Who'd benefit most? None, it would seem, but the consciously criminal in Publick Life as in Private, who know how to tap into the unremitting torrent of *Sha* roaring all night and all day, and convert it to their own uses. Howling like a great Boulevard of souls condemn'd to wander up and down the grim surfaces. (547)

Zhang's description here of the "Metropolitan cabal," the "consciously criminal," the 'Them' with the capital T, as Pynchon calls Them in an earlier work, is purposefully elusive and mystical. But who are They, actually? And how far does Their influence reach?

2 The Network

Henry Oldenburg, a seventeenth-century German-English theologian, natural philosopher, and the first Secretary of the Royal Society, wrote to John Winthrop, the Governor of Connecticut, in October 1667 the following: “Sr, you will please to remember, that we [the Royal Society] have taken to taske the whole Universe [...] It will therefore be requisite, that we purchase and entertain a commerce in all parts of ye world” (qtd. in Irving 93). Two important things are to be noted from this piece of correspondence. First, the Society seems to be very interested in the New World (“ye world”) and what it has to offer to them. Many of the settlers were Fellows of the Royal Society; Winthrop himself was one, as was Benjamin Franklin, whose character in the novel acts as a proto-whistleblower for Mason and Dixon when he reveals to them some of the reasons behind the Society’s devious plotting behind their backs. Second, and more importantly, it is suggested that America, important as it may be, is just another node in a larger natural system that the Society has decided to explore and explain (“the whole Universe”). This is something which Pynchon seems to be acutely aware of, and which operates as a latent force behind the novel’s narrative.

As Sarah Irving demonstrates, from its creation in 1660 onwards, the Royal Society tasked itself with describing the natural world in “disinterested” fashion, that is, without any religious, political or economic predispositions which might skew its aspirations for objectivity (96). It was to be the first organization which took a universal, systemic and methodological approach to nature, and which sought out to create a corpus of knowledge about the natural world on a global level. To do this, samples of plants, animals and soil had to be collected all over the globe, the heavens had to be observed systematically from different points on Earth, data had to be collected, published and transported, and this also included “the replication of practices and institutions, the circulation of instruments, images, texts, and specimens, and the building of long-distance

networks to allow for collective communication over extended geographical space,” as Jan Golinski enumerates (221). This wasn’t a phenomenon linked exclusively with the Royal Society, of course, but with the nascent global community of seventeenth- and eighteenth-century natural philosophers as a whole, though the Royal Society definitely does epitomize the process. And further, the establishing of this global scientific network naturally coincided with the expanding “networks of trade migration, the circulation of people and goods, and the techniques by which territory was surveyed and brought under control,” which both affected the scientific side of the proverbial coin, and was affected by it (Golinski 221-2). To put it more tersely, the intellectual efforts of the Enlightenment created and operated within a “reconfigured geography,” as the globe was measured, the oceans charted, the lands surveyed, and colonial settlements, of which America is surely the biggest one, put on the map (Golinski 224). So, in spite of the strivings of the Royal Society to work objectively or “disinterestedly,” working under the patronage of what was soon to become the world’s largest colonial empire does make the task difficult. At best, one could claim that the vast improvements made in the fields of positional astronomy, horology (the science of constructing clocks and watches), navigation, mechanics, optics, surveying, etc. were simply *utilized* by the British Empire, at worst, it was a matter of political collusion. It doesn’t, therefore, surprise that the Royal Society’s “*claims* to disinterested knowledge were frequently rhetorical, and concealed the interests, financial or otherwise, of the person in question” (Irving 96).

It also doesn’t surprise that Pynchon chooses to portray the Society, effectively Mason’s and Dixon’s employers, in as mysterious fashion as he does. It is presented as an omnipresent organization which has eyes and ears everywhere, a cabal whose members seem to be present wherever the pair goes, that seems to be politically connected well beyond anyone’s understanding—all the while being a source of constant paranoia for Mason and Dixon.

Consider, for example, an early subplot in which Mason and Dixon embark on a journey to Sumatra to observe the transit, only for their ship to be attacked by the French and forced to return to Plymouth. The astronomers, exhausted, enter a bout of paranoia, theorizing about their positions in the larger political-institutional mechanism, wondering why a civilian vessel, and one on a scientific expedition (the French are “not at war with the sciences” [247]), would be attacked in the first place:

Impenetrable, [the silence] calls up Questions whose Awkwardness has only increas'd as the Astronomers have come to understand there may be no way of ever finding the Answers.

“Did the Captain signal? Did they read it, and attack despite it?”

“Or *because* of it...?”

