11. The Decline of Symbolism

The 17th Century is a fascinating if underappreciated period for students of the history of Western thought. It was then that we witness the slow, punctuated but unmistakable transition between the age of symbolism and the modern era of empiricism and the natural sciences. It has long been thought a truism that modern Europe began with the Renaissance but we can now see this was not the case. The Renaissance was as its name suggests a rebirth of classical culture, a restatement of the ancient values of symbolism and allegory and one more stage in, if not the climax of, the age of symbolism. It was only in the 17th century that we can detect a new beginning with the tentative origin of many fields of the natural sciences in their modern form, although many of the seminal works in these fields are still expressed in an allegorical and symbolic format. Alongside these primitive stirrings of empiricism, we continue to witness expressions of the culture of symbolism as it struggled for survival: the mystical cults of the Rosicrucians and the Masons, a revival in the orthodoxy of Platonism with groups such as the Cambridge Platonists and after a public debate known now as the Quarrel between the Ancients and the Moderns, an acknowledgement that classical literature

at least should remain the foundation of a liberal education. Some writers in the traditional mode such as Robert Fludd and Athanasius Kircher refused to acknowledge that the new discoveries invalidated the old laws of symbolism but nevertheless themselves made real contributions to the new sciences. The pioneers of modern physics and astronomy, preeminently Kepler and Newton, giants as they were, were wholly within the traditions of their time. Kepler was convinced of the efficacy of astrology and saw it as a natural part of his system. Newton's primary interest was in exploring and explaining physical phenomena as a means to approach the nature of God and he viewed his great discoveries in mathematics, physics and optics and his exposition of the laws of gravity as merely one part of this grand undertaking.

In this Chapter I shall review some of these cultural convulsions and contradictions so that we can complete the story of the age of symbolism and go some way towards an explanation of the longevity of the phenomenon of literary symbolism. We shall also see how the deterioration of the criterion of decorum in the arts caused or at least accompanied the decline of symbolism. I start by examining some of the causes and the timing of the 'scientific' revolution of the 17th century.

· The Power of Tradition ·

We have seen how the Book of Nature, God's second book, was a potent source of the symbolism in medieval and Renaissance thinking. Augustine had emphasized that the two books were similar in structure and this view persisted right through to the 17th century. Thus Sir Thomas Browne:

> there are two books from which I collect my divinity; besides that written one of God, another of his servant Nature, that universal and publick Manuscript, that lies expansed unto the Eyes of all: those that never saw him in the one, have discovered him in the other.[1]

Curtius finds additional references to the book of Nature in Montaigne, Paracelsus, Descartes, Francis Bacon, Voltaire and Rousseau as well as a number of 17th century English poets including Milton.[2] Michael Bath points to references in text books in the 17th Century where even at this

[1] Browne 1642 Part 1 Ch 15 cited in Curtius 323

[2] See Curtius 322. He also quotes lines from Quarles *Emblemes* starting 'The world's a book in folio, printed all' although I have been unable to identify the reference in Quarles.

late date students were being taught to view nature in symbolic terms. Hezekiah Woodward subtitled his children's textbook[1] of 1641*, a Practicall Lecture upon the great Book of Nature*. Jacob Boehme could write in his encylopaedia published in 1622: "there is nothing in nature created that does not reveal the inner form outwardly as well, for the internal always works towards revelation."[2] But in spite of the persistence of this concept of nature as a symbol of God, it seems in hindsight that it might be a short and easy intellectual transition for nature to be seen as an object of study for what it was rather than for what it signified. Galileo saw the case quite clearly. As he said: "alongside the truth of revelation comes now an independent and original truth of nature."[3]

This being so we should examine why the transition to empiricism occurred when it did or to put it another way why did the transition take so long to occur? The Platonic metaphysic of symbolism in its many facets endured for two thousand years as the orthodox cultural paradigm. This is an almost unimaginable time span for us, accustomed as we are to continuous discoveries in the natural sciences and changes in paradigm on a daily basis. It is true that Platonism was challenged by the revival of Aristotelianism in the late Middle Ages but this revival which inspired Scholasticism and renewed interest in the classical literary disciplines did not catalyze an immediate interest in technology. Rather, in literary and philosophical circles, the two contrasting dogmas, the mysteries of Platonism and the dialectic of Aristotle were adopted by one party or another, debated endlessly and coexisted uneasily. But these debates did not result, at least immediately, in any revolution in thought or in any practical consequences for society.

There are several answers to these questions and the first and most simplistic is that living conditions in classical times were very primitive and in medieval societies they were little better. This fact is easy to overlook in view of the extraordinary philosophical and theoretical achievements of the classical Greeks. At the height of the Greek so-called civilization there was no drainage, there were no sheets or springs on the beds, no central heating, no watches, no windows, no bridges, no newspapers, no maps and virtually no books.[4] The Greeks were very uncomfortable by our standards and this was a very low starting point for any technological advance. From the institution of slavery they benefited

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[1] Woodward 1641 cited in Bath 1994 41

[2] Boehme 1622

[3] Cassirer *The Philosophy of the Enlightenment* quoted at Eisenstein 270

[4] This list is derived from Whall xlii

from cheap or free labor and this would have reduced the incentive to develop technology but this is certainly not a complete answer since it has been pointed out that in Roman times there were several severe economic crises caused by prolonged periods of scarcity of farm labor and of course slavery existed in the West to one degree or another until the 19th Century.

