THE BIBLE, PROTESTANTISM, AND THE RISE OF NATURAL SCIENCE

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CAMBRIDGE
UNIVERSITY PRESS

had persistently ignored the lessons taught by nature, and could therefore be justly condemned.

In the twelfth century, then, 'nature' becomes a new locus for the play of 'horizontal' resemblances, and the sphere of knowledge so constituted is a necessary precursor to the emergence of natural science. By the thirteenth century, Bonaventure was to able to identify two major categories of resemblance: those *similitudines* which obtain among created things, and those which obtain between created things and God.[30] Aquinas, likewise, pointed out that while God is the original exemplar of all things, (and thus all the creatures have some transcendental referent), 'yet among created things some may be called exemplars of others which are made to their likeness [*similitudinem*]'.[31] It is this last category which is new, and which delineates the sphere of nature, establishing the systematising principles upon which knowledge of the natural world is based.

READING NATURE: THE WHOLE AND THE PARTS

All the familiar medieval images of nature – chain, mirror, machine, musical instrument – bespeak something of the new-found intelligibility of the visible world considered as a whole. At the same time, however, discrete natural objects retain those meanings which had been attributed to them by the Fathers. 'Horizontal' similitudes, in other words, did not displace, but rather supplemented 'vertical' similitudes. It was this combination of the meaning and intelligibility of the cosmos which led to the recognition that nature could be regarded as a book. Hugh of St Victor thus declared that the whole of material creation consisted of letters written 'by the finger of God', the meaning of which was hidden from the unregenerate, but perspicuous to the spiritually literate.[32] Vincent of Beauvais was to speak similarly of 'the book of creatures given to us for reading'.[33] William of Conches regarded the elements from which natural objects are formed as like letters, the indivisible parts of syllables.[34] To Alan of Lille, every creature was a book.

[30] The distinction is explicitly stated by Bonaventure, *Quaestiones disputatae de scientia Christi*, q.2, *Opera Omnia*, v. 9

[31] Aquinas, *ST* 1a, 44, 3 (VIII, 17). As Aquinas put it elsewhere, things 'have a relation to one another, and to him [God]'. *ST* 1a. 47, 3 (VIII, 103).

[32] Hugh of St Victor, *De tribus diebus* 4, (*PL* 176, 814B). Also see Wanda Cizewski, 'Reading the World as Scripture: Hugh of St Victor's *De tribus diebus*', *Florilegium* 9 (1987) 65–88.

[33] Vincent of Beauvais, *Libellus totius operis apologeticus*, version 1, ch. 5; Crouse, '*Intentio Moysi*'.

[34] William of Conches, *Philosophia mundi* 1.1–3, qu. in Stock, *The Implications of Literacy* (Princeton University Press, 1983), p. 319.

The image of the 'book of nature' went considerably further than alternative metaphors which expressed the unity of the cosmos, for it implied firstly, that nature was to be read, expounded, investigated; that those meticulous labours which had hitherto been expended on the methodical investigation of that other book could now be directed towards the natural world. Indeed, those who expounded the book of nature were to bring to their new subject the habits of mind and techniques which they had employed in the investigation of scripture. Equally importantly, this metaphor implied that the world, like scripture, was a locus of divine revelation, and potentially both a source of knowledge of God and a means by which mankind might be reconciled to him. Nature was a new authority, an alternative text, a doorway to the divine which could stand alongside the sacred page. Honorius Augustodunensis could now write that there were two ways of knowing God: the contemplation of the created order, and knowledge of the sacred text. Together these provided a means of ascending to the very source of divine wisdom.[35] Study of the world took on a religious significance, and the exegesis of the book of nature became a vital concern.

To a large degree, the ways in which the book of nature was to be read were shaped by methods of scriptural interpretation. Indeed it is hardly surprising that the approach to this new book would take as its point of departure the only other systematic hermeneutical enterprise in existence at the time – the exposition of the sacred page. The search for patterns and connexions had up until now been solely the business of the biblical exegete. Now the world, too, had become a place where patterns could be discovered, and that impulse which had previously concerned itself with the harmonisation of various biblical texts, with the establishment of connexions between scriptural narratives, with seeking similitudes in scripture, was directed outwards to a new text – the book of nature. In order to see how the exegetical habits of mind might be transferred to their new subject, it is necessary to remind ourselves of the traditional methods of exposition of scripture. Moral and allegorical readings of scripture, while they may seem to the modern mind somewhat arbitrary and haphazard, were something of a