It seems not to belong in either of their lives. "Was there a mistake in the Plan of the Day? Did we get a piece of someone else's History, a fragment spall'd off of some Great Moment,— perhaps the late Engagement at Quiberon Bay,— such as now and then may fly into the ev'ryday paths of lives less dramattick? And there we are, with our Wigs askew."

"Happen," Dixon contributes in turn, "we were never meant at all to go to Bencoolen,— someone needed a couple of Martyrs, and we inconveniently surviv'd...?"

(44-45)

The astronomers, simply put, feel like they are mere chess pieces in a much grander game, in some “Great Moment” whose full significance is as mysterious as the attack itself. Mason especially, as he points out, feels “adrift in Waters unknown, Intrigues and Faction within the Royal Society, as among Nations and Charter'd Companies” (247), thus suggesting that the Society is as much a political institution as a scientific one. Finally, they send to the Royal Society a letter with

questions about what just transpired, and a suggestion for the new location to observe the transit from, only to in turn swiftly receive “a Letter of Reproach and Threat” from a “faceless committee,” a reproach that they “will go back to again and again, unable to release it” from their dreams (45). And indeed it is so, as the two engage in speculating their position vis-à-vis the Society on numerous occasions through the novel, and what it is they might have said to receive such a cold, impersonal and threatening reply. “What did we even do,” asks Mason two full years later, before embarking on their transoceanic voyage, “that has to be absolv’d? We represented our unwillingness to proceed upon a fool’s errand” (249). When is this “hateful unending Royal Society Intrigue” (249) going to finally end?

When they run into Maskelyne, he points out that the pair’s suggestion for a new observation spot, Scanderoon, as İskenderun, Turkey was then known, was “particularly unfortunate” (251). Mason is naturally curious, at which point Maskelyne reveal a complex web-like tangle of the Society’s political connections with various chartered companies, slave nations, trade routes, and so forth, as well as what is possibly an anti-Semitic economic conspiracy:

"I don't suppose Mr. Peach has ever spoken to you of the Levant Company...of that lively traffick in Muslins and Bombazines, passing thro' Aleppo, to the Sea, and the Warehouses of the Factors, at Scanderoon?"

"Mr. Peach does business with Aleppo,— no one who has learn'd Silk, can afford not to," Mason replied. "Yet, alas, unaccountably, it has remain'd absent from our Discourse."

"Jews," declar'd Maskelyne, regretting it in the Instant.

"Ah. Let me see if I'm following this. The Royal Society send Dixon and me to the Cape, thus incurring a Debt ow'd to Dutchmen, rather than to Jews, which any Stationing of Astronomers at Scanderoon would imply."

It becomes increasingly clear, to the characters in the novel as much as to the reader, that the Royal Society is far from being a "disinterested" scientific institution. Later, when they encounter Ben Franklin overseas, the Founding Father sheds some further light on the matter, confirming that "They all knew. But they could never allow upstarts to advise them in matters of Global strategy. [...] Thus the Board of Trade, thus the House of Commons.... Up there, day after there, instructing them, gently,— a Schoolmaster for Idiots" (271). Not only are the interests political and economic, but more importantly, the Society thus seems to be, willingly or unwillingly, under the direct control of some other institutions which "instruct" its operations around the globe. The fact that Mason and Dixon are not part of the inner circle that dictates the events which transpire around them, but work from the periphery and reconstruct the larger picture from the bits and pieces that do manage to somehow reach them, is precisely the novel's point: they are the Rosencrantz and the Guildenstern of the 18th century (Cowart 353).

Franklin's exposition is interesting and telling in another way, however. He mentions that individual members of the Society are "excellent minds, invigorating Company," and only when they are taken as a group, when they are "all in a Herd," do they turn into a clique full of "Stubbornness" (270), working towards ends that are certainly not motivated by the need to enlighten mankind. This ostensibly also accounts for the disparity between how Pynchon is constructing his particular version of the 18th century and the common image of the 18th century natural philosopher as a virtuous man. As historian of science Thomas L. Hankins writes, "Although science itself might be entirely objective and without ethical content, its very objectivity

made the natural philosopher a man of virtue. Objectivity was the opposite of self-interest and ambition; the natural philosopher served mankind rather than himself” (7). It is by way of association and the consequent onslaught of bureaucracy, party politics, and responsibility to other social bodies that virtuosity is betrayed. This is, moreover, especially true in the field of astronomy, which utilized new developments in mathematical analysis by the likes of Sir Isaac Newton, Gottfried Wilhelm Leibniz, and Leonard Euler, and which had practical applications that far exceeded those of any other sciences of the time (Hankins 23).