The cast of the Greek mind appears to have been towards the contemplative mode of philosophy rather than an active role in controlling the forces of nature and turning them to advantage. According to Yates, "it was basically a matter of will. Fundamentally, the Greeks did not want to operate" any modes of technology. The latter was "base and mechanical, a degeneration from the only occupation worthy of the dignity of man, pure rational and philosophical speculation."[1] The Greeks and Romans speculated on mathematics, astronomy and the other disciplines of natural philosophy or what we would call natural science but apparently they seemed unwilling or unable to turn this theoretical interest to practical applications. The technology employed during classical times was exceedingly primitive and remained so until the late Middle Ages when there was a major step forward with the invention of cast iron in the 14th Century.[2] The Greeks had no knowledge of mechanics and the Romans and Europeans during the Dark Ages were no better. The only power available was manual, wind, animal or water and the latter was necessarily limited by its location. Leonardo da Vinci was the first to describe a steam turbine in the Codex Leicester written from 1506 to 1510 and the first printed reference was in Giovanni Branca's *Le Machine* in 1629.

Apart from water wheels and Archimedes' perpetual water lifting screw, only one piece of evidence has survived from the whole of Greek and Roman history and archaeology that suggests any degree of technological sophistication. That is the remains of an astronomical clock found in a shipwreck in the Mediterranean and dated by its astronomical settings to 82BC. Constructed of bronze, it has at least 20 gears and a mechanical sophistication not surpassed until the 17th Century in our era.[3] It is not known whether this mechanism was unique or special in some way but it gives a hint that had there been incentives to develop or perpetuate this technology, cultural history in the West might perhaps have been very different.

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[1] Yates 1991 155-6

[2] Lee 20

[3] Price 60-7

Astronomical clocks which were the forerunners of modern timepieces passed to the West through Arab intermediaries in the same manner as the theoretical works of astronomy and mathematics. I have already referred to the well-known treatises of Euclid, Ptolemy and Hero of Alexandria which were rediscovered in the Renaissance as were those of Archimedes which, according to Cusanus, became available in the West by 1453.[1] The sophistication of Greek theoretical thinking is further illustrated by Apollonius' treatise on the theory of Conics which represents the most advanced stage in mathematics of the classical era. It was translated as early as 1270 by Moerbeke[2] and published in Latin in 1566.

There were technological advances in the Middle Ages: chimney flues, window panes, the rudder and the compass, lenses and eyeglasses, flying buttresses and above all gunpowder which had obvious revolutionary effects on the conduct of war and the nature of the knightly ideals. It was the beginning of the end for the heroic and honorable status of hand to hand combat.[3] There were some medieval writers who had visions of the future. Roger Bacon, in the 13th Century conceived of cars without animal power, airplanes, submarines, bridges without pier support, a machine which could attract things and another for lifting huge weights.[4] But these insights, in the conditions of the time, were just science fiction. During the Middle Ages measurement of all kinds was notoriously inaccurate and contemporaries were well aware of this shortcoming. Adelard of Bath pointed out at the beginning of the 12th Century that

> the senses are reliable neither in respect to the greatest nor the smallest objects. Who has ever comprehended the space of the sky with the sense of sight. Who has ever distinguished minute atoms with the eye?[5]

The astrolabe, a primitive measuring instrument, was also first introduced from the Arabs and is described in a treatise written by Robert the Englishman in 1271. A lengthy treatise on optics by the Arabic writer Alhazen, the first major contribution to this science since Ptolemy, had been translated in the West in 1270 as *Opticae thesaurus Alhazeni* and this was followed by Witelo's work of 1535, the first treatise on optics by an European. During the same period, Georgius Agricola (1494-1555) wrote

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[1] Sverdlow 125
[2] Sverdlow 132
[3] This collapse of the knightly ideals is of course one of the themes of *Don Quixote.*
[4] From the *Epistola de secretis operibus* quoted in Thorndike II, 655
[5] *De eodem at diverso* 13 quoted in Thorndike II, 29

books on weights and measures as well as on other practical matters including physical geology, subterranean gases, mineralogy and mining and from about the same time we begin to see illustrations of these technologies. Another major development was the invention of perspective by L.B. Alberti in about 1435. This was a major catalyst in the revolution from a symbolic to an empiricist era. Up to that moment the only way a picture could be viewed was in terms of its symbolic content; it was literally impossible for a descriptive or truly mimetic depiction of the world to be represented.

It had been a vicious circle. The world-view of the ancient world and the Middle Ages was against change. We have seen that contemporaries saw heaven as eternal and unchangeable and that time had little meaning; past, present and future were compressed, engendering a fatalism towards the future reinforced by the church which rightly viewed change as a threat to their authority and control. During most of the Middle Ages the Church through the monastic schools took on responsibility for education such as it was and thus controlled the attitudes of most of the population. Combined with the insidious will-sapping power of tradition, the result was technological stagnation. We have commented on the close association between science or natural philosophy and natural magic. The two were virtually the same in the eyes of the church and the official attitude to magic was arbitrary at best. We saw the example of Roger Bacon who did not wish to advertise his observations and theories on the magnetic needle for fear of being accused of magic.

The worst fears of the Church were realized by the changes brought about by the Reformation and the reaction instigated by the Catholic side at the Council of Trent was draconian and vicious. The Index of forbidden books sanctioned by the Inquisition was just the start. Catholic policy discouraged the development of vernacular texts and even discouraged private reading of the Bible preferring it to be done under supervision in church. We have seen how as far as printing was concerned this policy of censorship was entirely counter-productive. Protestant printers deliberately chose to print those books which were on the Index, thus using the notoriety of the Index to publicize their wares. Printing as a major economic component of the city of Lyons was crushed as printers emigrated to Geneva over the border in Protestant Switzerland; in the latter half of the 16th Century the number of printers in Geneva, the city of John Calvin, jumped from about five to more than three hundred.