[35] Honorius follows Eriugena in linking these two forms of knowledge to the two-fold vestiture of the transfigured Christ. Honorius Augustodunensis, *De animae exsilio et patria*, XII (*PL* 172.1246A); Eriugena, *De divisione naturae* III, 35 (*PL* 122, 723D); Bonaventure, *Breviloquium* II. c.12; Crouse, '*Intentio Moysi*', 155f. Also see Crouse, 'Honorius Augustodunensis: The Arts as *Via ad Patrium*', *Arts Libéraux et Philosophie au Moyen Age* (Paris: Vrin, 1969), pp. 531–9.

science, requiring of the exegete remarkable skill and ability. The task of the commentator was to set forth the truth of a particular passage by discerning links between it and other parts of scripture. Such links were constructed on the basis of resemblances between certain words or phrases, or even resemblances between the narrative 'shape' of passages. The one presupposition of this method was that scripture was a seamless text which formed a coherent whole and which bore witness to a single set of truths. The exposition of a passage would require of the exegete a knowledge of the whole of scripture and of the truths it contained, for only in the context of the whole could the meaning of the separate parts be known. Consider, for example, one small section of Augustine's exposition of Genesis 1.14 'Let there be lights in the firmament':

> But you, the elect race (I Pet. 2:9), 'the weak of the world' (I Cor. 1:27), who have abandoned everything to follow the Lord (Matt. 19:27), go after him and 'confound the mighty' (I Cor. 1:27). Go after him, 'beautiful feet' (Isa. 52:7). Shine in the firmament so that the heavens may declare his glory (Ps. 18:2f.) . . . It is as if God says 'Let there be lights in the firmament of heaven' and 'suddenly there came a sound from heaven, as if a vehement wind blew, and tongues were seen split, like fire which sat on each of them' (Acts 2:2–3). And the lights, made in the firmament of heaven, have the word of life (Phil. 2:15–16). Run everywhere, holy fires, fires of beauty. Do not be under a bushel (Matt. 5:14–15). He to whom you have adhered is exalted, and he has exalted you. Run and make it known to all nations (Ps. 78:10).[36]

The meaning of this pastiche of scriptural references may escape the modern reader, and the fact that the passage has been removed from its original context is not helpful. Yet we should at least get a sense of how the meanings of various terms and phrases from different parts of scripture were associated. 'Lights', 'fires', 'firmament', 'heavens', every scriptural occurrence of these words is, for Augustine, like a recapitulation of some deeper meaning, which transcends its incidental appearance in the narrative. One word or phrase calls to mind another, and in the superficial resemblances which exist between the various parts of scripture a meaning emerges. For those schooled in this tradition of exegesis, the meaning of a particular passage lay in its interconnectedness with many other apparently disparate passages of scripture. The whole exegetical enterprise assumed that the sacred page constituted a coherent unity. Exegesis, in short, entailed relating parts to a whole, for

[36] Augustine, *Confessions* XIII.xix (pp. 287f.)

every passage of scripture was potentially a microcosm in which the meaning of the whole could be enfolded.

By the twelfth century, some of the intellectuals at the new schools had become impatient with this traditional way of reading texts. For one thing, the possibility of providing some kind of original exegesis of this kind was becoming increasingly difficult. Virtually every text was now burdened with layers of meaning, and there remained little scope for imaginative higher interpretation. The task of a traditional scholar had become one of preservation and transmission, rather than original exegesis. As we have witnessed in our own age, when the possibilities inherent in a traditional canon seem exhausted, both a new canon and new hermeneutical approaches are sought. Thierry of Chartres, before turning his attention to the book of nature, made the explicit complaint that the possibility for moral and allegorical readings of scripture had been exhausted by 'the holy expositors'.[37] His solution was twofold: to suggest a new way of reading scripture, and equally importantly, to find a new subject upon which to exercise his exegetical energies. So it was that interpretive skills which in previous generations would have been directed towards uncovering further connexions in the pages of sacred scripture, were turned outwards to a new text – the book of nature. The allegorical imagination was directed to the natural world, seeking patterns and similitudes in this new sphere. Through this reorientation nature was constructed as a coherent and meaningful text in its own right. Crucially, just as a determination of the meaning of separate elements of scripture required the conviction that the sacred page represented a single, coherent unity, so the interpretation of the material things was now made possible by the discovery of 'nature'.

