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Microcosm, Macrocosm and ‘Practical Science’ in Andreae’s *Christianopolis*

Edward Thompson

The fifth lecture theatre is claimed by Astronomy, which is of no less value to the human race than the other arts. For with incredible diligence it observes for us the movements and the slow rotations of the heavens, the paths followed by the heavenly bodies, and their eclipses and other changes, the position of the constellations and their dispositions and oppositions, even the number and size of the visible stars and the proportion between them. Indeed, astronomy now almost penetrates into the heavens themselves and makes them as it were pay tribute to this, our own realm ... But now let us consider those who look up at the skies no more thoughtfully than a beast would. As far as they are concerned, the sun might rise in the West, and they would not know the proper time to do anything if it was not set down in the calendar. If they claim to be above such things, they should be greatly despised for being unwilling to know about something which the holy patriarchs studied most industriously. Whereas if they claim that astronomy is beyond them, we should say of them that though they have been given the noble bones of humanity, they are reverting back to earth. Every excuse is discreditable which robs man of his humanity, or, if we may add this, which robs him of his divinity.

Clearly, if God had not lead the way humanity would never have climbed up to those superior planes on its own feet, nor would we have perceived the order within those most irregular movements. Hence it is that only the most noble spirits have an inclination to study astronomy. Ignoble and earthborn minds are satisfied if they have acorns and husks to feed on.¹

Johann Valentin Andreae (1586–1654) studied and read widely at the University of Tübingen, and after a hesitant start had a distinguished career in the Lutheran Church. He is perhaps best known today as a probable joint author of the Rosicrucian *Fama* and *Confessio*, and for his utopian *Christianopolis*. His attitude towards many aspects of society anticipated values which are current today: he favoured education in bright, warm schoolrooms where children would learn by playing games; he preferred reform to revenge

and would sooner make fun of human folly than punish it; he was the friend of scientists, and a lover of art and music; he took his pastoral role seriously, standing up for his parishioners against oppressive officials and using all his influence to rebuild his beloved town of Calw after its destruction in the Thirty Years' War (1618–1648).

At some time towards the end of his period at Tübingen, Andreae joined a Christian society whose aim was to reform religion and society. Its name varied from time to time – ‘Societas Christiana’, ‘City of the Sun’ and even ‘My Christianopolis’ – as did its membership and structure,² but out of this came a series of short works which he wrote between 1618 and 1628. While they varied in style, from the secular to the religious, they shared the utopian hope that society might be reformed by the example of a group of people united by faith and working together to a common aim. The most important of these for present purposes are *Imago* and *Christianopolis*, both printed in 1619.

Reipublicae Christianopolitanae descriptio is an account in 100 short chapters of an ideal community of scholar-craftsmen located on an imaginary island in a distant sea. It owes something to Campanella's *The City of the Sun*, although many other influences can also be identified. *Christianopolis* was published with etchings depicting a carefully worked-out plan and sketch of the community, with fully detailed measurements. It is square in shape, like the real-life mining settlement of Freudenstadt, which was designed by Heinrich Schickhard, uncle of Andreae's friend, the polymath Wilhelm Schickhardt.³ Inside its defensive walls and moat, Christianopolis has three concentric square buildings, nested inside one another. These are the workshops of the community (where, for example, grain is milled, pottery is fired) and the accommodation of the people. Andreae emphasizes again and again that the work carried out here is an examination and exploration of the material universe. For example, working with metals

is not done by men who are driven to mindless labour like beasts of burden, but on the contrary by men who have long been trained in an accurate knowledge of natural philosophy ... here is practical science ... That is, it is their practice to look into the operations of chemistry and help to carry out tests by various investigations. (168–9)

There is a virtuous circularity in this part of the community: the work of the people is made lighter and easier for everyone by the application of science, and the result is increased leisure time which can be devoted by everyone to scientific study.