It was not just the Church which was reactionary. Perhaps it is inevitable in the early development of all societies that it is deemed undignified

for the patrician classes to become involved in trade and industry. In the words of Auerbach, the educated class of the 16th century

> was recruited from the socially and economically most influential circles, to whom good breeding and conduct in the fashionable sense, amiability in social intercourse, aptitude for human contact, and presence of mind meant more than any specialized competence; ….since these [knightly value concepts] were supported by the classicizing ideals of humanism… there soon resulted a sort of contempt for professional specialization.[1]

Such a tradition was exemplified in modern Britain where up to the middle of the 20th century it was proper for those educated at the private schools only to seek careers in the professions, the military or the church.[2] There was no question except for a tiny minority that a graduate would consider business or industry for his livelihood. This attitude was born of an ancient tradition. During most of the period we are considering, the idea of and the mechanisms for capitalism and profit just did not exist. The word itself for profit in early Greek was derogatory; *foros* meant primarily tribute or what a conqueror exacted from the conquered. Similarly, the Latin word for interest was *foenus* which came from the root *ferre,* to bring in. Aristotle was quite categorical when he said that it was against nature for money to breed money[3] and this thought was perpetuated by the medieval church which condemned commercial activity and allowed nominal profit only to the extent of the doctrine of the 'just price'.[4] There was no banking system to assist in the development of the capitalist dream; for that the West had to wait for the Lombard and Florentine banks of the Renaissance. Until then, even if there had been the motivation, there was little or no means for the economic development and exploitation of applied technology.

The Italian Renaissance with the development of the wealth and stability of the city states, the growth of the middle class, the foundation of the universities and particularly the advent of printing, the greatest cultural event in the West of the second millennium, provided the medium for change. Kepler stated the case with typical clarity:

> After the birth of printing, books became widespread. Hence everybody throughout Europe devoted himself to the study of letters. Hence many

[1] Auerbach 307
[2] See Snow 1962
[3] Aristotle *Politics* Bk 1
[4] Pirenne 508

> universities came into existence, and at once so many learned men appeared that the authority of those who clung to barbarism soon declined.[1]

Lorenzo Valla (1405-1457), the humanist and translator of Aesop, pointed to the universality of Latin which enabled rapid communication between scholars. He also suggested that it was *aemulatio* or the competition between the new universe of scholars which accounted for the rapid change in the nature and extent of knowledge. It is now a truism that advances in scientific discovery are a collaborative effort, where communication between individuals and the sharing of ideas is a necessary catalyst to progress and where one group builds on the work of another. Without rapid communication, brought on by the advent of printing, the acceleration of scientific discovery would not have been possible.

Finally we can point to the voyages of discovery of the 15th and 16th centuries as further catalysts of the new empiricism, widening both mental and physical horizons of the peoples of Europe. By the end of the 17th Century it was being asked how the American Indians and the Chinese who both appeared to be ancient peoples could possibly fit into the standard Christian chronology which determined that God had created the world only 4,000 years earlier. Furthermore, as knowledge of our own world improved so did observation of the physical universe beyond it. It began to be understood that the stars were separate solar systems at vast distances from the Earth and that these other systems might shelter their own populations of living creatures. This had been hypothesized as early as Cusanus and was reiterated by Galileo[2] and increasing acceptance of the possibility raised the potential for all manner of theological discussion as to whether these populations could or should be subject to the laws and the word of God. Writers of the time realized immediately the significance of the discoveries. Francis Bacon (1561-1626) in his masterpiece *Instauratio Magna Scientarum,* the Great Restoration of Learning,[3] has the image on his title page of a ship passing through the Pillars of Hercules and sailing to the New World and this was specifically intended as an allegory of the widening of horizons provided by learning.

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[1] Kepler 1937 I, 330 cited Grafton 1991 196

[2] Galileo 1632 cited Lovejoy 121

[3] This was subtitled *Novum Organum* the New Organon, following Artistotle's collection of books called the Organon: the Categories, On Interpretation, Posterior Analytics, Prior Analytics and Topics. Subsequent editions of Bacon's book just had the title *Novum Organum.*

· From Decorum to Decoration ·

We saw above (page 127) how, for more than 2,000 years, during the whole period of Western literature and culture up to the 17th Century, ornamentation and decoration had a meaning which was significantly different from what it is today. Cosmos and cosmetic, decorum and decoration each had subtle but real relationships with each other. To ornament meant to construct or create a whole in a manner that was appro-appropriate to its purpose or function and the practitioners of all the arts and crafts were legitimate and worthy contributors to such an end. The Greek word for art was *techne* from which we get our word technique; correspondingly, in the late Middle Ages and Renaissance all art was applied or decorative and it was applied with a didactic end in view. The establishment and maintenance of order, moral, spiritual and political was naturally a continuing priority of the civil and ecclesiastical authorities so that political and aesthetic ambitions coincided and reinforced one another. Decoration was one more element in this moralizing imperative. Erasmus, as usual, summed it up and in his *De Ratione Studii*, On the Purpose of Education, suggested that authors should

> write some brief and pithy saying such as aphorisms, proverbs and maxims at the beginning and end of your books; others you will inscribe on rings or drinking cups; others you will paint on doors and walls or even in the glass of a window so that what may aid learning is constantly before the eye. For although these measures seems trivial in themselves when taken singly, yet taken together they make a profitable addition to the treasury of knowledge.[1]

The close relationship between symbol, decoration and instruction is nowhere better illustrated than in the emblem literature. We have seen (page 261) how Alciato, in composing his little book of Emblems, had as one of his chief aims that it would be useful for decorators; "painters, goldsmiths and founders can make the sort of things we call badges and fasten to hats or which we call trademarks." This thought was repeated constantly throughout all the literary genres of the age. Corrozet in his *Hecatomgraphie* also affirms a second purpose for his work "so can draughtsmen and cutters, painters, embroiderers, goldsmiths and engravers take in this book some inspiration as they create a tapestry." And Georgette de Montenay in the introduction to her *Emblemes ou devises Chretiennes*, or Christian Emblems or devices, of 1571, the first Christian