The meaning of nature, then, like the meaning of scripture, was a matter of relating the parts to the whole. As a single passage of scripture might be made to bear the meaning of the whole, so discrete material objects were seen to be reflections of the whole. A speck of dust, observed Robert Grosseteste, 'is an image of the whole universe' and 'a mirror of the creator'.[38] The model which medieval thinkers were to rely

[37] 'Postea vero ad sensum litterae historealem exponendum veniam, ut et allegoricam et moralem lectionem, quas sancti expositores aperte executi sunt, ex toto praetermittam.' *Magistri Theoderici Carnotensis Tractatus* 1 (reproduced in N. Häring, 'The Creation and Creator of the World According to Thierry of Chartres and Clarenbaldus of Arras', *Archives d'Histoire Doctrinale et Littéraire du Moyen Age* 22 (1955) 184–200 (184).

[38] Qu. in S. Gieben, 'Traces of God in nature according to Robert Grosseteste, with the text of the *Dictum, Omnis creatura speculum est*', *Franciscan Studies*, 24 (1964) 144–58. Cf. R. W. Southern, *Robert Grosseteste: the Growth of an English Mind in Medieval Europe* (Oxford: Clarendon, 1986), pp. 216f.

upon to establish such connexions in nature was thus the ancient idea of microcosm-macrocosm, a conception employed in biblical exegesis, but one which, as Plato had intimated in the *Timaeus*, could also be applied to the world.[39] From very early in the Christian era, Plato's suggestion that the human frame mirrors the shape of the universe had been adapted to the business of biblical interpretation. In Philo's exegetical writings this link between the human being (the microcosm) and creation (the macrocosm) became a rich source of allegorical interpretations, with scriptural references to natural objects now being read as references to persons, or parts of persons.[40] The Fathers had followed his lead, utilising microcosm in the interpretation of scripture in a number a ways. Thereafter, microcosm-macrocosm was more or less restricted in its application to the enterprise of biblical hermeneutics.[41] Origen applied it in numerous allegorical interpretations and also used it to give an account of the notion of man as the image of God.[42] St Gregory, who in the Middle Ages was the chief patristic source for the idea of microcosm, relied upon it to explain a puzzling reference in Mark's gospel in which the disciples are enjoined to 'preach the gospel to every creature' (Mark 16.15). Casting about for reasons to avoid mounting what must have seemed a rather fruitless evangelistic enterprise, Gregory declared that it is actually man who is 'every creature' because he comprehends all creatures in himself.[43] St Ambrose noted that 'the body of man is constructed like the world itself', and that he is 'a summation of the universe'.[44] Our eyes are like the sun and moon, our hair like the trees, our eye-brows two-fold hedges or mountains, our nose a cavern.[45] For the most part, however, Ambrose was interested in how features of the world can represent human passions or affections, for it is these connexions which are required for tropological interpretation. If the world was to be a moral training ground for the human race, then stones, plants, animals and their behaviours, each would need to represent some aspect of human nature, some virtue to be emulated, some vice to be avoided.[46]

[39] Plato, *Timaeus*, 44d, 28d-30d (pp. 1173, 1163); cf. *Phaedrus*, 270c (p. 516). Aristotle, too, had made some perfunctory remarks to the effect that human anatomy is conformed to the architecture of the universe. *History of Animals* 494a; cf. *De resp.* 477a; *De caelo*, 284, *Physics*, 252b.

[40] 'Man is every kind of animal'; 'he resembled . . . both the world and God; and he represented in his soul the characteristics of the nature of each'. Philo, *De opificio mundi* LI.146, LIII. 151 (p. 21); Cf. *Legum allegoriae II*, vii.22f. (p. 40).

[41] Perhaps the single exception to this rule was Nemesius, *On the Nature of Man* I.2, 4, 10.

[42] *Homilies in Genesis* I.xi, xii (*FC* 71, 61f.). Cf. Philo, *On the Life of Moses II*, XII.65 (p. 496).

[43] Gregory, *Homiliae in Evangelium* 29 (*PL* 76, 1212); Cf. Nemesius, *The Nature of Man*, I.i-ii.

[44] Ambrose, *Hexameron*, VI.ix.54, 75 (pp. 268, 282).

[45] *Ibid.*, VI.ix.54–63 (pp. 268–74).

[46] *Ibid.*, VI.iii–iv (pp. 232–46).