Most notably, there is the Longitude Problem. In conversation with his listeners, the narrator, Rev^d Cherrycoke, describing his and the astronomers’ voyage to the Cape, tells of the moment when they crossed the equator from the northern hemisphere into the southern, and the accompanying series of pranks that are traditional among sailors on such occasions. One of the listeners, Uncle Ives, calls it a “foolish rowdy-dow over some Geometer’s Abstraction that cannot even be seen” (56). For any other of the lines spoken of in the novel, including Mason’s and Dixon’s line, this would have been true—but not for the equator. Cherrycoke is quick to rebuff Ives: “But that for one Instant,” he says, “our Shadows lay perfectly beneath us. To change Hemispheres is no abstract turn,— our [pranks] were Tolls exacted for passage thro’ the Gate of the single shadowless Moment, and into the South, with a newly constellated Sky, and all-unforeseen ways of living and dying” (56). Narrational flair aside, Cherrycoke is right—global positioning along the north-south axis is not an abstraction, but very much determined by celestial mechanics, as all one has to do to determine one’s geographical latitude is to gauge the Sun’s elevation above the horizon. Geographical longitude, on the other hand, is a pure “Abstraction,” and without any reliable, easily usable natural determinants (like the Sun), its calculation was up until the 18th century difficult on land and practically impossible at sea.

For centuries, this problem plagued European navies, with countless sailors losing lives in shipwrecks⁹ or by getting scurvy after failing to fix their location on the ocean and running out of health-preserving food, not to mention less lethal damage, like the dependence on well-known routes, along which whaling, merchant, war- and pirate ships all clustered together and “fell prey to one another,” as Dava Sobel puts it in her account of the quest for longitude (15). This is why in 1714 Queen Anne finally issued the Longitude Act, which offered £20,000 (just under four million pounds in today’s currency) to whomever found a “Practicable and Useful” method of determining longitude at sea to within half an arc degree (around 30 nautical miles at the equator), £15,000 for accuracy of two thirds of a degree, and £10,000 for accuracy of one degree (Sobel 53). This of course resulted in a myriad of crackpot solutions to the problem from all walks of life, which is, needless to say, fertile ground for Pynchon. In a flashback, Mason, as the apprentice of Astronomer Royal James Bradley, is tasked with going through all the “Suggestions, Schemes, Rants, Sermons, full-length Books” (141) that Bradley receives as AR:

Treatises on "Para-geography" arriv'd, with alternative Maps of the World superimpos'd upon the more familiar ones. Many,— as had the elder Cabot upon his deathbed,— claim'd to've been told the Secrets of the Longitude by God (or, as some preferr'd, Thatwhichever Created Earth and her Rate of Spin). Others told of Rapture by creatures not precisely Angels, nor yet Demons,— styl'd "Agents of Altitude." That they were taken aloft and shewn the Earth as it appear'd from the Distance of the Sun, and that

⁹ The most notorious example of this is when an English fleet of ships, led by the *Association* and commanded by Admiral Sir Cloudisley Shovell, sank practically in its entirety on October 22, 1707, after the sailors wrongly gauged their longitude and blindly ran into the Scilly Isles, a series of tiny islands twenty miles southwest of England, in the middle of a foggy night. Practically at home, around two thousand men lost their lives, all on account of poor navigation (Sobel 11-13).

the Navigator of the Vessel us'd a kind of Micrometer, whose Lines were clapp'd to the Diameter of the Earth... (141)

The importance of the Longitude Act for the topic it hand should be obvious, albeit in somewhat different fashion than what has been presented up to now. Precisely speaking, not only is the era's science and technology directly integrated into the broader, globalizing social fabric of the 18th century, but the progress happens exactly at the behest of the political structures struggling to safely navigate around the globe and exert colonial influence. To go even further and put the general ludicrousness of the proposals, Pynchon's or actual ones¹⁰, aside, the novel does seem to argue that such a process of weaving a global empire, though a project of the select and secretive few, happens only through the insight provided by the greater public—the subordinate, the subjects of the empire, the ones who are, like the protagonists of the novel, certainly not in the know. The problem of exploitation gets even more overt when one considers the slavery, first at the Cape, then later in America, which undergirds different kinds of scientific ventures. Dixon, more sensitive of the two to the slavery they witness, upon arrival at the Cape comments on “Astronomy in a Realm where Slavery prevails...! Slaves holding candles to illuminate the ocular Threads, whilst others hold Mirrors, should we wish another Angle. One might lie, supine, Zenith-Star position, all Night,...being fann'd, fed, amus'd,— ev'ryone else oblig'd to remain upon their Feet, ever a-tip, to respond to a 'Gazer's least Velleity” (69). Scientific work, following the novel, simultaneously acts as a system of control and in turn depends on the people that are controlled.

