

REGIONAL NATURAL HISTORY IN ENGLAND: PHYSICO-THEOLOGY AND THE EXPLORATION OF NATURE

David BECK*

Abstract. First the article offers a contextual discussion of more widespread Latitudinarian views of nature and the relationship between the landscape and God. Secondly, it argues that the regional natural history should be seen as a contribution to debates regarding physico-theological belief, through an examination of comments regarding the origin and nature of fossils. This section demonstrates the reciprocal nature of religious and natural thought in the period: fossils informed the regional natural historians' views of the biblical narrative, and the Bible informed their understanding of fossils. The final section turns to the relationship between the world that God created and both morality and health, finding that in more "scientific" fields regional natural historians were acting "empirically" in reporting isolated instances without wider theorising. The disjuncture between open conjecture upon religious implications and the relative lack thereof upon natural philosophical matters suggests, I argue, that natural theology should be the key in our understanding of regional natural histories in this period.

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Introduction

For the invisible things of him from the creation of the world are clearly seen, being understood by the things that are made, even his eternal power and Godhead; so that they are without excuse.¹

The idea that through nature it was possible to glimpse God was a common creed among Protestants.² As an illustrative example George Walker (1582–1651), one of the Westminster Divines who were involved in writing the strongly Calvinist Westminster Confession of Faith (1646), turned to the quote from St. Paul in Romans 1:20 above and argued that through studying nature his contemporaries were able "as in a glasse [to] behold the Glory of God with open face (the veil of ignorance being removed)[...] So often as we behold the visible outward works of God."³ That is to say, for Walker the visible world was directly created by God, and in it his glory was openly exposed to individual observation.

* Department of History, University of Warwick, Coventry, CV4 7AL, UK, email: D.C.Beck@warwick.ac.uk

In a similar fashion Francis Bacon had earlier argued that “natural philosophy is after the word of God at once the surest medicine against superstition, and the most approved nourishment for faith, and therefore she is rightly given to religion as her most faithful handmaid.”⁴ Bacon suggests that the investigation and understanding of the natural world is a possibility thanks to the fact that God “hath fitted it for the comprehension of man’s mind.”⁵ Like Walker, Bacon also turned to the Bible for support, pointing in particular to Daniel 12:4 (“Many shall go to and fro, and knowledge shall be increased”) which appears on the frontispiece of his *Instauratio magna* (“Great Instauration,” 1620). The natural world was taken to be the visible face of the Lord, open to observation by Man through his God-given senses, and therefore Nature took its place alongside the Bible as a path through which to reach religious knowledge.⁶

Despite the centrality of theological discussion in seventeenth century discourse about the natural world, and a plethora of studies on the relationships between religion and science since the 1930s,⁷ religion takes a largely peripheral position in most current mainstream history of science.⁸ I argue that for regional natural historians in England, including John Aubrey (1626–1697), Robert Plot (1640–1696), Charles Leigh (1662–1701), John Morton (1671–1726), and Thomas Robinson (d. 1719), physico-theology was central to their reasons for investigating the natural world, and deeply affected the works produced. Regional natural histories were encyclopaedias of a local area (a county, or a small number thereof) covering subjects which we might now refer to as archaeology, genealogy, heraldry, cartography, botany, geology, and mineralogy, among others. This article focuses upon the naturalisation of religious values within the landscape in the genre, tracing the theological commitments of the regional natural historians from both their overt theological statements and the style of argumentation used in their works. These physico-theological statements are situated in the context of wider Latitudinarian conceptions of nature, epitomised by individuals such as John Tillotson (1630–1694) and Isaac Barrow. First, though, I turn to the historiographic context of this piece and particularly the work of Alexandra Walsham, Peter Harrison and Kevin Killeen.

The article is especially concerned with issues surrounding “special providence,” or God’s direct and miraculous interaction in nature, which was a topic of much debate through the seventeenth century. Prior to the 1640s, as Walsham has shown, the focus of discussions of special providence had been primarily upon punitive actions (storms, earthquakes, etc.), while through the middle of the century discussions of “the multiple manifestations of God’s gracious benevolence that surrounded them” became increasingly common.⁹ By the end of the century Sussex vicar William Turner’s (1652/3–1701) *Compleat history of the most remarkable providences* (1697) argued that the collection of such things would act against possible atheistic tendencies, being clear evidence that “the ways of God are unsearchable, and his Footsteps cannot perfectly be traced.”¹⁰ For Turner strange occurrences in and on the landscape provided absolute proof of God’s existence, and of his inscrutability by humankind. At the same time, by the 1690s references to God’s providential actions, such as those in Turner’s work, were notably less common.¹¹

However, while God's miraculous intervention in the natural world was less commonly discussed, it was still considered possible to detect and examine God through nature, in particular through physico-theology: the exploration of tangible nature to detect God's design of the world. This was not just the glorification and praise of God; but the attempt to theologically come to *know* Him through His works, through the landscape. In most historiography since the 1980s physico-theology has been the dominant understanding of the relationship between religion and the study of nature in the latter half of the seventeenth century.¹² This school of thought draws on works such as Charleton, *The Darkness of Atheism*, Barker, *Natural Theology*, Boyle, *Some Physico-Theological Considerations*, and Ray's *The Wisdom of God and Three Physico-Theological Discourses*, all of which suggest the existence of God-given but inviolable laws of nature. For example in Ray's opinion the natural world was not directly controlled by God, rather He used the agency of plastic nature – a regular and predictable instrument which was entirely subordinate to God's intelligence.¹³