The basis of tropological readings of the world was, in the words of Ambrose, that 'we cannot fully know ourselves without first knowing the nature of all living creatures'.[47]

Augustine had followed this trend, regarding the beasts as, amongst other things, allegorical representations of human passions. The true meaning of our original dominion over the animals is that through reason, the passions were once, and should again, be held under the sway of reason: 'then the wild animals are quiet and the beasts are tamed and the serpents are rendered harmless: in allegory they signify the affections of the soul . . . So in the "living soul" there will be beasts that have become good by the gentleness of their behaviour . . . For these animals serve reason when they are restrained from their deathly ways.'[48] Jerome, similarly, was to interpret scriptural references to certain beasts as Plato's 'irascible and concupiscible passions'. He was less trusting of reason, however, urging that the passions and reason alike be placed under the control of conscience (συνείδησις).[49] Gregory of Nyssa agreed that the dominion referred to in Genesis was the original freedom enjoyed by the human soul, before it succumbed to its lower nature – 'it owns no master, and is self-governed, ruled autocratically by its own will'.[50] Even John Chrysostom, generally not given to spiritual interpretations, spoke of 'bringing the beast under control' by 'banishing the flood of unworthy passions'.[51] This principle thus allowed entities in the material world to play their proper roles in the edification of the human soul. Things in the physical world derived their significance from their relatedness to the interior world. Moreover, notions of dominion which might otherwise have provided some motivation for engaging with the material world, were deflected by these 'spiritual' or psychological interpretations.

Medieval exegetes were thus familiar with the use of microcosm-macrocosm in the interpretation of texts. From their encounter with Plato's *Timaeus*, they now learnt that the microcosm-macrocosm relation could be redeployed in the natural world. Turned outwards upon

[47] *Ibid.*, VI.ii.3 (p. 229), The same idea is repeated by the author of the *Asclepius*, who wrote that 'on account of mankind's divine composition, it seems right to call him a well-ordered world. . . Mankind knows himself through the world'. *Asclepius*, 10 (Copenhaver edn p. 72).

[48] Augustine, *Confessions* XIII.xxi (p. 291).

[49] Jerome, *Commentariorum in Hiezechielem* 1.1.6/8 (*CCSL* LXXV, 11f.), and *Homilies* 7 (*FC* 48, 54); Cf. *Homilies* 30 (*FC* 48, 227).

[50] Gregory of Nyssa, *De hominis opificio*, 4.1 qu. in Pagels, *Adam, Eve, and the Serpent*, p. 98.

[51] Chrysostom, *Homilies on Genesis* VIII.14 (*FC* 74, 113). For animals as symbolising human passions, also see Philo, *De plantatione* XI.43 (p. 194b), Maximus, *Quaestiones ad Thalassium* 27 (*Corpus Christianorum series graeca* 7, 261, 53).

the book of nature, this conception became an all-encompassing paradigm, able to relate apparently disparate elements of the natural world in much the same way that it had previously served scripture. Whereas microcosm-macrocosm had enabled exegetes to establish the meaning of other living things, with creatures in the external world being interpreted as features of the inner spiritual and moral world, now this same principle posited man as a material being, embedded in a material world, and intimately connected with the whole creation. Now connexions were established between the human body and the world, and the resemblances upon which they were based posited sympathetic rather than semantic links. Microcosmic conceptions had formerly made known the meaning of the world, now they would hold out the possibility of its mastery. From being an interpretive principle, microcosm-macrocosm came to be an ordering conception by which the world could be known, and in theory, manipulated. References to objects in the world, in turn, could be mapped onto some interior element of the human soul.

The relation of the human being to the macrocosm was set out in various ways by medieval writers. At a simple level the body might be said to be a microcosm in that it is formed from all the elements of the universe.[52] Elaborations of this elemental microcosm depict the whole person as sharing in the material existence of inanimate objects, the life of plants, the sensation of animals, the reason of angels.[53] More specific structural correspondences between various parts of the world and parts of the human body were also common.[54] Hildegard of Bingen drew parallels between the human head and the firmament above the earth; between the movements of the blood and the flow of rivers; between bone and marrow, and rock and tree; between body and soul, and earth and sun.[55] Later, Robert Grosseteste was to write similarly that the head was the heavens, the eyes the moon and sun, the breath the winds, the belly the sea.[56] By the Renaissance, there were quite detailed accounts of

[52] Allers refers to this as 'elementaristic microcosm', pp. 321ff.