¹⁰ And some solutions that did get proposed to the Board of Longitude, a body that was to oversee and award the prize, were as offbeat as something Pynchon might imagine. Surely the most bizarre was the “wounded dog theory,” whereby a magical healing powder was applied to not the dog himself, but his bandages, yet the dog would nevertheless feel the pain of the recovery process. Sobel writes: “Send aboard a wounded dog as a ship sets sail. Leave ashore a trusted individual to dip the dog's bandage into the sympathy solution every day at noon. The dog would perforce yelp in reaction, and thereby provide the captain a time cue. The dog's cry would mean, “the Sun is upon the Meridian in London.” The captain could then compare that hour to the local time on ship and figure the longitude accordingly” (42).

Another clear example of this is John Harrison, to go back to the matter of determining longitude. Of all the proposals, two eventually emerged as the best candidates. The first one was the astronomical one, and relied on using position of the moon in relation to other celestial objects, primarily the Sun and a few of the brighter stars. The method was fraught with complications and when first proposed still required decades of collecting data (which, in the novel's epilogue, Mason is seen refining in his old age for a living [768]), charting the skies, above and below the equator, and developing methods for predicting the Moon's erratic trajectory around the Earth on a yearly basis. Yet, the scientific/astronomical establishment, led by men like John Flamsteed, Edmund Halley, James Bradley and most fiercely by Nevil Maskelyne, persisted throughout the century in pushing it as the most viable option. The "lunar distance method," as it was known, "was propagated by individual investigators scattered all across the globe, each one doing his small part on a project of immense proportions. No wonder the technique assumed an air of planet-wide importance" (Sobel 98). Of course establishing a global network of astronomers and mathematicians which together accumulated vast swaths of knowledge seemed like the best option, and it fit neatly into the idea of the scientific establishment doing important, valuable work. Yet, even when all the technical inadequacies were surpassed, the way nature operated could not be: the moon was visible only for a limited time each month, and not to mention that fog or just a big cloud were enough to prevent sailors from doing anything. The second method was by taking onboard the ship a clock or a watch which kept the time of the meridian of departure, then the difference between it and the local time would translate to a difference in longitude. The only problem was that the conditions the ocean provided (constant lolling about, differences in humidity and temperature, slightly different gravitational pull at different points of the globe, etc.) made the usage of clocks and watches seemingly impossible. Pynchon, as imaginatively as ever, presents

the problem by staging a conversation between two sentient clocks who run into each other for a brief while and discuss their inability to stay straight while on the ocean:

And indeed, what they wanted to talk about all along, was the Ocean. Somehow they could not get to the Topick. Neither Clock really knows what it is,— beyond an undeniably rhythmick Being of some sort,— tho' they've spent most of their lives in Range of it, sometimes no more than a Barrel-Stave and a Hull-Plank away. Its Wave-beats have ever been with them, yet can neither quite say, where upon it they may lie. What they feel is an Attraction, more and less resistible, to beat in Synchrony with it, regardless of their Pendulum-lengths, or even the divisions of the Day. The closest they come to talking of it is when the Shelton Clock confides, "I really don't like Ships much." (123)

Thus when John Harrison, an English clock- and watchmaker, proposed in 1730 that it is actually possible to construct a timekeeper that will remain accurate on sea, and built a series of prototypes over the next four decades, a revolution of sorts took place. Being far simpler than the lunar method, after a long history of patent disputes, litigations, and Harrison's resisting the "vested navigational interests of the scientific establishment" (Sobel 99), the temporal method eventually started to dominate European naval conquests. As one of the novel's minor character explains, "soon enough, sturdier offspring of Mr. Harrison's Watch will be showing their noontide Faces all about the Fleets, and Lunars will have had their day. The best we wretched Lunarians can ever hope for, is to share the Prize, which will prove at last a Tart cut too many ways to satisfy any" (201). Some historians of science, furthermore, would even go so far to suggest that Harrison's timekeepers are what if not enabled than facilitated the creation of the British Empire itself (Sobel 153).

With new means of determining longitude relatively accurately anywhere on the planet, on sea or land, a global network of meridians, parallels, and other “Abstractions” emerges as independently of the natural world as Mason’s and Dixon’s line. And just like their line, the global “Abstractions” pave the way for political and economic control. So when Cherrycoke narrates about the American West that is yet to “be seen and recorded, measur’d and tied in, back into the Net-Work of Points already known, that slowly triangulates its Way into the Continent, changing all from subjunctive to declarative, reducing Possibilities to Simplicities that serve the ends of Governments” (345)—one might as well understand that by a “Net-Work of Points already known” he means not just the already assimilated New England, but the whole globe as well. The American segment of the novel, then, serves as a microcosm of a much grander process happening over the course of the 18th century.