The article also seeks to support and extend the long historiography referencing the Bible and Nature as “the two books” through which seventeenth century man could come to know God.¹⁴ Both Harrison and Killeen have pointed in several recent works to the different modes of biblical interpretation and their relationship with the investigation and understanding of nature.¹⁵ In *The Bible, Protestantism, and the Rise of Natural Science*, Harrison argued that it was a literal interpretation of scripture, indebted to “the Protestant approach to the interpretation of texts,” which formed the centrepiece of this relationship.¹⁶ Killeen has recently given an alternative view, demonstrating in *Biblical Scholarship, Science and Politics in Early Modern England* that Thomas Browne utilised both literal and allegorical modes of interpretation when it came to the Bible, and that both were equally important in his study of nature. Killeen therefore argues for a more wide-ranging reciprocal hermeneutics between biblical exegesis and natural study.¹⁷ In doing so, Killeen follows earlier work arguing that, “God's word [...] was *not* equated with the lexical surface of the Bible, nor with the exact wording of any particular passage.”¹⁸ This article, while supporting both authors in pointing to the importance of the study of the Bible alongside Nature, supports Killeen's claim that it was not only literal interpretations of biblical passages which were invoked. In particular, when it comes to explaining change in the landscape through time, the regional natural historians utilised Biblical interpretations in both allegorical and literal modes to draw their wider conjectures; while the physical landscape in which they immersed themselves provided the specific instances through which they displayed God's hand.

‘The Great *Magnificence* of God’ – Latitudinarian Nature

In this visible frame of the world, which we behold with our eyes, which soever way we look, we are encountered with ocular demonstrations of the wisdom of God.¹⁹

John Tillotson was ordained in 1661 and Archbishop of Canterbury from 1691 until his death in 1694. Among most historiography Tillotson is taken as an indicator of the mainstream Low Church grouping known as Latitudinarianism. While Latitudinarianism is hard to define, despite extensive historical attention,²⁰ its main aim was to avoid theological factionalism through moderation and a focus upon the shared, pious, heritage of England. In amongst the two hundred and fifty of Tillotson's sermons which were published either during his life or in the ten years following his death, we can discern a strong sense of the relationship he envisaged between nature and God. This was not just a support for "natural religion," the idea that reasoned thought would lead to a belief in God;²¹ Tillotson also suggested, as can be seen from the quote above, that the observation of nature itself would prove God's existence. The argument he puts forward, distilled down to its core, is deceptively simple: the world is hugely complex, ordered and astounding, therefore only God could have designed it. Hence for Tillotson and his Latitudinarian peers, the observation of the world took on a strong theological foundation.

Indeed, the idea that "priests [should be] as well skilled in nature as the people,"²² was central to the Latitudinarians, making the strong overlap between the Latitudinarian clergy and the Royal Society unsurprising.²³ For those such as Isaac Barrow, who were willing to court potential danger by opening themselves to accusations of taking away authority from the Bible and the Church by giving the observation of nature primacy over that of scripture and revealed religion, an even stronger formulation of the argument was put forward, as in the following quote:

The best (no less convincing than obvious) arguments, asserting the existence of a Deity, are deduced from the manifold and manifest footsteps of admirable wisdom, skill and design, apparent in the general order [...] of the world.²⁴

Barrow, along with others such as Robert Boyle and Nehemiah Grew (1641–1712), took this further by firstly denying special providence as a mechanism of action by God in the world, and secondly by arguing that "Nature, and the Causes and Reasons of Things, duly contemplated, naturally lead us to God."²⁵ Concurrently with philosophical changes which have been well documented by historians of science,²⁶ this theological change led to the idea that God was the architect, rather than the direct operator, of the world. That is to say, He was the active causal agent in designing and creating the world, in all its intricate detail, and set the laws by which nature operated, but He did not intervene in miraculous fashion above and beyond those laws. Thus, through the minute and precise observation of the natural world we could come to *know* God's design of the world, and thus God.

This physico-theological position led, in some circles, to severe criticism. Perhaps the most succinct explanation of the theological dangers that minute and precise observation could cause comes from a letter from the French political author Meric Casubon (1599–1671) in 1669:

Men that are much fix'd upon matter and secondary causes and sensual objects, if great care be not taken, may in time [...] and by degrees forget that there are such things as Spirits, substances really existing and of great power, though not visible, or palpable by their Nature.²⁷

While most historians agree that, at least initially, the theological motivations for natural history were genuine, Daston has put forward the argument that “unwavering attention directed to humble objects became an end in itself, infusing them with aesthetic and sentimental value” which was out of all proportion to their importance in contemporary theological discussions; in effect arguing that Casubon’s critique of observational science came true.²⁸ One of the consequences of this argument, which is generally representative of most current historiography of natural history in the late seventeenth century, is that physico-theological openings to works of natural history are taken as primarily representing responses to the “argumentative context” of the day.²⁹ This assumption has led to the neglect of the religious motivations for the study of nature in late seventeenth century in most recent historiography of natural history and collecting.³⁰