[53] Eriugena, *De divisione naturae* II.4 (*PL* 122. 530D); Alanus de Insulis, *Distinct. dict. theol.* (*PL* 210, 755a); Aquinas, *ST* Ia. 91, 1 (XIII, 19)

[54] Honorius Augustodunensis, *Elucidarium* I.II (*PL* 172, 1116B-C). On microcosm in Eriugena, see *Jean Scot: Homélie sur le prologue de Jean*, ed. E. Jeauneau, (Paris, 1969), pp. 336–8; James McEvoy, 'Microcosm and Macrocosm in the Writings of Bonaventure', *S. Bonaventura II* (Roma: Padre di Editori di Quaracchi, 1974).

[55] Hildegard, *Liber divinorum operum*, I.IV.16, 97, 82, 81 (*PL* 197, 814D, 862D, 862C); *Subtilitates* II.3 (*PL* 197, 1212).

[56] Robert Grosseteste, 'Quod homo sit minor mundus', in L. Baur, 'Die Philosophie des Robert Grosseteste', *Beiträge zur Geschichte der Philosophie des Mittelalters* 9 (1912), 59. Cf. Isidore of Seville, *Differentiarum* II. 48f. (*PL* 83, 77f.).

the various correspondences which obtained between the human body and the constitution of the universe. Sixteenth-century surgeon, Ambroise Pare, is typical:

> Just as in the big world [i.e. the macrocosm] there are two great lights, to wit, the sun and the moon, so there are in the human body two eyes which illuminate it, which [microcosm] is composed of four elements, as in the big world in which winds, thunder, earthquakes, rain, dew, vapors, exhalations, hail, eclipses, floods, sterility, fertility, stones, mountains, fruits, and several divers species of animals occur; the same thing also happens in the small world which is the human body. An example of winds: they can be observed to be enclosed in windy apostemas and in the bowels of those who have windy colic; and similarly in some women whose belly one can hear rumbling in such a way that it seems there is a colony of frogs there; the which [winds] upon issuing from the seat make noises like cannons being fired. And although the artillery piece is aimed towards the ground, nevertheless the cannon smoke always hits the nose of the cannoneer and those who are near him.[57]

Pare goes on to give equally colourful examples of rains and floods, fruits, mountains, stones, sterility and fertility, all of which could be found in the microcosm.

The conviction that the superior realm governed the inferior persisted until well into the seventeenth century, and beyond. Cambridge educated physician Nicholas Culpeper declared in his popular *Herbal* (1653), that 'the admirable Harmony of the Creation is herein seen, in the influence of Stars upon herbs and the Body of Man . . . one part of the Creation is subservient to the other, and all for the use of Man, whereby the infinite power and Wisdom of God is displayed'.[58] All but the most sceptical of his contemporaries would have agreed. Indeed, the theory of celestial influences provided an important justification for the existence of heavenly bodies. In the words of Sir Walter Raleigh:

> If we cannot deny but that God hath given virtue to springs and fountains, to cold earth, to plants and stones, minerals and to the excremental parts of the basest living creatures, why should we rob the beautiful stars of their working powers? For, seeing they are many in number and of eminent beauty and magnitude, we may not think that in the treasury of his wisdom who is infinite there can be wanting, even for every star, a peculiar virtue and operation; as every herb, plant, fruit, flower, adorning the face of the earth hath the like.[59]

[57] Amboise Pare, *On Monsters and Marvels*, tr. Janis Pallister (University of Chicago Press, 1982) pp. 53f.

[58] Nicolas Culpeper, *Complete Herbal and English Physician Enlarged* (Ware: Wordsworth, 1995), Epistle to the Reader, p. vii.

[59] Qu. in Keith Thomas, *Religion and the Decline of Magic* (New York: Charles Scribner's Sons, 1971), p. 333.

Natural objects inhabiting the heavens, no less than their terrestrial counterparts, played an intimate role in human affairs.