3 The Escape

When Cherrycoke talks about “reducing Possibilities to Simplicities,” though, it is probably too simplistic to imagine that he is talking just about direct economic or political control taking over the continent. He asks, almost forlornly,

Does Britannia, when she sleeps, dream? Is America her dream?— in which all that cannot pass in the metropolitan Wakefulness is allow'd Expression away in the restless Slumber of these Provinces, and on West-ward, wherever 'tis not yet mapp'd, nor written down, nor ever, my the majority of Mankind, seen,— serving as a very Rubbish-Tip for subjunctive Hopes, for all that *may yet be true*,— Earthly Paradise, Fountain of Youth, Realms of Prester John, Christ's Kingdom, ever behind the sunset... (345)

What is being lost, on a much more profound level than the politico-economic, is the hope that America would be exempt from the forces governing the world ever more pervasively. The feeling of the West being a sanctuary, an “Earthly Paradise,” a “damn U-topia” (638) where all the non-reason, the cultural heterogeneity, the magic and the spirituality of the world can find expression is being eroded one survey line at a time. Geographic integration, demonstrated so far on a national and on a global level, is synonymous with integration into the modern, rational world. Epistemological shifts brought on by the Age of Reason, shifts which Lotman, for example, calls an “awakening” from a “deep sleep” (214-215), naturally had enormous consequences in perceiving the world in other, less rational ways, which are now increasingly looked down upon. In Cherrycoke's own words, “These times are unfriendly toward Worlds alternative to this one. Royal Society members and French Encyclopaedists are in the Chariot, availing themselves whilst they may of any occasion to preach the Gospels of Reason, denouncing all that once was Magic” (359).

This is a problem which seems to interest Pynchon on several levels. In the first place, the issue is that the scientific reason¹¹ of the 18th century is prone to co-option by entities of systemic control. Reason itself, along with all the technological and scientific developments that come with it, thus becomes a tool for serving other ends that are, paradoxically, in themselves probably not governed by much reason, as Latour has shown. But to go a step further, this control occurs because of the very nature of reason: it is totalizing, universal, it erodes all the “Possibilities” by claiming their territory, literally and figuratively, and making them subservient to one and the same epistemological frame of reference. This is disappointing in itself for Pynchon, but the additional layer of control-enabling renders it truly crushing. Brian Edwards, in his reading of the novel, puts it clearly when he says that the “danger is not only that with knowledge comes control (together with repression, exploitation and disappointment, but also that it involves a diminution of the possibilities of enchantment. And Pynchon has long expressed ambivalence towards ‘progress,’ together with sympathy for that may yet elude or challenge civilization’s systems of control” (26).

Such an ambivalent stance towards the Enlightenment is of course not unheard of. Michel Foucault, in his final essay, “What is Enlightenment?” builds his argument on much of the same ground as Pynchon:

Now the relations between the growth of capabilities and the growth of autonomy are not as simple as the eighteenth century may have believed. And we have been able to see what forms of power relation were conveyed by various technologies[...]: disciplines, both

¹¹ It would be more precise to say that the “scientific revolution” that took place during the 17th and more extensively 18th centuries was a development concurrent with the actual process of Enlightenment, which is understood more on cultural, religious and philosophical grounds. Nevertheless, as Hankins was sure to make clear, the “Reason” in the Age of Reason was very much modelled on scientific reasoning, especially mathematics. Not to mention that at the time, what we today call “science” (mathematics, astronomy, etc.) was called “natural philosophy” and was deeply intertwined with other branches of philosophy (Hankins 2). The scientific developments of the 18th century are therefore in this paper considered synonymous with the Enlightenment for the sake of simplicity.

collective and individual, procedures of normalization exercised in the name of the power of the state, demands of society or of population zones are examples... (48)

Interestingly enough, Foucault here speaks of what the 18th century people “may have believed”—there is then a discord between what the Enlightenment seemed to be doing (improving society), and what we now see it was actually doing (establishing power relations). That same disjunction seems to slowly dawn upon the two astronomers as their faith in their work, as well as in the possibilities that the American continent offers, slowly dwindles and turns into bitter disappointment. “Where does it end?” asks Dixon after finishing the work on the Line in 1768 and once again encountering brutal slavery on the streets of Philadelphia, “No matter where in it we go, shall we find all the World Tyrants and Slaves? America was the one place we should not have found them” (693). America, too, was the place where “Miracles might yet occur, that God might yet return to Human affairs, that all the wistful Fictions necessary to the childhood of a species might yet come true” (353).