However, I have come across nothing in the writings of the regional natural historians to indicate that they were being insincere, or *using* God at all – indeed the absence of direct reference to Him in most of their writing, with the exception of that by Thomas Robinson, is notable itself. As such I propose, in the following section, to shift the burden of proof, and suggest that unless we have specific reasons to think otherwise, we should generally take early modern authors at their word when they claim pious motivations and make statements regarding religious or biblical interpretation. Thus, I treat the words of Aubrey, Plot, Morton, Leigh and Robinson as reasonable indicators of an “honest belief” which was guiding and shaping their actions; if the reader prefers instead to conceptualise them (and therefore my comments) as regarding an idealised or rhetorical “trope,” that is of course their prerogative.

John Aubrey’s religious inclinations have proved hard, if not impossible, to map precisely, despite the historical attention lavished on him over the years.³¹ This is partly because his only book on the topic, which was entitled either *The Foundation of Ethics and the Ladder of Religion* or *Religio Naturalis, or a Scale of the decay of the Christian Religion, with a prospect or foresight where it will settle*, has been lost;³² and also because his religious views appear to have changed significantly through the course of his life. Both Michael Hunter and Samuel Mendyk have suggested that John Aubrey was an exponent of “a sort of natural theology,”³³ and he would certainly have fit within the notably broad Latitudinarian Church at most times. This is clearly evidenced by the suggestion from his friend Charles Snell that, shortly after Aubrey’s financial ruin, he should take orders and become a parish priest.³⁴ The general tone of his work was moral and pious, seen for instance in his writings on education and correspondence which focus upon shared virtues like “justice and charity,”³⁵ and idioms such as “do as you would be done to.”³⁶ However it was neither in keeping with the High Church focus on saving grace, nor the close and consistent scriptural focus of most other

Protestant denominations of the time. An attempt to position him precisely would, in my opinion, be futile; but when it comes to the relationship between the landscape and God, Aubrey was reasonably clear: he was on the “modern,” Latitudinarian side of the debate, believing that it was not a “sin to search into the ways of nature” as it had been, by his own account, prior to the execution of Charles I in 1649.³⁷

As well as mentioning the lack of a moral reason not to investigate nature, Aubrey occasionally mentions explicitly religious motivations for his investigation of the world around him. For instance, when writing to his friend the antiquarian Anthony Wood (1632–1695) regarding the compilation of his notes and further research he was undertaking in his home county of Wiltshire around 1670 he claims: “a kind of divine impulse to have it done [...] And when tis done none of these parts will value it.”³⁸ Here, not only is Aubrey claiming a personal, religious inspiration, he is also downplaying any social or economic reasons for the project he was pursuing at the time. The front cover of his manuscript copy of the natural history of Wiltshire, lodged in the Royal Society, also indicates the intention of his local natural historical work to expose the glory and wonder of God, with two quotes from The Book of Psalms:

O Lord, how glorious are Thy works: Thy thoughts are very deep. An unwise man doth not well consider this: And a fool doth not understand it.

I will remember the works of the lord: and call to mind thy wonders of old time.³⁹

Both of these demonstrate how Aubrey’s “divine” impulse led to a body of research which focused upon the description and exploration of God’s world in order to restore “thy wonders of old time.” Personal motivations, such as simple “interest” in the landscape, were infused for Aubrey and many of his contemporaries with religious meaning. The lack of a consistent or explicit engagement with religion should therefore not be taken as a lack of pious concern; the assumption that the landscape was God’s creation was self-evident to Aubrey, and an interest in its description did not require justification. Likewise, when Robert Plot says in his preface to the reader that he began research into the natural history of Oxfordshire “for [his] own pleasure, the subject of it being so pleasant, and of so great variety,” we can read-through religious intent as at least a partial underpinning to this “pleasure.”⁴⁰ While Plot does not often explicitly refer to God himself, the impression the reader is left with is that his religious inspirations were similar to Aubrey’s; as can be seen in a poem written “to Dr. Plot on his Natural History of Staffordshire” by John Norris (1657–1711), fellow of All-Souls,⁴¹ and inserted at Plot’s request as a preface to his *Staffordshire*. The poem opens:

What strange *Peversity* is this of *Man!*
When t’was a *Crime* to taste th’ *inlightening* Tree
He could not then his hand refrain,

None then so *inquisitive*, so curious as *He*:
But now he has liberty to try and know
God's whole *Plantation* below

Norris continues in a similar tone, giving a conception of humanity as morally obliged to be curious about the world that God created; in earlier times religious law had held back the investigation of God's landscape and now, though given liberty, "sedentary" and "dull souls" still held/hold us back.

Such Ignorance can ne'r *Devotion* raise,
They will want *Wisdom*, and their *Maker Praise*.