[1] Cited in Ayers Bagley *Emblematica* 7, 1, 1993 47

emblem book, says the same.[1] Ripa's *Iconologia* which we have met as one of the seminal books of symbolism of the age, was also subtitled as useful for poets, painters and sculptors in depicting human virtue, life, emotions and passions and it was thus translated in the English version in 1778 by George Richardson. Leon Battista Alberti the great architect and polymath of the quattrocento was perhaps the first to suggest that hieroglyphs might provide inspiration for the decoration of 'medals, coins, columns, arches, rooms or festivals'[2] as did Fasanini who translated Horapollo into Latin in 1517. He proposed in his introduction that they could be used for the decoration of swords, rings, bells, beds, doors and ceilings. Similarly, Louise de Savoie, the early French translator of Horapollo, sought to justify her work by saying that "those who know this book will be able to write in figures the deeds of Kings in marble and tapestry."[3]

Tesauro in his classic *Il Cannochiale Aristotelico,* the Aristotelian Telescope, categorizes the emblem as primarily intended to serve as a model of decorators.

> Emblems are a metaphor for the ornamentation of decorations, rooms or vases signifying any moral theme or doctrinal sign by means of hieroglyphs or iconological figures or fables or other erudite representations, assisted by a clear motto or by some verses when the erudition is too difficult for mediocre minds.[4]

M. Gardien, a contributor to the journal, *Mercure Galant,* in 1678 says that "the principal aim of the emblem, following the etymology of the word, has been to decorate vases, walls, temples etc."[5]

Many other examples can be taken almost at random. A description of the decoration and allegorical content of the Palace of Fontainebleau by Pierre Dan in 1642 was such that his book has been classified as an emblem book[6] and another, from outside the emblem genre, was an edition of engravings from Ovid's *Metamorphoses* published by Furst in Nuremberg in 1641 which was stated to be a reference book for goldsmiths painters, sculptors, craftsmen and other artists. In 1685 Nicholas Verrien, wrote an emblem book entitled *Livre curieux et utile pour les scavants, et artistes*, a Curious and useful book for philosophers and artists. A 20th Cen-

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[1] Praz 45
[2] Alberti VIII, 4.
[3] D. Russell 120
[4] Tesauro 488
[5] Reproduced by Daniel Russell in *Emblematica* 1, 1, 1986 102
[6] Pierre Dan 1642 cited in Praz 312

tury book continued the tradition in Guy Cadogan Rothery's *Decorator's Symbols, Emblems and Devices* published in London in 1907. This really was not an emblem book, being as it says a book for decorators illustrated by symbols but the importance of propriety is still emphasized. The Editors Note, the Preface and the Introduction all begin with an admonition that decoration should be adapted to the proper purpose for which the building is to be used.

The use of emblems and devices as an inspiration for art and decoration during the late Renaissance was legion. Suffice it to say that they were used to embellish portraiture, to decorate cathedrals and churches, monuments, state apartments, palaces, mansions and castles. A room in Hawstead Hall in Suffolk, England now in the Ipswich Museum was decorated with over 40 emblems on panels.[1] In another stately home in England, Hatfield House, there are four tapestries woven in 1611 which show 179 emblems on their borders of which 29 come from Whitney.[2] Francis Bacon's house at Gorhambury in England was decorated with emblems as described by the diarist John Aubrey. Emblems and devices were embroidered on dresses and woven into tapestries, engraved on caskets and medallions and painted on vases, on glass, on tableware and engraved on armor. Mary, Queen of Scots, embroidered devices on the hangings of her state bed. Emblems were used, in fact demanded by authors, as title pages or frontispieces to hundreds of books which did not fall into the emblem genre.[3] Praz gives another fifty examples of different decorative uses of emblems in his summary of the field which we need not repeat here.[4]

Emblems were used for the decoration of ships. A foreign visitor to England in 1602 remarked on the decoration of three of Queen Elizabeth's ships. "The cabins were decorated with costly paintings and very beautiful emblems."[5] Another example is in the first English translation by John Florio of Montaigne's *Essays* in 1603, where the title page contained a poem of which the first lines are:

> When first this portlike Frontispiece was wrought
> To raise a pile complete, it was our thought,
> Whose Rooms and Galleries should have been trim'd

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[1] See Young *Emblematica* 3,1, 1988 77 which gives citations for this room.

[2] R. Freeman 95

[3] However, as Daly points out, title pages suffered the same fate as other early illustrations. They were frequently reused. The publisher Bynneman used the same title page in at least 26 different publications. Daly 1988 26

[4] Praz 50-54

[5] Young *Emblematica* 3, 1, 1988 65

With Emblemes and with Pictures fairly lim'd…….[1]

The Swiss Church of Maria Logetto in Hergiswald near Lucerne was decorated in 1653 with 321 emblems mostly derived from the compendium published the previous year by Filippo Picinelli whose vast *Mondo Symbolico,* or World of Symbols, described no less than 7,000 emblems.[2] The Hotel de Ville in Lausanne was decorated with *Silence,* one of Van Veen's emblems from his 1608 emblem book, *Emblemata Amorum*, Emblems of Love.[3] Menestrier describes two series of emblems in the Palace of Fontainebleu. One of fifty-eight emblems showed the feats of Ulysses comparing him to the French King and another of eighty-five emblems dealt with general moral topics. He also refers to a painted frieze which ran the whole length of the church of San Silvestro in Monte at Rome and another on the ceiling of the Sacristy of the Pères Theatines in Paris.[4] Michael Bath relates the common habit of painting the wooden ceilings of Scottish 17th century houses with emblems and devices.[5] The book of devices by Scipione Ammirato called *Il Rota overo dell'Imprese,* or The Rota or about Devices (1562) was a description of the devices decorating a house belonging to Bernardino Rota.