In fact, so all-consuming is the totalizing force behind reason that institutional religion is subsumed under it, leaving behind spirituality and faith, and embracing the cold, rational approach to the existence or nonexistence to God. Deism—the faith in the existence of a Creator that has after creating the universe receded and left it to operate according to its laws like clockwork—is the religion of the day, and “As God has receded, as Deism has crept in to make the best of this progressive Absence, more and more do we witness extreme varieties of human character emergent” (358). This reconciliation is visible, too, from the Jesuit order, who are described in the novel in a way strikingly similar to the Royal Society: as a cryptic, shadow-weaving organization that is hardly doing anything other than vying for power. Strikingly, the Jesuits and their leader, Father Zarpazo, the closest the novel has to a ‘villain’, are represented by Cherrycoke as even more

explicitly ominous; they are a “Financial Entity” that has “the same difficulties with Stock-Jabbing, Land-holdings, Officials who may not stay brib’d for quite long enough” (528) as any other criminal enterprise. In this, they are helped by their Optickal Telegraph—a marvelous piece of communication technology that, despite being completely fictional and even veering towards science fiction, does serve to demonstrate that technological advancements are, once again, key to exerting power.

The American West, though its days are numbered, is now still alive and well and populated by all kinds of marvels for Mason and Dixon to encounter as they journey into it. Thus they run into, for example, a tavern called The Rabbi of Prague, American “headquarters of a Kabbalistic Faith” (485), where Jewish mythology is considered with all earnestness available, after which Mason has an encounter with a “giant Golem, or Jewish Automaton, taller than the most ancient of the Trees” (485). On a similar note, later the astronomers are told by Captain Shelby of a Native American myth about a race of giants who lived on the North American continent even before them, and who left behind giant earth mounds (595), as of a giant beaver that “figures importantly in Tales of how they and the World began” (620). There are, too, tales of werewolves (236), the history of a French immigrant and the mechanickal Duck in love with him (371-381), and the fantastic theory that posits that Earth’s interior is actually hollow (a callback, Pynchon readers will recognize, to V.’s Vheissu) (542-553). More realistically but not less enchantingly, Pynchon’s colonial America is full of striking and interesting personae, Franklin and Washington included, of Pynchonian high-jinks, epic natural landscapes, fragrant coffee (because resisting tea, of course, is increasingly synonymous with resisting Britishness), misty taverns, preachers, gunslingers, immigrants, blossoming love and pieces of Americana of all shapes and sizes, mythologized repeatedly by the elusive poet Timothy Tox in his *Pennsylvaniaiad* (both

Pynchon's inventions). All of this, it is to be surmised, is being gradually lost, subsumed under that looming shadow of reason, trapped by the scientific-capitalist conjunction protruding into the West twelve miles at a time. So, the natural question is, how to escape, and where to escape to?

One answer to the question is presented within the chronotopic organization of the novel, that is, by presenting real times and places that can be, and are inhabited by the characters. These heterotopias, to use Foucault's terminology, are sanctuaries in which ordinary rules of time and space don't apply, and where as a consequence 'progress' can be evaded for the time being. One of these is the so-called 'Wedge': an empty one-square-mile triangle of land where the twelve-mile circle around New Castle, the Tangent Line and the West Line imperfectly meet, between which is a space that would remain unclaimed by any of the three states (Pennsylvania, Delaware and Maryland, one on each side of the triangle, respectively) until the beginning of the 20th century. This Bermuda-triangle-like site, a favorite meeting spot for local astronomers, is where "strange lights appear at Night, figures not quite human emerge from and disappear into it, and in the Daytime, Farm animals who stray too close, vanish and do not re-merge" (323). It is, furthermore, a place "not so much claim'd by any one Province, as priz'd for its Ambiguity,—occupied by all whose Wish, hardly uncommon in this Era of fluid Identity, is not to reside anywhere" (469). To style the period of the Enlightenment an "Era of fluid Identity" is a clever move on Pynchon's part, for the entire novel, as has been shown, is a novel of transition from one mode of thought to another.

Something similar to the Wedge exists in different varieties across the novel. There is, on more fantastic grounds, the eleven days 'lost' when the English adopted the Gregorian calendar in 1752, and when everyone went from 2 September to 14 September, except Mason, who claims that he woke up normally on 3 September, and that he spent the next fortnight all alone in the

world. As two strangers in a tavern would have it, “the Battle-fields we know, situated in Earth’s three Dimensions, have also their counterparts in Time,— and if the Popish gain advantage in Time’s Reckoning, they may easily carry the Day” (190). The Protestant hostility (“battle”) towards a Catholic calendar is clear, but it might as well be understood as hostility towards systems that are controlling not only space, but time as well, in the process creating such a “brute Absence” or a “Tear thro’ the fabric of Life” (555). Reminiscent of the Wedge is even the terminology employed by Mason, who styles it a “slowly rotating Loop, or if you like, Vortex, of eleven days, *tangent* to the Linear Path of what we imagine as Ordinary time” (555, my emphasis). And just like the Wedge, it is a crack in the new spatio-temporal organization of the world, a crack which Mason, when he enters it, finds to be an escape from the “Enterprise so passionately fear’d and hated by most of the People” and a repository of “all the Knowledge of Worlds civiliz’d and pagan, late and ancient” (558).