Inside the area devoted to production and accommodation, which are separated by gardens and public spaces, stands a large square building which houses the college, the *primum mobile* of the community. This has the museum, the library and the laboratories of the community on the ground floor; upstairs there is a suite of lecture theatres, where the community educates its young men and women; and above that are dormitories for the scholars. The college

is taller than the living quarters and workshops of the community, and inside is a large quadrangle surrounding the temple, the highest building of all.

Clearly the architecture of Christianopolis is intended to symbolize the relationships between the various spheres of activity it houses, and their relative importance. In this arrangement the college (science and education) is more important than the economy, and forms the interface between the material economy and religion. Andreae observes that Christianopolis may also be understood as a model of the ideal human personality, so its architecture also maps his view of the relationships between body, mind and soul.

So far as its contact with the outer, material world is concerned, science has a relatively modern character. It is experimental, or at least experiential – a hands-on activity founded on accurate observation and recording, rather than a body of immutable doctrine. So in the college in Christianopolis there is a large studio in which the visual arts are studied. In part this is because he believed that ideas enter our minds more easily through pictures than through words – an idea later taken up by Comenius in *Orbis pictus* – and so the walls in the college are covered in Campanellan style with instructive pictures and diagrams. The studio also functions to 'bring penetrating eyes to bear on everything, and hands that are skilled in copying, and – what is the chief thing – a judgement that is already equal to its task and trained' (214–15). This emphasis on observation and experience also explains why the library in this part of the community is relatively small. While the scientific methodology of Christianopolis favoured the recovery of lost knowledge, it also deprecated and distrusted classical authority and book learning.

Science is also a collective enterprise in which all the people of Christianopolis are expected to engage. It is not the province of isolated *virtuosi*; it is for everyone. Elisabeth Hansot and others have argued that science is not a collaborative activity in Andreae (as in, say, Bacon).⁴ They are of course correct in the sense that for Andreae one may come to God's design as easily from a single leaf as from a forest of trees. This is perhaps implicit in the doctrine of the correspondence of microcosm and macrocosm, which suggests that there is a common pattern to all objects of study. But this view also requires us to ignore Andreae's other writing in which cooperative work is explicit. In *Imago* each researcher 'has such associates as can advance his discipline, and they can discuss their common business all the more certainly and more faithfully because they have agreed wholeheartedly in Christ to help each other'.⁵

There are, however, some limitations to science. Science was not a wonder-working activity for Andreae. Medicines, for example, may be discovered or improved, but they do not prolong life beyond its usual limits. Technical progress does not extend much beyond improved machinery and decent housing.

We may explore further the boundary between science and religion, or between the experimental and non-experimental forms of knowledge, by considering in more detail his view of astronomy and its related subjects.

Andreae was thoroughly familiar with the astronomy of his day: a friend and correspondent of Kepler, he had studied under Maestlin at Tübingen. Discussing sunspots in *Mythologiae* he refers to such authorities as Johann Fabricius, Christoph Scheiner, Adriaan Anthoniszoon, Simon Stevin and David Origanus, along with Galileo and Kepler;⁶ in 1642 in *Subsidia* he listed the most eminent modern people in various fields, and chose the astronomers Copernicus, Tycho Brahe and Johann Kepler to represent mathematics, along with the Jesuit Christoph Clavius.⁷ In his *Mathematical Collection* Andreae takes an even-handed view of the competing astronomical systems of Copernicus, Tycho Brahe, Nicolaus Reimers (Bär) and Helisaeus Röslin; but the outdated Ptolemaic system, which he illustrates, was merely of historical interest.⁸