While the significant feature of the Medieval preoccupation with microcosm and macrocosm was the establishment of physical correspondences between human body and material world, the moral qualities and psychological faculties which had been the main interest of the Fathers were not completely neglected. Jacob ibn Zaddick (d. 1149), for example, wrote that 'There is nothing in the world which has not its correspondence in man. . . He is courageous like the lion, timorous like the hare, patient like the lamb, clever like the fox.'[60] Hildegard, too, wrote of the humours that course through the human body, sometimes raging fiercely, like the leopard, sometimes sluggishly as in the crab, at other times in ways analogous to the wolf, deer, bear, serpent, lamb, or lion.[61] Yet even these correspondences were now set out with a new intention. Jacob ibn Zaddick actually inverted the priorities of the Fathers, by proposing that self-knowledge will lead to a knowledge of the external world. His concern is not with the moral lessons which animals can teach us by virtue of their representing various passions, virtues, or vices; he is concerned rather with how the insight that man is a microcosm can be of assistance in gaining knowledge of the macrocosm. Hildegard seems to be making a veiled reference to the signs of the zodiac, and to how the movements of the heavenly bodies exert their influence on the souls of man and beast alike, although the implications of these astrological speculations are not developed here.[62]

The various structural correspondences made possible knowledge of the material world, based on the idea, as old as the presocratic philosophers, that 'like knows like'. As Empedocles had expressed it:

> For 'tis by Earth we see Earth, by Water Water,
> By Ether Ether, by Fire destructive Fire,
> By Love Love, and Hate by cruel Hate.[63]

Elemental microcosm thus provided the theoretical basis of universal knowledge, which was available uniquely to the microcosm. This is the meaning of Aristotle's remark in *De anima* that the human soul is, 'in a sense, everything'.[64] Aquinas, having established that 'man is called a

[60] Allers, 'Microcosmos', p. 246. The control of the passions by reason was thereby depicted as reflecting human dominion over the animals, lost at the fall. Cf. Philo, *De Plantatione*, XI.43 (p. 194). [61] Hildegard, *Liber divinorum operum* (*PL* 197, 732f.); Cf. *HMES* II, 150.
[62] As they are elsewhere. See *Causae et curae* (*PL* 197, 778); Cf. *HMES* II, 150–3.
[63] Qu. in Aristotle, *De anima* 404b. [64] Aristotle, *De anima* 431b.

little world or microcosm, because all parts of the created world are found in him in one way or another', points out the epistemological implications: 'it was proper for the human body to be made out of the four elements, in order to give man an affinity with lower bodies, as a sort of middle link between spiritual and bodily substances . . .'. This balance of the elements 'is necessary in man's constitution to ensure that he has a good sense of touch, which is the basis of the other senses'.[65] Because man is in a sense all things, he can know all things. The same idea is expressed in Andrew Marvell's couplet: 'The mind is that ocean where each kind / Does straight its own resemblance find.'[66] The knowledge of all things, in turn, held out the promise of the mastery of nature, for things linked by similitude were also linked causally on the basis of that likeness by sympathy. The principle 'like moves like' thus enabled the extension of knowledge based on the macrocosm to physic, meteorology, astrology, sympathetic cures, as well as the darker arts of divination and black magic. Terrestrial events could be accounted for by changes in the celestial spheres, while physiological changes in the human being relate to changes in the material world. Hildegard linked the flux and reflux of the tides, the flow of bloody menses, cycles of plague and pestilence, to the revolutions of the celestial spheres.[67] Likenesses, then, were not simply static resemblances, but were external signs of what we would regard as 'causal' principles. The active principle between entities which shared a likeness was 'sympathy'. Sympathetic connexions lay at the basis of medieval medicine, astronomy and astrology, natural magic.[68] Each of these arts was based on the manipulation of resemblances. Even knowledge of the future could be gleaned from the study of resemblances, for 'structural' analogies were accompanied by temporal analogies. As the firmament above resembles the earth below, as the world within resembles the world without, so the future resembles the past. This symmetry had always been implicit in figural readings of scripture, according to which historical events 'prefigured' what was yet to come. Now this temporal symmetry was to be read as well in the book of nature, primarily in the revolutions of the celestial spheres. Human destiny could be read from the movements of the corresponding celestial spheres, and equally, changes in the sublunary world were linked to the fortunes of human-

[65] Aquinas, *ST* 1a. 91, 1 (XIII, 19). [66] Andrew Marvell, 'The Garden'.
[67] Hildegard, *Liber divinorum operum* I.iv.98 (*PL* 197, 877A)
[68] Angus Fletcher thus speaks of 'allegorical causation', *Allegory: The Theory of a Symbolic Mode* (Cornell University Press, 1964), pp. 181–219.

ity.[69] And while there were those who still harboured suspicions about astrological prognostication, owing perhaps to the residual influence of Augustine's animus to the art, or to reservations about how the horoscope might be squared with free-will, practitioners of astrology could always point to the first chapter of Genesis, which tells how God placed lights in the firmament to serve for signs and for seasons, or to the story of the Magi, who had followed the star to Bethlehem.[70]