The same quality can be ascribed to the Chinese Circle, a Chinese alternative to the 360-degree division of the globe’s circumference from which “the Jesuits remov’d” “five and a Quarter Degrees” to harmonize it to their own system. A clear sign of scientific homogenization, it is a “bit like the Eleven Days taken from your Calendar, isn’t it?” asks Captain Zhang. “Same Questions present themselves,— Where’d that slice of Azimuth go? How will it be redeem’d?” (629) Of course, the five degrees are as abstract as the eleven days, no actual alteration is done to the physical world, but it points to how the superstratal, cultural level is reduced to one (and here, Western) monolithic congruence. And the degrees of the Chinese Circle lost, like the eleven days for Mason, probably serve as a sanctuary, a space of resistance, no matter how fictional, for someone who cannot or does not want to adapt. There are, too, all the different taverns which in a way serve the same heterotopic purpose, places where free ideas circulate and where the revolution

is slowly building up, in one of which Jefferson makes an appearance (395). The coffee-houses are “places of talk and intrigue,” where the two “hear news of the latest Indian massacre, local rivalries and fears and superstitions, scientific curiosity and experiment, and, of course, ideas about cartography itself” (Edwards 25).

The biggest place of resistance, however, is fiction itself. On the very basic level, fiction proposes alternatives to the increasingly hostile world, where imagination can run wild and go directly against the totalizing forces of reason brought on by the Enlightenment. Pynchon himself, in his famous 1984 essay, “Is It O.K. To Be a Luddite?” focuses on this when he traces the history of Luddism—aversion to technological progress—to the 18th century and “an emerging technopolitical order that might or might not know what it was doing”:

The craze for Gothic fiction after "The Castle of Otranto" was grounded, I suspect, in deep and religious yearnings for that earlier mythical time which had come to be known as the Age of Miracles. In ways more and less literal, folks in the 18th century believed that once upon a time all kinds of things had been possible which were no longer so. Giants, dragons, spells. The laws of nature had not been so strictly formulated back then. What had once been true working magic had, by the Age of Reason, degenerated into mere machinery. (“Luddite”)

The very usage of the adjective “technopolitical” is telling of his position, and furthermore, he explicitly locates the source of rejecting technology in the economic realm when he posits that what Luddites, in their original formation, truly minded was the “concentration of capital that each machine represented” and “the ability of each machine to put a certain number of humans out of work” (“Luddite”). He shows, much like in *Mason & Dixon*, that the intellectual and philosophical revolution of the Enlightenment, the dilution of “the Age of Miracles,” was accompanied by harsh

economic and political changes, which in turn depended on technological progress. After all of this, the Romantic rejection of the Enlightenment ethos through Gothic and other types of fiction was no surprise, nor is the existence of its successors “on through Pre-Raphaelites, turn-of-the-century tarot cards, space opera in the pulps and the comics, down to ‘Star Wars’ and contemporary tales of sword and sorcery” (“Luddite”). Fiction, to put it as simply as possible, is a means of temporarily rejecting modernity, which has since the 18th century become synonymous with reality.

But there is something also to be said about Pynchon’s specific brand of fiction—the encyclopedic, maximalist, mega-novels that sometimes weave together dozens of plot threads and hundreds of characters, and that fastidiously go down the rabbit holes of history known and unknown. His novels and their wide-ranging topics, which “resist not only conventional notions of rationality and history but also traditional conventions of the regular historical novel” (Edwards 27), are by their very complexity countering the simplification of life that systems of control strive for. As much as Pynchon’s complex narratives, *Mason & Dixon* included, provide escape, they also argue that easy, unambiguous, and completely ‘rational’ approaches to history and culture, American or otherwise, are simply inadequate.