Astronomy, for Andreae, is essentially a description of celestial bodies – sun, moon, planets, comets, stars – and their movements. It rests, like the other sciences, on accurate observation, measurement and recording; and of course on mathematical analysis. Next door to the studio for visual arts is the observatory of Christianopolis, which Andreae describes as ‘an excavated place for astronomical instruments’.⁹ This is presumably like the Stjerneborg annexe to Brahe’s Uraniborg observatory – which Andreae illustrated in his *Mathematical Collection* (Plate 76) – in being dug into the ground to reduce wind-shake. Here,

we observe the courses of the stars with various instruments, and set them down in writing; and it is a marvel that men can have both so much patience and so much perseverance as to arrive at various kinds of hypothesis. I shall not set out a list of the instruments at this point, since they are almost all to be found in the description of the most admirable Tycho Brahe. [In Christianopolis] They have added a few others, among which the most wonderful is the recently invented telescope. (215)

Andreae here shows that in his utopia astronomy is on the cutting edge of the new technology, and he separates himself from those who would drag their feet.

But why do I describe these things? As if I did not know how ingenious devices are despised by the masses, who affect to have no ability to use mathematical instruments ... throwing away half of science and making themselves useless as contributors to human knowledge ... When they shall have recognised the instruments of science as the embodiment of human thought, and shall have used them skilfully for some purpose, then they must be honoured. But if, like strangers in a strange land, they contribute to mortal man no assistance, no advice, no judgement or explanation, they are contemptible and we shall come to the conclusion that they should be handed over to the herdsmen who look after sheep, oxen and swine. (215–16)

In the adjacent Astronomical Museum, which is designed as an educational resource, the heavens are represented, with their primary and secondary movements.

Here were displayed a map of the star-strewn sky, and a model of the whole heavenly host shining very brightly. Whether you wish to see the two celestial hemispheres in their convex form, or concave, or as a plane projection, nothing at all is left to be desired. The same is true if you wish to see very accurate drawings of individual constellations, or the harmony of the heavens and the wonderful proportions between them, or geographical charts of the earth. You were allowed to see accurate observations of celestial phenomena, and, what is more up to date, observations of spots on the planets, all displayed with incredible industry. (216–17)

Where the boundary between astronomy and astrology is concerned, Andreae held the standard view of educated people in his day that astronomy is a descriptive account of the movements of celestial bodies, whereas astrology studies relationships between earth and sky, the interdependence of macrocosm and microcosm: astrology is applied astronomy. As to astrology, he says, the effects on earth of 'the sun and moon are quite clearly evident' (237) but those of the stars are less certain. Weather forecasting is an instance of astrology, and it is in this context that he observes that 'anyone who does not know the use of astrology in human affairs, or who has the nerve to deny its usefulness is condemned to the opposite element – I hope he may have to dig and till the earth in unfavourable weather, and work for a very long time' (239).

Andreae's disapproval of those who are 'unwilling to know about something which the holy patriarchs studied most industriously' (237) was echoed – or perhaps quoted – a generation later when Beale wrote to Hartlib: 'I am of this heresy, that astrology is a most serious affaire, if it were handled with ancient sanctity, as I conceive, and finding [*sic*] anciently recorded that the holy patriarchs doe' (Sept., 1657).¹⁰

Andreae's treatment of astrology does not completely dismiss the possibility of celestial events having a bearing on human life. His illustration of his own horoscope, and of charts showing the purported relationship between, for example, the features of one's face and various planetary influences, comes with the advice that 'the reader must make up his own mind'.¹¹

In *Turris Babel*, also published in 1619, where he was trying to draw a line under the recent Rosicrucian furore, Andreae couples the Astrologer with the Naometrian as two deluded self-deceivers.¹² In the section on 'Sunsports' in *Mythologiae*, however, he comes down on the side of hypothesis testing. A dispute is described concerning the effect on earth of these blemishes on the purity of the sun. Since the disputants were not able to place enough faith in the telescope, 'various religious, political, scientific and cultural blemishes were observed on earth and compared with those in the heavens'. The outcome of this was that no 'analogous correspondence appeared, and no regularities could be identified', leading to the conclusion that faults in human affairs are not the product of celestial imperfections.¹³ The fault, as Shakespeare's Cassius remarked, is not in our stars, but in ourselves.