The argument running through Norris' poem is that the best way to praise God is through exploring "the great *Magnificence* of God" – the natural world. Indeed, not only exploration, "but display," was a moral imperative as projected by the poem. As earlier quotes have suggested, this exploration was to lead to the recovery of Adamic knowledge, that knowledge which was lost through the Fall.⁴² The penultimate stanza of the poem brings in "our learned author" Plot himself, in true dedicatory style:

In th'head of these *Heroic Few*
Our *Learned Author* first appears in view,
Whose searching *Genius* like the *Lamp* of day
Does the Earth's furniture display,
Nor suffer's to lie buri'd and unknown
Natures rich Talent, or his *own*.
Drake and *Columbus* do in thee revive,
And we from they *Research* as much receive,
Thou art as great as they, for tis all one
New Worlds to *find*, or nicely to describe the *known*.⁴³

As can be seen in the above quote the regional natural historians, in common with most of their fellow Latitudinarians, considered curiosity and exploration as morally good activities from the Restoration in 1660 onwards. By and large they dismissed the idea of direct providence, in which God intervenes in the world directly, replacing it with the idea commonly presented as the "God as architect" paradigm, which is where the moral imperative to explore emerged from.

Fossils and the Universal Deluge: Physico-Theology in Practice

Fossils around the turn of the eighteenth century were defined as "all bodies whatever that are dug out of the Earth" – the only distinction being between those which were native of the earth and those "adventitious... foreign... extraneous."⁴⁴ In the latter half of the seventeenth century there was a debate as to whether these fossils were naturally occurring "formed stones" which were mirroring or simply resembled

known natural creatures, or organic creatures deposited in the mountains in which they were found by the universal deluge or other circumstances. Regional natural historians, as we will see, ranged on both sides of the key issues, and utilised both physico-theological and biblical criticism to make their arguments. That is, as Killeen has argued, they saw a direct relationship between God's Word and His World. The debate itself had been sparked by the publication in 1681 of the first part of clergymen Thomas Burnet's (1635–1715) *Telluris theoria sacra*, translated and expanded into English three years later as *Theory of the Earth*.

Burnet's main and controversial innovation was a strong focus upon the importance of the Biblical Flood as part of a wider chronology of how the Earth came to be in its present state. He suggested that the earth, when first created, was surrounded with water on which oil floated, and above which was a globe of dust-filled air; the descent of this dust created a level, smooth, global paradise. The shape of the Earth itself, Burnet argued, had also been different: smooth, uniform, and somewhat egg-like (oval but with flattened sides). At the same time a different alignment of the Earth's axis generated perpetual spring, and rivers flowed from the poles towards the equatorial regions; in short it was paradise. Burnet situated the contemporary earth as a "broken," ruined, "unshapen" version of its former self, made so by the Flood which resulted when the fracturing of this surface freed the waters from the abyss beneath, creating the modern, corrupted and varied, world with its mountains and seas.⁴⁵ Post-flood, the corrupted Earth was largely unchanging, before the projected and future arrival of the great conflagration which would produce a new "face of nature."⁴⁶

Burnet's central claim was that observations of the natural world could be "writ with a sincere intention to justify the Doctrines of the *Universal Deluge*, and of *Paradise*."⁴⁷ A thorough understanding of nature, for Burnet, was as important as a textual understanding of the Bible; the two pillars of understanding the landscape acted symbiotically. In telling the story of the creation as he did, Burnet read Genesis as a simplified account, preferring that given in 2 Peter which gives far more room for a chronological and historical interpretation. His reasoning, made explicit in correspondence with Isaac Newton, was that Genesis was adapted and simplified by Moses for the benefit of primitive Israelites.⁴⁸ Even Burnet, who represents the height of physico-theology, was himself involved in a dual discussion, interpreting both nature and the Bible symbiotically.

John Aubrey, in his manuscript natural history of Wiltshire, refers directly to Burnet's *Telluris theoria sacra* in "An Hypothesis of the Terraqueous Globe. A digression."⁴⁹ In one particular area he criticises Burnet – that of the Earth's changeability in the period since the Flood. Aubrey points to on-going changes in the Earth, including several cuttings from the *London Gazette* regarding Italian earthquakes in 1688 and 1690 within the manuscript. Earthquakes not only point to the fact that the Earth is still changing, they also provide a clue which can to Aubrey's mind unify much of Burnet's eschatology:

As the world was torne by earthquakes [...] as also the vaulture by the time foundered and fell in, so the water subsided and the dry land appeared [...]. Then, why might not that change alter the centre of gravity of the earth? Before this the pole of the ecliptique perhaps was the pole of the world.⁵⁰

While he disagrees with the idea of a static post-Flood earth as put forward by Burnet, Aubrey agrees with most of the substantive propositions: there was a universal flood; the Bible should not be interpreted literally regarding natural philosophy; and we can see evidence of the process of God's creation through the study of nature. Again, like Burnet, Aubrey takes a non-literal reading of Genesis. In justifying this, he quotes Timothy 3.15: "from a child thou hast known the Holy Scriptures, which are able to *make thee wise unto salvation*," on which Aubrey observes "the Apostle doth not say, to *teach natural philosophy*: and see Pere Symond, where he says that the scriptures in some places may be erroneous *as to philosophy*."⁵¹ However Aubrey, following Burnet, saw the Universal Deluge itself as central to our understanding of the Earth's chronology. The argument surrounding the relationship between this chronology and the fossils which had been found in the landscape was best expressed by Robert Plot:

Whether the stones we find in the forms of Shell-fish, be *Lapides sui generis*, naturally produced by some extraordinary plastic virtue latent in the Earth or Quarries where they are found? Or whether they rather owe their form and figuration to the shells of the Fishes they represent, brought the places where they are now found by a Deluge, Earth-quake, or some other such means, and there being filled with mud, clay, and petrifying juices, have in tract of time been turned into stones, as we now find them, still retaining the same shape in the whole, with the same lineations, sutures, eminencies, cavities, orifices, points that they had whil'st they were shells?⁵²

Plot thought that they were "*Lapides*," or naturally and recently created objects.⁵³ He elaborates on this in his second published regional natural history, giving a total of seven reasons that formed stones cannot be understood as the remains of previously living organisms.⁵⁴ This is why Hamshaw Thomas, among others, refer to him as "one of the last champions of the old views in England" as regards the interpretation of fossils.⁵⁵ John Aubrey, on the other hand, took the position that fossils were the remains of living organisms, though he did not expand on the details of their creation or composition, instead alluding to his agreement with John Ray (1627–1705), who had thought through and published on the theory of the Earth more explicitly.⁵⁶

In his public writings Ray held that the species of the earth were fixed, a necessary corollary of which is that fossilised remains, if organic, would be of species which could be found by contemporaries. However there was an interesting contradiction between his public statements that the number of species was fixed, and

his correspondence with Edward Lhwyd (1660–1709) which suggested that the examination of unidentifiable fossils was likely “to overthrow the opinion generally received [...] that since the first Creation there have been no species of Animals or Vegetables lost, no new ones produced.”⁵⁷ Ray did not give a clear opinion on the age or creation of fossils themselves; though in his correspondence with Lhwyd he did situate his discussion in relation to John Woodward (1665–1728), whose opinions he thought to be “a plausible conjecture.”⁵⁸ In his *Essay* (1695), Woodward aimed to prove “the Superintendence and Agency of Providence in the Natural World: as also to evince the Fidelity and Exactness of the Mosaick Narrative of the Creation, and of the Deluge.” During the Flood, he argues, everything dissolved into a mass of liquid, rock, and organic matter which settled into sedimentary remains: hence sedimentary rocks in which were embedded the species existent at the time of the Flood.

Charles Leigh, in of his *Natural History of Lancashire, Cheshire and the Peak* (1700), made his opinion regarding Woodward’s theories particularly clear:

An Universal Deluge is fully demonstrated from several Topics; but that there was a total Dissolution of the whole Strata of the Earth at that time, is proved impossible, both from Scripture and Observations in Nature: Whence tis evident, Dr. Woodward’s Hypothesis is Erroneous⁵⁹ Several hundred Fathom above the surface of the Sea [...] all sorts of marine Shells [...] which doubtless, considering the immense height of the Mountain, could not be deposited there by any means but a Deluge, and that an universal one.⁶⁰

Leigh was clear that he considered fossils to be organic in origin, and thought that the deluge was complete; justifying his views primary through reference to biblical sources.⁶¹ There were only two exceptions, in Leigh’s mind, to the idea that fossils were organic remains deposited by the deluge: some plants (made by chemical processes) and certain formed stones (formed by “ovism,” the development of animal eggs).⁶² The discussions regarding fossils, for all of the authors mentioned above, were both biblical and natural historical in nature, the two forms of argument were symbiotic and nature on its own was insufficient for any meaningful discussion.

John Morton, of the regional natural historians, was the most interested in the debate surrounding the meaning of fossilised remains that he found – probably in part due to his extensive correspondence with Lhwyd from 1694 to 1709, along with occasional trips together looking for them.⁶³ One result of this was that nine of the fourteen plates in *The Natural History of Northamptonshire* are of fossils which Morton like Leigh and Aubrey, argued had organic origins. In Morton’s opinion, Northamptonshire excelled all other counties in the number of fossils to be found. The “turbinated” nature of the fossils, according to Morton, made it clear that they were seashells –that the biblical flood had carried animals inland, which had by petrification become fossilised.⁶⁴ This provides an example of the common process in regional natural history by which evidence of objects, combined with some

reasonable, and simple, deduction, was used in conjunction with biblical exegesis to explain a strange occurrence.

Thomas Robinson, rector of Ousby, appended “A vindication of the philosophical and theological paraphrase of the mosaick system of the creation” to his *Natural History of Westmoreland and Cumberland* making the links I have been pointing to between regional natural history and biblical exegesis manifest.⁶⁵ The dedication states that his reflections and observations are:

[...] grounded upon a general, yet very probable, if not Evident Hypothesis: (viz.) That when the Almighty by the first Diversion of the Waters made the dry Land to appear, all the Lax and floating Particles of Matter, in that vast and confused Mass, which were of the same Nature and affinity, by an agreeable juxtaposition of Parts, and a secret Magnatism, drew together and did fix and settle into particular Classes, every Class producing some Mine, Metallic Ore, or Mineral, which is the more Pneumatic Part and Perfection of that Class.⁶⁶