Conclusion

Is it O.K. to be a Luddite, then? Is the novel's skepticism towards the Enlightenment and the scientific and technological progress that came with it warranted? The novel, especially when accompanied by the essay, would lead to the conclusion that the answer is 'yes', but this is not to say that Pynchon is a fanatic or a blind zealot that outright denounces the modern age. Too much of the novel, and of his entire oeuvre, is fascinated with science and technology and all the possibilities that the modern understanding of life has wrought, yet at the same time, the fascination in Pynchon comes with skepticism towards the way scientific-technological progress can be exploited, and to go even further, with a certain dose of nostalgia for the "Age of Miracles" when nothing of the kind existed for exploitation. Pynchon's project in *Mason & Dixon* is to scrutinize "the age in which technology began to come into its own—bringing with it the modern world's spiritual desperation" (Cowart 342), he is "deconstructing in so many ways the Ancient Savagery-Modern Science binary" (Edwards 28), to quote some of the critics of his work. The entire narrative, in other words, is an argument both for and against the Enlightenment and the accompanying scientific revolution; it is the excavation of the ideal from the actually historical.

Which is why it is all the more relevant that the 18th century is explored through the eyes of George Mason and Jeremiah Dixon, two lowly astronomers who are doing work for political and economic forces far above their level of comprehension. Precisely because they are always on the periphery, observing the grander cycles of technopolitical development from the sidelines, their perspective is the reader's point of entry into the intricacies of the period the novel is portraying. Mason and Dixon, in other words, are deeply lost in the grand schemes of politicians, entrepreneurs, the Royal Society, the Jesuits, etc., and as the narrative's principal focalizers, they make the readers feel lost, too. The astronomers, or at least their fictional selves, are "implied

historians, developing through the novel's language an oddly contemporary perspective from within the eighteenth-century context," as Christy L. Burns argues (2). And when Burns, in her reading of the novel, says that Pynchon's text is constructed (linguistically, narratively, thematically) in a way that suggests that "Americans were even then as we are now" (3), what is really implied is the inverse: Americans, and the contemporary world as a whole, are now as they were then.

The swirl of science and culture in *Mason & Dixon*, though on the surface similar to Pynchon's other work, is therefore truly one of a kind in his oeuvre. By portraying the period which if not started then surely solidified modernity, and in which modern science was born, he is revisiting the origin point of what constitutes our present moment. The Mason-Dixon Line, the centerpoint of the novel, is just one example of science altering the reality around us, here by *de facto* structuring American wilderness and subjecting it to ownership, "Land-Jobbery," control, etc., and its significance is even greater when one considers the immense cultural role it would take on during the 19th century. The Line, furthermore, is soon to be just one in a network of many, as the American Old West is conquered in fundamentally the same way, and as one remembers that the constantly-shifting demarcation point between civilization and the Old West is at its core the demarcation point between surveyed and unsurveyed land. Even more pervading is this process on a global scale, where the same kind of power relations are established, where the same kind of structured space emerges, where less and less of nature is unexplored, unconquered, unsubjected—exemplified in Pynchon's text via the Royal Society and what was soon to be the British Empire.

After his critical evaluation of the Enlightenment, the only remaining thing to do for Pynchon, then, is to find sanctuary—no matter how imaginary—and to resist the "consciously

criminal,” all the ‘reason’ at their disposal, and the way of life they are creating. In doing this, for all the formidable erudition Pynchon displays in his work, and for all his ostensible political pessimism and skepticism, what shines through, perhaps in *Mason & Dixon* brighter than anywhere else, is a hope that “There may be found, within the malodorous Grotto of the Selves, a conscious Denial of all that Reason holds true” (769). Is there, he is ultimately asking, really any other option?

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Abstract

The paper offers a reading of Thomas Pynchon's *Mason & Dixon* (1997) in terms of its portrayal of technology, science, and, more broadly, Enlightenment thought. The argument is that the novel's main concern is the inability to separate science out from the culture in which it is practiced and that scientific and technological progress are therefore deeply vulnerable to exploitation by political and economic systems. This conjunction of science, culture and politics is evinced by considering three principal matters. Firstly, Mason's and Dixon's surveying of the notorious border between Pennsylvania and Maryland is explored, as is the way their work figures in American eighteenth-century history and culture, in relation to the revolutionary activity, land ownership, slavery, westward movement, relations with Native Americans, etc. Secondly, the paper assesses the way Pynchon's two astronomers are implicated in a grander process of eighteenth-century globalization and the creation of the nascent British Empire. Finally, more abstract and indeed more pervading effects of the Age of Reason on eighteenth-century culture presented in the novel are considered, together with various ways of countering the totalizing effects of 'Enlightened' thought. Pynchon, it is shown, is in his novel exploring the differences between what the development of science in the period should have represented in its ideal version, and what it really represented—the establishment of power relations.

Keywords: Thomas Pynchon, *Mason & Dixon*, Enlightenment, globalization, Royal Society, science, technology, 18th century