While some medieval accounts of microcosm make provision for other natural objects representing all the features of the universe in their structures, it was universally accepted that the human individual was the microcosm par excellence, owing to their pivotal position in the cosmos. William of Auvergne declared the human soul to be uniquely 'on the horizon of two worlds'.[71] Hildegard wrote that 'humanity stands in the centre of the structure of the world' and in consequence, 'is more important than all other creatures'.[72] To Honorius Augustodunensis, likewise, man was located at the very centre of the chain of being, between heaven and earth, between angels and the animals, constructed from spirit and matter, man the 'celestial animal' contains all things and

[69] Isidore of Seville (c. 560–636) was an important source for medieval ideas of medical astrology. He explicitly linked the conception of man as a microcosm to astrology, an art of which he whole-heartedly approved. *Etymologiae* IV.13–14. Also see J. Fontaine, 'Isidore de Séville et l'astrologie', *Revue des Études Latines* 31 (1953), 283–5; William Sharpe (ed. and tr.), *Isidore of Seville: The Medical Writings*. (Philadelphia: American Philosophical Society, 1964), pp. 25f.

[70] Isaiah 47.13–14, by way of contrast, condemns astrological prediction. For Augustine's opposition to astrology, see *Confessions* IV.iii.4, *De div. Quaest.* LXXXIII.xiv.1, *City of God* V.1–9; Cf. Aquinas, *Summa contra gentiles* III.82, 85–6. The embarrassing incident of the Magi was reckoned by Origen to be the final great moment of a now dead art. *Against Celsus*, II.60. Cf. Nemesius, *Of the Nature of Man* XXV.51 (Library of Christian Classics IV, 397). Astrological signs might also be imprinted on terrestrial things, such as stones, or the human body, and there serve as medium for the influence of the stars, planets, and constellations. The imprinting of zodiac signs on rocks is discussed by Albertus Magnus, *The Book of Minerals*, tr. Dorothy Wyckoff (Oxford: Clarendon, 1967), II.iii.5 'The meaning of the Images on Stones' (pp. 141–151). Later, signs on the human body were to provide the basis of physiognomy and cheiromancy (palm-reading). See, e.g., Jean d'Indagine, *Chiromance* (Lyon, 1549), Barthélemy Coclès, *Physiognomonia* (Strassbourg, 1533), Robert Fludd, *Utriusque cosmi historia* (Oppenheim, 1619).

[71] William of Auvergne, *De anima* VII.6, *Opera Omnia* II supp., 211. See S. Marrone, *William of Auvergne and Robert Grosseteste* (Princeton University Press, 1983), p. 34. Similar expressions, probably deriving from *Liber de causis* II, are to be found in Alanus de Insulis, Albertus Magnus, and Aquinas. See Allers, 'Microcosmus', p. 360; McEvoy, *The Philosophy of Robert Grosseteste*, p. 383. Cf. *Asclepius* 6 : 'man has been put in the happier place of middle status so that he might cherish those beneath him and be cherished by those above him. . . He is everything, and he is everywhere.' (Copenhaver edn, pp. 69f.).

[72] Hildegard, *Liber divinorum operum* I.ii.15 (*PL* 197.761B). Elsewhere: 'Man sits on the judgement seat of the world. He rules over the creation. Each creature is under his control and in his service. He is above all other creatures.' *Ibid.* I.iv.100 (*PL* 197.885C)

unites all things.[73] When combined with notion of man as the image and similitude of God, numerous implications followed for the unique relation of the human being to both Creator and the creation. 'Man' was the last-created, an exemplar, a *summa*, a resemblance of all things from the most lowly to God himself, image and likeness of God, lord of the creatures, and archetype of the universe. In the words of Robert Grosseteste:

> In the last place the All-high established a product, man, who would be at once the exemplar of all [the grades] mentioned and drawn from them all, as one might do who wrote individual works containing his wisdom and then edited them into a *summa*. For man is on the same level as the angel in his soul, his sensibility relates him to the animals and he shares his organic level with all growing things, while certain parts of his body bear a likeness to other material things. In his physical aspect, therefore, he resembles the most lowly of things and so is imperfect, but his soul is the equal of the highest creature and hence most noble. Taken in all of what he is, however, he is the most worthy creature that exists. For I maintain that man resembles the Creator more than does any other thing made, for as all things stand in God as their cause, so too all shine forth in man as their effect, which is why he is called a tiny world. And since he is best of all, being equal to all together yet equalled by none, they commonly owe him natural obedience; so he is the image of God. The Lord said, 'let us make man in our image and likeness'. He gave him dominion over all things, for man had been conceived as the model of the whole universe.[74]

As the bearer of the dual images of the Deity and his creation, man had been given not only his place in the order of things, but also his destiny.