Robinson argues against the “late Theorists,” clearly referring to Burnet among others, and their argument that the Earth, at the Creation, was “mathematically round, without Mountains, Hills, or Vallies, as if these exuberances of its Surface, like Warts and Wens, were the Deformities of it.” He sees this criticism of the contemporary Earth as critique of God himself, and puts a clear focus upon the purpose of everything in God’s World:

the God of Nature hath made nothing in vain, but for Good only, being all ordered by Counsel, Wisdom and Providence. / To which we shall subjoin, that Providence hath made them all in some measure useful to man.⁶⁷

Mountains, then, rather than deformities on a once pure Earth, were instead provided for visual entertainment, to give the appropriate topology for rain and wind, and providing the environment for a “Set of Vegetables peculiar to their cold and elevated Soil, and most proper and agreeable with the hot Natures of Sheep and other Creatures bread upon them.”⁶⁸ But when it comes to the Creation his paraphrase of Genesis, while unusually explicit, gives a view remarkably similar to most of those he argues against elsewhere. For instance regarding Genesis 1:2, he mirrors Burnet’s discussion, talking of the Earth as created from “a confused Mass of Matter, consisting of Solids, Fluids, and Volatiles, all jumbled together.” In it he refers to Bishop Patrick’s recent “Excellent Comment upon the First Chapter of Genesis,” which argued that as the “spirit of God moved upon the Face of the Waters” (Genesis 1:2) life was created in the water first. This leads us in to a discussion of fossils, as Robinson draws the conclusion that the marine animals and shells

which we meet with generated in Sand and Gravel, being not Locomotive, and the first Products of the Waters, might be left behind upon the first Division of the Waters, and the draining of this Earth; and so with the other solid Strata and Sediments, be petrified into a stony Substance.⁶⁹

Robinson based this discussion partly on his biblical criticism, and partly upon having “seen the Impression of Fern, Heath, and other Vegetables in an excellent Collection of such Rarities of Nature, made by our present Lord Bishop of Carlisle.” Collections of exceptional rarities such as this, along with imprints Robinson had seen on the walls of collieries, were so beautiful “that nothing but the Author of Nature itself could produce such excellent Workmanship.”⁷⁰ For Robinson these demonstrate the “plastic spirit in nature,” the mechanism by which Nature operated without direct interference from God.

Fossils provide an ideal example to discern the theological content of regional natural histories, with the exception of Robert Plot’s, given his belief that they were naturally occurring and of recent origin rather than ancient remains of formerly living animals. For the rest, and their like-minded contemporaries, the belief that they could find remains of animals alive before the Flood, or even before the initial division of the oceans, is a particularly clear case in which reading the Bible and exploring the natural world held a symbiotic and reciprocal relationship. It was inconceivable for the regional natural historians to attempt to understand and interpret ancient remains without reference to the Bible; and equally inconceivable to attempt to choose between alternate readings of the Bible without reference to nature.

The temporal landscape and God’s designs for man

Throughout the debates above the idea that God had designed the world was not in question, it was taken as a self-evident truth and given a specific chronology by the Mosaick chronology of the Earth. While there were debates as to whether the Earth had continued to change after the Flood or not, all those mentioned above, and their regular correspondents, agreed that the landscape itself formed part of a “Providential scheme of history leading from Genesis to Apocalypse.”⁷¹ The debate between ancients and moderns has been well-studied, with the birth of a more positive sense of time often being located in the latter seventeenth-century.⁷² We see this reflected in regional natural histories especially in comments regarding society, for instance John Aubrey’s remark regarding the improvement in farming practices: “Till the beginning of the civil wars wheat was rarely shown hereabout; and the brown bread was barley: now all the servants and poor people eat wheaten bread.”⁷³

The conception of progress through time was also a lens through which the landscape was understood. Thomas Robinson is the regional natural historian who deals most explicitly with the meaning of the temporal landscape, referring for instance to the hypothesis that: “God Almighty made all the Veins of Metal in the same Condition as we now find them... [as] an affront to Nature, in denying her a productive Virtue in this, which is allowed her in all sublunary Things.” As well as

discussing Nature's productive virtue as a religious problem, he cites specific examples of the changing Earth, for instance an iron mine in Tuscany that regenerates every fifteen to twenty years.⁷⁴ Robinson's suggestion that the Earth changes according to her own "productive virtue" implies that a historical understanding of nature is both possible and necessary for a full understanding of either the natural world or the Bible. As somebody with an intimate knowledge of mines, in this area he feels confident enough to theorise more widely:

the Author of Nature seems to have created them [metals and ores] in that Obscurity and Depth, and to have immured them in hard Rocks, on purpose to hide their Causes, and to give a Check to the Ambition of Man.⁷⁵

All Mines of Coal, Lead, Iron, Copper, &c. have their natural Position in the Earth, either upon Flats, or in Veins... thus Providence hath been pleased to order it... [so that] the Miners might be encouraged to make their Trials with great Advantage⁷⁶

These two quotes demonstrate the picture Robinson paints through his work as a whole: resources are distributed for the benefit of man; but also to test us. Rather than providing the resources for easy exploitation, God has left us clues to their location. The complexity of interpreting these clues can both check and inspire our ambition, which associates an enquiring mind with God's world. This is a picture of a God who, through the way he has created nature, "hath ordered all Things for the Benefit of Man, and to encourage his Industry."⁷⁷ The natural landscape demonstrated, for Robinson and his contemporaries, the virtues and moral properties of God and, in analogous fashion, the expected behaviour of man.