Such was the enthusiasm for the decorative emblem that there is evidence that many emblem books were actually dismembered and their pages pasted up on the walls of the houses by those who could not afford the decorators fees. This practice apparently continued well into the 20th Century. Russell reports being informed by a bookseller in Brussels that his father, thirty or forty years earlier, had frequently sold emblem books to ladies who tore out the pages and used them for devotional or inspirational decoration.[6]

Then there was the decoration for the innumerable festivals, parades, pageants, masques and theatrical productions. Menestrier was an acknowledged expert in arranging such things for the court, the nobility and municipalities and in his vast literary output he provides ample evidence of the general acceptance of the genre. As Judi Loach points out, Menestrier exemplified the link between the didactic, moral and spiritual aims of the emblem and their use in the myriad decorative schemes of the time. Menestrier was a Jesuit and was based in Lyons the headquar-

[1] The poem appears in the third edition. Limned meant to paint or decorate coming from the word illumination.
[2] W. Vogler *Emblematica* 8, 1, 1994 133
[3] Clements 18
[4] Menestrier 1684 50
[5] Michael Bath *Emblematica* 7, 2, 1993 259
[6] D. Russell 136 note 37

ters of the Jesuit movement in France. The Jesuits were the intellectual elite of the age and they used this position of authority to fulfill the single-minded purpose of their order in every way they could and as Menestrier wrote, "all these entertainments consist only of devices, emblems and inscriptions."

Ben Jonson continually used emblems, devices and hieroglyphs in his court masques especially *The Masque of Blacknesse* presented in 1605 and the *Masque of Beautie* of 1608. In the former, Jonson is quite open that he is trying to imitate the Egyptian hieroglyphs and he uses motifs taken directly from Ripa's *Iconologia*.[1] Christopher Marlowe in his *Edward II*[2] used devices as integral to the plot and similarly devices are central to Shakespeare's story of *Pericles*. Devices and emblems were motifs in other books of the age including *Arcadia* by Philip Sidney in which one focus of the story are the secret messages contained in the symbolism of the devices displayed in the tournaments in which the characters take part.

Modern commentators have seen the use of the emblem in these theatrical environments as the highest point in the art. "Pageantry is itself the quintessence of emblematic art."[3] And "it were by no means too much to say that in the masque the fashion for the courtly impresa and for the emblem-book reached its completest expression."[4] We cannot, however, pretend that all these monuments to symbolism were created with the same high ideals that we have outlined throughout this book. As the age of symbolism declined so did the moral and spiritual inspiration behind the emblem. Nothing could be more appropriate to illustrate the end of the age of symbolism than the decline of emblem and device in concept, form and function into decoration in the sense that we now use the word. When the function of all artistic expression was seen as didactic, there was no conflict between the different forms of this expression, between the crafts and what we now call the fine arts. Art was the technique of all forms of symbolic expression. When symbolism lost its purpose, the decorative arts simultaneously lost their status. They were and are not now perceived as embodying the necessary emotional power demanded by modern theories of art.

· The Rise of Empiricism ·

[1] See Alan R. Young *Emblematica* 6, 1, 1992 18
[2] Daly 1998 172
[3] Wickham II, 2, 209 cited in Daly 1998 174
[4] Nicoll 154 cited Daly 1998 185

Paradoxically, the transition to empiricism was catalyzed by two elements of contemporary thought: first the well-developed tradition of categorization that was practiced in the Arts of Memory and Rhetoric exemplified by the commonplace books and then the continuing interest in the practice of magic. Magic was a believed to be an universal force which could be controlled and manipulated by practitioners if its laws were sufficiently studied and understood. For the philosophers of the late Middle Ages, natural magic was synonymous with what we call natural science and we shall see in the discussion of Newton's theory of the vegetative principle and Kepler's theories on astrology further confirmation of this similarity.

During the 17th and early 18th centuries the work of the natural philosophers fell somewhere along the line between symbolism and empiricism and most combined both elements to some degree. Athanasius Kircher (1601 – 1680) was perhaps the last of the 'Renaissance' scholars, someone who professed expertise in many different fields and did not hesitate to write authoritatively about all of them and in his work he was positioned towards the symbolic end of the spectrum. He had an extraordinary output, on languages, Egyptology, music, numerology and logic and he demonstrates nicely how, despite himself, the new knowledge broke through the obfuscations of allegory. His self-proclaimed expertise in the translation of the hieroglyphs was founded on his knowledge of the Coptic language for which he wrote the first grammar in the West, *Prodromus Coptus sive Aegyptiacus* of 1636. Kircher believed Coptic to be a relic of the ancient Egyptian language and thus the key to their scripts. We have seen however (page 179) that his interpretation of the hieroglyphs was hopelessly indeed ludicrously incorrect. His interest in languages stemmed from his orthodox belief that there was an original universal language and an universal philosophy, knowledge of which would give insight into the nature of God but he was also one of the first to tackle the implications of the voyages of discovery of the previous century by attempting to include oriental languages especially Chinese into his chronology of the development of language.

This was only a part of his polymathic interests. He wrote on magnetism *Magnes sive De arte magnetica* a book published in 1643 which has a chapter headed *De magnetismo Electri,* On Electro-magnetism. He wrote a musical encyclopaedia, *Musurgia Universalis sive Ars Magna,* (1650) which naturally related musical theory back to the music of the spheres but included descriptions of musical instruments some of which he had invented himself including the megaphone, the *Arithmologia* of 1665 a history of numerology, a geography of ancient Rome, *Latium* of 1671, *Turris babel sive archontologia* of 1679, a description of ancient architecture,

the *Ars Magna Lucis* of 1646, a treatise on light which included the first description of the magic lantern and the *Mundus subterraneus* of 1665 which included both descriptions of subterranean monsters and sound hypotheses on the nature of erosion and of volcanism. This breathtaking catelog is only a partial list of his vast output. Perhaps the work which indicated most clearly that he stood squarely in the tradition of the age of symbolism was the *Ars Magna Sciendi* of 1669 an attempt to describe a form of logic which could be employed in and thus unite all fields of knowledge. It was similar to and based on the Art of Ramon Llull.