[73] 'Qui etiam et imaginem et similitudinem Dei creatus memoratur, ut coeleste animal intelligatur: dum ratione et intellectu c caiteris animantibus sequestratur. Et quia ei Dominus quandoque couniri disposuit, ei participium cum omni creatura tribuit: Scilicet discernere cum angelis, sentire cum animantibus, crescere cum herbis et arboris, esse cum lapidibus. Corpus ejus de quatuor elementis compegit, animam scientia replevit, et omni corporali creaturae praefecit.' Honorius Augustodunensis, *Hexaemeron* III (*PL* 172, 258C).

[74] Grosseteste, *De confessione*, pp. 240–1, qu. in McEvoy, *The Philosophy of Robert Grosseteste* p. 408. A similar passage occurs in Nemesius: 'In his own person, man joins mortal creatures with the immortals, and brings the rational beings into contact with the irrational. He bears about in his proper nature a reflex of the whole creation, and is therefore rightly called 'the world in little'. He is the creature for whom God thought worthy of such special providence that, for his sake, all creatures have their being, both those that are, and those that are yet to be. He is the creature for whose sake God became man, so that this creature might attain incorruption and escape corruption, might reign on high, being made after the image and likeness of God. . . Who, then, can fully express the pre-eminence of so singular a creature.' *Of the Nature of Man* I.10 (Library of Christian Classics IV. 254f.) In the thirteenth century, Bonaventure was to combine in a similar fashion the finality of man in the creation, and his relation to creation as microcosm. See McEvoy, 'Microcosm and Macrocosm', p. 315.

Man was to know the world, and to master it, and in doing so was to come to know God and be reconciled to him.

RESTORING LOST LIKENESSES

If the book of nature was to be read in conjunction with the book of scripture, it was no less true that the message to be read in the natural world was similar to that of scripture: nature provided knowledge of God and pointed the way to redemption. The possibility that God might be known through resemblances in the world was already familiar to readers of those Platonic works which had proved so influential in the twelfth century, all of which had stressed the immanence of God in the world. In the *Timaeus*, Plato asserted that the world is 'a sensible God who is the image of the intellectual'.[75] The *Asclepius* repeats this claim describing the cosmos as a god 'who can be seen and sensed'.[76] Macrobius further extended this conception, describing the visible world as the temple of God:

> In order to show, therefore, that the omnipotence of the Supreme God can hardly ever be comprehended and never witnessed, he called whatever is visible to our eyes the temple of that God who is apprehended only in the mind, so that those who worship these visible objects as temples might still owe the greatest reverence to the Creator, and that whoever is inducted into the privileges of this temple might know that he had to live in the manner of a priest.[77]

Twelfth-century writers, while wary of the dangers of pantheism, were nonetheless influenced by these conceptions and came to stress in an unprecedented way the possibility of knowing God through his creatures. Hildegard, for example, tirelessly reminds us that 'all Creatures are an indication of God', that 'it is God whom human beings know in every creature'.[78] 'Wherever we look', agreed Grosseteste, 'we find vestiges of God.'[79] Hugh of St Victor was similarly enthusiastic about the prospects of a knowledge of God through nature: 'Every nature tells of God; every nature teaches man; every nature reproduces its essential

[75] Plato, *Timaeus*, 92c.

[76] *Asclepius* 8 (Copenhaver edn p. 71); Cf. *Corpus Hermeticum*: the cosmos is 'a great god and image of a greater' XII.15 (Copenhaver edn p. 46).

[77] Macrobius, *Commentary on the Dream of Scipio* XIV.1 (p. 142). In the seventeenth century, Robert Boyle was to cite this passage, and similar references in Philo, to support his claim that scientists were 'priests of nature'. *On the Excellency of Natural Philosophy* Part I, Essay III, *Works* II, 31f.

[78] Hildegard, *Liber divinorum operum* I.ii.15, I.iv.105, I.iv.97 (*PL* 197, 761B, 896B).

[79] Qu. in S. Gieben, 'Traces of God in Nature' p. 148.