Godly grace was naturalised in the provision of resources for man in proportion to his needs and in a manner encouraging his moral behaviour. In a section of Morton's *Natural History of Northamptonshire* devoted to springs and other watercourses, he describes "Pisford Field, a Field of about 1200 Acres, [in which] there are at least 300 Springs."⁷⁸ The focus of the description is upon how providential the location of these springs is, how it supports contemporary society. The soil in this particular field is of a type which does not hold water, and is raised in comparison with surrounding land, which would, Morton surmises, mean that in a dry summer there would be no water for the cattle which are grazed there, were it not for the springs. "In that little Tract, we have one of the many instances of the Care and Wisdom of the Great Creator, in supplying the several Parts of the Earth with such a share of Water, as was suitable and requisite."⁷⁹ God was directly responsible for the fertility of the locale that Morton was examining; and especially for its water, the Rivers "distributed, as if they ran in Channels contrived, and cut by Art, and Labour, to convey a competent Share of Water unto Every Part."⁸⁰

For Leigh, it is the mines which take precedence, there being "no Counties in England affording so great a Variety of Mines, Minerals and Metals, with other choice Products, and the most surprising Phenomena of Nature," when compared with

Lancashire, Cheshire and the Peak.⁸¹ Morton, Leigh and Robinson are each drawing on the physical landscape of the counties on which they focused. Each find God's plans in the landscape around them: Northamptonshire is full of rivers, springs, brooks, creeks, and other beautiful and varied waterways; while the more mountainous tracts from Westmorland to the Peak have a far greater predominance of mineable resources. God's grace provides the explanatory force in all three cases, but it is the physical landscape of the places being explored which is the object of explanation and within which God's plans are naturalised.

None of the regional natural histories explicitly projected this naturalisation, or the correlating idealised morality, back onto society. Their comments were limited to descriptions of the manner in which nature had been organised by the Creator to provide for men, not discussing how men should adapt the organisation of society to more efficiently utilise the provisions given by God. However, while the *Tour* (1724–1726) barely mentions God, Daniel Defoe's work is more explicitly exploitative: we, the British, are to re-organise society, using nature's bounty, to suit our own desires, or rather, those of London which is the beating heart of the nation. Areas that are self-sufficient, or cut-off from London in any way, are portrayed in entirely negative terms: Cornwall, for instance, is "said to be inhabited by a fierce and ravenous people."⁸² Geoffrey Sill has referred to this portrayal as projecting "a moral imperative pointing the way towards England's industrialisation."⁸³ So what for the regional natural historians was perceived as God's grace in providing for people had become for Defoe, just ten years after Morton and Robinson's work, an exploitable resource, and one which men had a moral duty to exploit.

However, the fact that the regional natural histories did not include this information does not imply that the mode of thinking displayed by Defoe, linking the organisation of the natural world to morality, did not exist to them. John Aubrey in particular clearly embraced the idea that there was a relationship between the landscape and the qualities and personalities of the people within it:

At Huntley in Gloucestershire, the nature of the people breaks with the soil; which there the sand leaves and the wet woods ere soil comes, and so the north part of Wiltshire. In the sandy part the natives are of muddy complexion, hard or black-eyed, quick; and the other slow, pale, long-visaged, drawling voice, spiteful, and as a result inhospitable, always cold in their feet, anxious, malicious, bigots and witches. According to the saying, you may as soon break your neck as your thirst among 'em; on the other hand, in Herefordshire they will ask strangers as they ride along by their horses, invite them to drink.⁸⁴

As well as determining the morality of its inhabitants, the landscape for the regional natural historians also had a considerable, one might say determining, affect upon health. For example, we are told that despite the bad airs associated with the Bogs on the Moorland, the area was "as healthy perhaps as the best part of the County," evidenced by twelve tenants of two parishes whose "Ages put together made

up a thousand years.”⁸⁵ However when it came to making the distinction between healthy and healthiest a more general measure was required than the anecdotal evidence given by Mr Biddulph, and this requirement was answered when Plot found that there were three Christenings to one Burial in “Swynerton [...] and all the Hill Country betwixt that and Trentham.”⁸⁶ The demographic research Plot conducts while wandering through Staffordshire led him to several conclusions as to the properties which would lead to the healthiest situation:

the most healthy paces are both on the tops and descents of hills facing the north, the winds from thence blowing cool and dry, whereas those from the South are hot and moist [...] whatever the ancients have written in commendation of the lofty, dry, and open situations (which perhaps may be best in hotter Climes) ours in England ought neither to be without trees for shade [...]. Nor ought the English situation to be altogether dry, but water'd if possible with a quick and clear stream.⁸⁷