In Christianopolis the lecture theatres are arranged in groups of three, and it appears that while everyone goes through the two lower classes, the third is perhaps restricted to those able to benefit from the most advanced teaching. Thus arithmetic and geometry are followed by 'Mystic Numbers', natural history and civil history are followed by 'Church History', and study of astronomy and astrology leads up to 'The Christians' Heavens'.

This leads to the less progressive side of the regime in Christianopolis. Knowledge obtained by observation and experience from the Book of Nature is superior to that which comes from the written textbook, but it is inferior to the knowledge which comes from the Bible or which is obtained by revelation. The temple at the centre of the community rises above the college. The real reason why Christianopolitans do not fear astrological portents is not the flawed methodology of science, which may be improved by further study, but their confidence that there is a Christian Heaven above, which overrides the merely astronomical or astrological plane.

In their view it is doubtful that everything depends on the first moment of existence or birth, and very doubtful that one should accept a judgement of life and death based on that. Therefore they are the more strongly inclined to study how the stars are ruled, and how they may through faith shake off the yoke of the stars, if such there be. (238)

Similarly, the reason why science is pursued as a collective activity is not so much because of synergy or the economy of massed resources, important though these may be, but because in the end 'Unity is divine, division is born of the demon; for there is one God, and countless demons'.¹⁴ And in the last analysis the reason for studying the world and adding to scientific knowledge is to arrive at a deeper knowledge of the heavens – and so to come to despise the world. Those who take this to the highest level may end by rejecting all human knowledge in favour of a sacred simplicity, which he calls 'Christian Poverty' or 'Sacred Poverty'.

This is for those who 'unlearn everything, abandon everything and suffer everything' – but they turn away from conventional knowledge only after mastering it. 'No one is safer knowing nothing, than one who has penetrated the labyrinths of the sciences' (247–8).

Curiosity about the natural world is proper, then, and leads to an appreciation of its creator. Applied to the revealed truths of religion, however, it may become '*curiositas*' and thoroughly improper. Things known by the Light of Grace are not to be subjected to scientific inquiry. So in Christianopolis 'they do not subject everything to logic, least of all God' (225).

If knowledge from revelation is superior to knowledge inferred from observation of the world, why do we not rely entirely on revealed knowledge? Part of the answer is that Andreae would have his people exercise and make use of every talent that they have. Nothing is wasted or unused in Christianopolis.

For example, the defensive moat around the walls 'is full of fish so that it does not lie idle even in times of peace' and beside the outer walls of the community there are open spaces (to deny an attacker cover) which are 'stocked with wild animals, not for pleasure but to be made use of' (162).

A second part of Andreae's answer is that if someone is given a prophetic insight, 'the Christianopolitans do not reject it lightly. On the contrary, they test the revelation. So they have a School of Prophecy ... a place where they can study the consistency and truth of prophetic inspiration' (251). The methodology may suggest the investigation of sunspots, but Prophecy is one of the third-level subjects, following on from Theology and its practice, so testing of revealed knowledge seems likely to be only for the most advanced students of theology.

There are then two sides to Andreae's utopia. If science lies between society and religion, it not only mediates between one and the other, it is also itself subject to the tensions that arise from being linked in two disparate directions. There are thus elements in Andreae's approach to science which are non-scientific or even anti-scientific. 'We really can not turn our backs on human knowledge,' he says, then adds the qualification 'provided that it is kept within the bounds of Christian simplicity, and it does not limit the freedom of our minds. In fact we should embrace it, if it reveals this universe to us and persuades us of the emptiness and imperfection of all things, and sends us away reinforced in our desire for heaven'.¹⁵

If Andreae's Christian utopia helped to create a climate of opinion in which bodies like the Royal Society could be established and were seen to be operating within stable Christian communities, it was perhaps also necessary for some aspects of his work to be rejected. Some of the achievement of Hartlib and his circle was perhaps that they seem to have succeeded in separating the more progressive elements of Andreae's work from those that would ultimately have hindered development.