There were other reactionaries like Kircher. Tommaso Ceva was a Jesuit poet who wrote the *Philosophia Nova-antiqua* of 1704, a long poem conveniently outlining much of the new philosophical and scientific knowledge of the age and then denouncing it. He was able to make satisfactory use of the newly discovered gravity to prove the existence of God. Then there were those who overcame the ancient prejudices. Thomas Browne, in his *Pseudodoxia Epidemica,* the Epidemic of Pseudo-opinions, of 1646 subtitled Enquiries into Vulgar or Common Practices, finally tried to demolish the allegories of the Bestiaries and Lord Shaftesbury (1671-1713), the English philosopher, was similarly disparaging of the hieroglyphic tradition describing the hieroglyphs in colorful language as "false, barbarous, and mixed, preposterous, disproportionate and lame forms, .. false imitations, lies, impotent pretending, magical, mystical, monkish and Gothic emblems .. monstrous."[1]

It was only to be expected that a cultural revolution of such magnitude would occur gradually, in fits and starts and under protest from reactionary elements. During the 16th century, we witness pockets of resistance by the traditionalists and the academic establishment. For instance, there were the Cambridge Platonists, a group of academics centered in the University of Cambridge who flourished around 1640 and attempted to revive the Florentine tradition associated with Ficino and his Academy.[2] The principals in the movement were Ralph Cudworth, Henry More and Anne Conway; like the Florentines they tried to reconcile their Christianity with classical culture by proving that the Greeks and Romans were monotheistic. But unlike Athanasius Kircher, they did reluctantly accept that the Hermetic texts and the Sibylline Oracles had been discredited and that they did not come from the time of Moses but were a later Platonic and Christian interpolation. Referring to Trismegistus, More grudgingly writes: "there may be suspected some fraud and

[1] Cited in Dieckmann 320

[2] See Grafton 17 for a further discussion.

corruption in several passages of that Book, in reference to the interests of Christianity."[1]

By the end of the 17th century, the Establishment could no longer ignore the trend towards empiricism, the controversy between old and new came out into the open and the advantages and disadvantages were debated by English and French academics from about 1690 in what was called The Battle of the Books[2] or *la Querelle des anciens et modernes*. One of the principal protagonists in this debate in France on the side of the moderns was Charles Perrault (1628-1703) with his book *Parallèle des anciens et modernes* (1688-1698). Another was Fontenelle with his *Les Anciens et les Modernes* also from 1688 where he makes the essential distinction between the arts and science. Since the latter, he said, depends on reason and knowledge of the facts, later generations must necessarily build on the work of the earlier. It has been shown that Claude Menestrier wrote his expanded second edition of the *L'art des Emblèmes,* as part of the *Querelle.* He was the acknowledged expert in France on the organization of masques and processions but late in life in the 1680s on the occasion of two important such events, the funerals of the French General Turenne and of the Queen of France at Notre Dame in Paris, he was passed over for other *promoteurs* who were considered more avant-garde. This inspired the new edition (from 1684) of his book on emblems as a reemphasis of the importance of the classical traditions.[3]

The compromise reached in the debate had a profound influence on education in both countries for three centuries. It was settled, perhaps inevitably, that the natural sciences would be developed in the new and radical style pioneered over the preceding century and a 'classical education' in the liberal arts would continue to be based on Greek and Latin language and literature. After all "a liberal education has for its object to impart the highest culture, to lead youths in the most full, vigorous and harmonious exercise according to the best ideal attainable, of their active, cognitive and aesthetic faculties." And you can't want better than that. But this quotation comes from a book of essays[4] written two hundred years after the Battle of the Books, in the 19th Century, when the debate over the virtues of the liberal arts education was still continuing. In our own day however the debate is almost over and has finally been lost by

[1] More 1662 113 cited in Yates 1991 424. See also Cassirer 1953 the standard study of Shaftesbury's neoPlatonism.
[2] A phrase coined by Jonathan Swift.
[3] Loach *Emblematica* 2, 2, 1987 317
[4] Farrar 1867 cited Steiner 1971 75

the ancients. The classical languages are still taught in some high schools but the purpose of doing so is not well understood.

The fact was that the turn of the 17th century had seen an extraordinary explosion of scientific and empirical works. We have already discussed Gesner's *Historiae Animalium* of 1587 considered to be the start of modern zoology and there was a similar encyclopaedia on Herbs by Matthiolus with his *Commentarii Pedacii Dioscoridis,* Comments on Dioscorides, written from 1542 to 1556 although this was stated in the traditional form to be a divine science. J.C. Scaliger did the same for Plants with his *De Plantis* of 1556 and with his commentaries on the works on plants by Aristotle and Theophrastus.

An abbreviated list of the pioneering works of modern science from the 17th Century would include at least the following. Gilbert's *De magnete*, On magnets, published in London in 1600 is said to be the first English scientific treatise based on empirical research. In 1614 Napier published his new invention of logarithms. As we have seen, in 1620 Francis Bacon wrote the *Instauratio Magna Scientarum,* subtitled *Novum Organum* the latter being a perhaps overly ambitious reference to Aristotle's *Organon* and in which he argued that science should now be based on experimentation and inductive reasoning. Oughtred claimed to have invented the slide rule in 1621. William Harvey published in 1628 his treatise on the circulation of the blood.[1] In 1645 Blaise Pascal, the mathematician and philosopher, invented the first digital calculator. In true academic fashion, he started manufacturing and marketing his invention but his enterprise failed very quickly. Later in the century, Leeuwenheoek (1632-1723) discovered spermatozoa, bacteria, blood cells, algae and other protista with the help of the newly invented microscope and Robert Hooke independently described the cells of the body in his *Micrographia* of 1665. Boyle (1627-91) 'the father of chemistry' discovered 'Boyle's law' relating temperature and pressure which was published in his *New Experiments Physio-Mechanical* of 1662. At the same time, he was the first to introduce the concept of acid and alkali and in his *Chymista Scepticus*, The Skeptical Chymist, he was outspoken in his criticism of Aristotle and Paracelsus. Descartes and Leibniz among their other contributions to natural philosophy made advances in theoretical mathematics including calculus.[2] By any measure, it was an extraordinary explosion of discovery.