Health is, for Plot, a latent property of the landscape, an understanding which fits firmly within the humoral medical tradition, as does his reference to qualities of heat and moisture (and their respective inverses). This traditional methodology, though, comes alongside the questioning of received medical wisdom from southern Europe regarding the ideal landscape with Plot's own observations being given epistemological priority. This is one of the rare cases where Plot used the narrative descriptions to make generalisations beyond Staffordshire – though even here it is notable that he is only generalising to “the English situation.” A similar idea of what makes a healthy landscape is given by Robinson, who refers to the northern counties as “elevated above the rest of the Island; which exposeth the Inhabitants to a colder, yet a more healthful Air than the level Counties.”⁸⁸

Even when it came to the health of the landscape, regional natural histories were more concerned with describing particular examples than commenting upon or drawing out their theoretical implications. One result of this was Aubrey's support for John Ray's survey of plants in Cambridgeshire, and suggestion that the same should be performed elsewhere: “God Almighty hath furnished us with plants to cure us, that grow perhaps within five or ten miles of our abodes, and we know it not.”⁸⁹ One example of a place with specific medical properties which was reported in Aubrey's *Natural History and Antiquities of the County of Surrey*, and indeed still known about today, is Epsom Spring. Epsom is not only a medical marvel which was worthy of just over twenty pages of discussion, it was of such importance to locals that when it was stopped up by Mrs Evelyn, the Lady of the Manor, it was only a year before “Providence repaired that loss with the discovery of a new well.” The course of history conspired to ensure that the water from Epsom Spring would be accessible by men, whatever the actions of individuals.⁹⁰ And, given the non-medical properties discussed by John Toland in his *Description of Epsom* (1711), and transcribed into *The Natural History and Antiquities of the County of Surrey* by its editor, one can see why this would be important:

A Tory does not stare and leer when a Whig comes in; nor a Whig look four and whisper at the sight of a Tory. These distinctions are laid by with the Winter Suit at London, and a greyer, easier Habit worn in the Country.⁹¹

Concluding Remarks

As we have seen, the reduction in the role of special providence discussed at the outset of the article did not imply a withdrawal of God from the world or the landscape as envisaged by regional natural historians. The main aim of regional natural history, on the contrary, was religious; as John Morton wrote on a copy of his *Natural History of Northamptonshire*: “I will give Thanks unto Thee, O Lord, with my Whole Heart: I will speak of all Thy marvellous Works [of Nature].”⁹² In this focus they were far from alone, for instance we can look to Robert Boyle’s reflection on a naturalist as being “not only delighted with these outward objects, that gratify his sense, but receives a much higher satisfaction, in admiring the knowledge of the author.”⁹³ Admiring God’s world, for these men and many others around the turn of the eighteenth century, also implied an attempt to understand it through physico-theology. This, as my discussion of the debates surrounding the origin of fossils has shown, was a dual discussion: Nature could not be correctly interpreted without reference to the Bible; and the Bible could not be correctly interpreted without reference to Nature. It is interesting, though nothing more than that, to note that it was Biblical interpretations which convinced Morton and others that fossils were the remains of organic creatures.

Through all of the regional natural histories the landscape was explored as God’s world. Regarding health, it was the God-given landscape which was healthy or not, the people within it and their longevity merely indicators as to the landscape’s properties. Likewise, the water which we needed and utilised was, whether stream or spring, provided by God. As such, the moral imperative embedded in regional natural history was to come to know God’s world which, in itself, would enable gentlemen to build their houses in the proper, “best,” situation for their own health. The lack of conjectures regarding what natural or medical processes made particular situations healthy, or what the nature of the link between a landscape and the personality of its inhabitants were, is instructive. In fact, throughout the regional natural histories we see more attempts to deduce God’s providential ordering of the world by perceiving his Grace in the landscape than we do attempts to deduce natural laws. So while historians of science may be right to suggest that the “things” found in natural histories were used as empirical facts by contemporary natural philosophers and exploited by those of a more utilitarian bent,⁹⁴ regional natural history also had an important role to play in contemporary physico-theological discussions, and was a valued cultural pursuit in itself due to its religious connotations.

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- ⁹¹ Aubrey, J., *The Natural History and Antiquities of the County of Surrey*, 206-207
- ⁹² Morton, J., "The Natural History of Northamptonshire; with some account of the antiquities. To which is annex'd a transcript of Doomsday-Book, so far as it relates to that county [...] with copious MS. notes by the author", in *MS Sloane A 766* (British Library, 1712), ii.
- ⁹³ Boyle, R. *The works of the honourable Robert Boyle*, ed. T. Birch (London: Printed for A. Millar, 1744), 5 vols., vol. I, 424 – "of the usefulness of natural philosophy."
- ⁹⁴ Poovey, M., *A History Of The Modern Fact: Problems of Knowledge in the Sciences of Wealth and Society* (Chicago: University of Chicago Press, 1998), 9-13; Yeo, R.R., *Encyclopaedic Visions: Scientific Dictionaries and Enlightenment Culture* (Cambridge: Cambridge University Press, 2001), 64; Cook, H.J., "The Cutting Edge of a Revolution? Medicine and Natural History near the Shores of the North Sea", in *Renaissance and Revolution: Humanists, Scholars, Craftsmen, and Natural Philosophers in Early Modern Europe*, eds. J.V. Field, A.J. Frank and L. James (Cambridge: Cambridge University Press, 1993), 45-61; Shapin, S. (1996), 32.