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[1] In his *Exercitatio Anatomica de Motu Cordis et Sanguinibus in Animalium.*

[2] Newton apparently discovered both differential and integral calculus before Leibniz but he did not publish his discovery. When Leibniz later independently made the same discovery and claimed the prize there was naturally a tremendous public row between the two mathematicians.

Pride of place in this pantheon, then as now, went to the cosmographers and physicists. We should remember when considering their achievements in the 17th Century, that Copernicus' heliocentric theory was only that. It was in fact a hypothesis rather than a proven theory as he himself acknowledged. Proof of the motion of the earth was impossible until the discovery of the measurement of stellar distances by parallax which was not achieved for another couple of centuries. Copernicus' achievement was a reordering and reinterpretation of the available data which over the centuries had become largely corrupted and in fact he tried to remain as close to the exposition of Ptolemy as he could. This lack of unambiguous data and the complexities in interpreting the data that did exist, allowed the church establishment to maintain its reactionary stance on these matters without difficulty.

My aim here is not to detail the scientific discoveries or importance of Kepler and Newton but to use them as examples perhaps the prime examples of natural philosophers at the cusp of the scientific revolution, philosophers who are now seen as pioneers in the fields for which they are remembered but who were then absolutely in the symbolic traditions of their time and whose scientific achievements were only part of wider agenda reflecting those traditions, namely the search for the nature of God and the meaning of human life.

Kepler who has been described as one of the most distinguished humanists of his time, used symbolism with a light touch. He admitted in his diary, describing himself in the third person: "he took delight in enigmas, looked for the saltiest jokes, played with allegories in such a way that he followed out every minutest detail and dragged them along by the hair."[1] In his first book *Mysterium cosmographicum* of 1595, he tried to prove from Copernicus' theories that God had ordered the universe in accordance with Pythagorean number systems. Later in his masterwork of 1619, *Harmonices Mundi Libri V*, or Five Books on the Harmony of the World, he devoted a whole section to Hermes Trismegistus whose views he saw as close to Pythagoras and another to a critique of the Hermetic works of Robert Fludd.[2] He proposed that the symbol of creation was based on the golden section and he believed that astrology, purified of its popular elements, what he called a reformed astrology, which described the relationships of the elements of the universe, was still a valid aspect of reality. His professor, Maestlin, had already described him as primarily an astrologer.

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[1] Cited Grafton 1991 182

[2] Yates 1991 441

Nevertheless in the *Harmonice Mundi,* Kepler also made significant theoretical advances: he made the enormous break with medieval practice by proposing that astronomical measurements were based on geometry and not on Pythagorean number theory and he accurately described the orbits of the planets and the effects of gravity including the causes of tidal movements although mathematical proof for these phenomena had to wait for Newton. Most interestingly for our purpose we can actually document in Kepler's later work the moment of transition from symbolism to modern physics. Up to that time he had followed Aristotelian orthodoxy by allowing that astronomical bodies had souls and that it was the sympathetic interactions between the elements of the universal soul that governed celestial movement. In the *Harmonice Mundi,* he then says, "if we substitute for the word 'soul' the word 'force' then we get just the principle which underlies my physics of the skies."[1] From that moment on the path of development of modern physics and cosmology was unobstructed.

Isaac Newton, who is generally regarded as the father of modern mathematics and physics, is best-known for his *Principia Mathematica* of 1687 in which he described mathematically the law of gravity and showed that this law applied equally to the motions of objects on earth and those of the heavenly bodies. Newton is recognized as one of the greatest mathematicians of all time but recent research shows[2] that his place in history must be considered within the traditions of symbolism that we have been discussing and that his wider aims went far beyond mathematical speculations for their own sake. Newton's

> goal was a knowledge of God and for achieving that goal he marshaled the evidence from every source available to him: mathematics, experiment, observation, reason, revelation, historical record, myth, the tattered remnants of ancient wisdom.[3]

He investigated mathematics, mechanics, optics, prophecy, alchemy and chemistry all with the same single-mindedness viewing all these disciplines as complementary sources of inspiration. Specifically, he was concerned first to identify the life-giving force that distinguished animate beings from inanimate objects and secondly to identify the nature of the force of gravity. He also considered whether these two forces were related in some way or even were possibly identical. To this life-giving

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[1] Kepler 1619 Preface trans. Christopher White.

[2] See for instance Force and Popkin 1999

[3] Dobbs 7. Much of the material on Newton in this section is taken from Dobbs excellent work on the subject.

force, he gave the name the 'vegetative' spirit, vegetative deriving from the Latin meaning to enliven or animate. However, although in the *Principia* he described the mathematical basis of gravity, he never succeeded in identifying the nature of gravity, how or why it worked or what was the mechanical force underlying its effects. Nevertheless, he was convinced that the vegetative spirit and the force of gravity were somehow related.

In the search for this relationship, Newton devoted much of his time to alchemical experimentation. After the *Principia* had been completed in 1686 and before the manuscript had even been received by the Royal Society (the mail or its equivalent taking about the same time then as now), Newton returned to his laboratory and between that date and 1696 he wrote about 55,000 words in his laboratory notes and 175,000 words in his alchemical treatises.[1] Even before the publication of the *Principia* he had proposed a substance called magnesia which had as its name implies close associations with magnetism, which he believed to be the vegetative spirit and which also might be the agent which generated the differences between living things. In these speculations he used the familiar terms of alchemy. Particles of matter fermented or generated new forms and then putrefied returning to the basic atoms of matter. If we translate the alchemical terms ferment and putrefy into modern terminology, combine and disintegrate, the methods of alchemy seem less outlandish. Newton also followed the traditional alchemical notion that it was 'illumination' that caused the 'fermentation' of matter. This also is not so far removed from the modern view of light as the principal source of energy for life. Newton accepted the premise of Zeno the Stoic that the active principle was fire or light and that this was channeled from God through the sun; this belief was repeated by the neoPlatonists, by Pseudo-Dionysius who had said that "light is an image of the archetypal Good"[2] and by Aquinas with his doctrine of *claritas,* an element in the definition of beauty. For him *claritas* was the luminosity of the soul overflowing throughout the physical body.[3]

As part of these alchemical considerations, Newton studied the works of Hermes Trismegistus for 20 years and wrote commentaries on several alchemical treatises including the *Emerald Tablet* and the *Golden Work*.[4] According to the Hermetic works, the sun is the 'visible God'. Newton believed that Hermes Trismegistus was so called since he was

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[1] Dobbs 170

[2] Cited Dobbs 158

[3] See Eco 1986 81 for further discussion of the meaning of *claritas*.

[4] Dobbs 68

Lord over the three kingdoms, animal, vegetable and mineral and in spite of the reevaluation of the date of the works of Trismegistus I have described (page 89). Newton still supposed that he was the most ancient and venerable of authorities and he was at the top of a list that Newton compiled of the *Authores optimi*, the best authors.

In his quest for the origin of life and the origin of the diversity of nature, Newton naturally went back to first principles and his solution was as traditional and orthodox as any before him. God had created the world and to understand the world you had also to examine His nature. Newton like Descartes accepted that God had initiated the development of the universe and that the variety of the world was made up of individual particles combined in different ways but he did not accept Descartes' proposal that the universe had from the moment of creation unfolded in a mechanical and deterministic way. He saw that this mechanistic view would constrain the free will of both God and man and he therefore proposed that God acted through an Agent which controlled the progress of the world and the evolution of the variety of life. This Agent was, for Newton, variously and at different times in his work, the vegetative spirit, the alchemical spirit, the spirit of God, the Logos and Christ Himself. Newton was thus an Arian Christian, in fact a heretic, since he believed that Christ was not of the same essence as, not equal to, God the father, but rather His servant. But this concept of the divine Agent enabled Newton to rationalize his view of the cause of miracles as the temporary suspension of the laws of nature (page 68) and his orthodox acceptance of divination as an understanding of God's preordained future, a future which might nevertheless be redirected since in Newton's view God could do anything except contradict himself. This belief in divination was strengthened by Newton's acceptance of the medieval doctrine of typology which in his customary manner he argued out to its logical conclusion. According to him, the *Hexamaeron*, the six days of creation described in Genesis, was a symbolic synopsis prefiguring the whole of spiritual history. Newton's interest in divination was also expressed in his acceptance that dreams were symbols of both present and future. He used the dream book not of Artemidorus but of the Arabic writer Achmet as his source of interpretation of dreams; he referred frequently to Achmet in his book *Treatise on the Apocalypse* which was published posthumously but probably written very early in his career. In this he interprets the Book of the Apocalypse in typological terms and also uses the word emblem as a synonym of symbol which it had largely become. "According to wch doctrine ye Apocalyptic Dragon is a very proper emblem of ye Roman Kingdom which was so great an enemy of

the Church."[1] He also lays down rules of interpretation for these symbols or types. As he puts it: "by which means the Language of ye Prophets will become certain and ye liberty of wresting it to private imaginations be cut off."

Like his contemporaries and predecessors, Newton, in his quest to discover the nature of the vegetative spirit, the nature of gravity and the nature of God, in addition to Christian sources, also drew on every possible classical and ancient reference that was available. He accepted the existence of the Great Chain of Being (page 18) as a hierarchy of spiritual entities between the divine and gross earthly matter. He translated Nicholas Flamel's *Exposition of the Hieroglyphical Figures* from the French.[2] We know from the surviving inventory of his library what he read and his collection contained many of the books mentioned in this study including those by Valeriano, Tesauro and Caussin. We know that he had five copies of Ovid's *Metamorphoses* including one which was the first book he bought as an undergraduate at Cambridge.[3] In his own work he quoted and analyzed the preSocratic philosophers, Pythagoras, Virgil and Philo of Alexandria and referred with approval to the Harmony of the Spheres citing from Augustine's *De Musica* and from the *Wisdom of Solomon* to the effect that God had ordered everything by number and measure (page 12).

In 1706 he wrote: "whence it seems to have been an ancient opinion that matter depends on a Deity for its laws of motion as well as for its existence."[4] And this seems to have been Newton's own final answer to the cause of both gravitation and the vegetative spirit although at the same time he acknowledged that his life's work was far from a complete or satisfactory solution to the problems of natural philosophy. In his famous words which remind us of the sad remarks of Aquinas (page 38), Newton, in his final years, said that he had been like a boy on the seashore picking up now and again a smoother pebble or a prettier shell than usual while the great ocean of Truth still lay before him. He too had struggled with the idea that in the mystical circularity of the meaning of the symbol lay the key to the understanding of the nature of God. Newton was as Dobbs has characterized him a Janus figure; one who looked forward as the progenitor of modern physics and back in the tradition of the great natural philosophers of the age of symbolism and who at-

[1] Cited by Mamiani *Universitas* 13 2000
[2] Dobbs 176
[3] Mamiani *Universitas* 13 2000
[4] Newton unpublished draft associated with *de Optice*, on Optics, cited in Dobbs 197

tempted to synthesize all existing knowledge into a coherent metaphysical theory of God and human existence.