

THE  
BATTLE  
OF THE  
ANCIENTS  
AND THE  
MODERNS

*by*

CONOR WALTON

M.A. in Art History and Theory  
UNIVERSITY OF ESSEX

September 1995

What I then got hold of, something frightful and dangerous, a problem with horns but not necessarily a bull, in any case a new problem - today I should say that it was *the problem of science itself*, science considered for the first time as problematic, as questionable. But the book in which my youthful courage and suspicion found an outlet - what an *impossible* book had to result from a task so uncongenial to youth! Constructed from a lot of immature, overgreen personal experiences, all of them close to the limits of communication, presented in the context of *art* - for the problem of science cannot be recognized in the context of science - a book perhaps for artists who also have an analytic and retrospective penchant (in other words, an exceptional type of artist for whom one might have to look far and wide and really would not care to look)...

-FRIEDRICH NIETZSCHE  
*The Birth of Tragedy*

## *Table of Contents*

I	<i>Introduction</i>	1
II	<i>The Ancients</i>	3
III	<i>The Moderns</i>	6
IV	<i>Fontenelle and Wotton</i>	10
V	<i>Reason and the Rules</i>	16
VI	<i>History and the Arts</i>	19
VII	<i>The Uniformity of Nature</i>	21
VIII	<i>Science and Sentiment</i>	23
IX	<i>From Mechanical Art to Mechanical Science</i>	27
X	<i>Once More into Battle</i>	41
XI	<i>'The True Old Humean Philosophy'</i>	43
XII	<i>History and Taste</i>	48
XIII	<i>Conclusion</i>	54
	<i>Bibliography</i>	58

## I

*Introduction*

The subject of this dissertation is an apparently trivial literary dispute. Though it took place more than three centuries ago, we are still living with some of its consequences. Ostensibly fought over the relative merits of ancient and modern poets, the dispute grew to encompass all areas of human endeavour, and led to a number of important cultural distinctions, principally between the arts and sciences, and between the proper spheres of knowledge and of taste. As such, it held the attention of a generation, and continued to exert an influence on thinkers, like Hume, who were born long after the dispute appeared to have been resolved.<sup>1</sup>

The primary concern of this enquiry is with distinctions between what we would call the arts and sciences. The reader should note, however, that during the central period that is here being dealt with, the terms ‘art’ and ‘science’ overlapped in their application to a considerable degree, as did ‘science’ and ‘philosophy,’ and it was only towards the end of the eighteenth century that these terms began to be consistently differentiated along the lines of modern usage.<sup>2</sup> How and why this differentiation came about is what I hope to elucidate.

---

<sup>1</sup> As Peter Jones said, Hume was “engrossed ... in the debate on the relative merits of ancient and modern learning and culture. He owned at least three of the major volumes which addressed this debate between the Ancients and Moderns ... Hume’s interest in this debate is everywhere apparent in the 1741 *Essays*.” Jones, ‘Hume’s literary and aesthetic theory,’ in *The Cambridge Companion to Hume*, ed. David Fate Norton, Cambridge University Press, 1993, p.257-9. According to the list compiled by Norton and Norton, the following editions were in Hume’s library: Charles Perrault, *Parallèles des Anciens et des Modernes* (Amsterdam, 1693, 1st ed. 1688); William Wotton, *Reflections upon Ancient and Modern Learning* (London 1694); Jean-Baptiste Dubos, *Réflexions Critiques sur la Poésie et sur la Peinture* (Utrecht, 1732, 1st ed. 1719) Hume would also have been familiar with Fontenelle’s *Digression sur les Anciens et les Modernes* (Paris 1688) and his *Dialogues des Morts* (Paris 1683).

<sup>2</sup> To quote from the definition of ‘Art’ in Diderot’s *Encyclopédie* (1751): “The focal points of our different reflections have been called ‘science’ or ‘art’ according to the nature of their ‘formal’ objects, to use the language of logic. If the object leads to action, we give the name of ‘art’ to the compendium of rules governing its use and to their technical order. If the object is merely contemplated under different aspects, the compendium and technical order of the observations concerning this object are called ‘science.’ Thus metaphysics is a science and ethics is an art. The same is true of theology and pyrotechnics.” Theology was thus a ‘science’ because it was *par excellence* contemplative, but other subject – music, for example – could be viewed as an art or a science depending on whether they were looked upon from a practical or a theoretical point of view. The modern redefinition of art and science, and their separation into two distinct fields of human *activity* was not yet established (The beginnings of this demarcation in English between the words ‘art’ and ‘science’ is attributed by the *Oxford English Dictionary* to Richard Kirwan in 1796: “Previous to the year 1780 minerology tho’ tolerably understood as an art could scarcely be termed a science.”). The now commonly accepted reduction of ‘science’ to a set of activities pursued using experimental method (at which point theology no longer qualifies), and the reduction of ‘art’ to a set of objects intended for (aesthetic) contemplation – the so-called ‘fine arts’ – neatly inverts the ‘active’ and ‘contemplative’ distinction that was Diderot’s starting point. This thesis will be very much concerned with such inversions.

## THE BATTLE OF THE ANCIENTS AND THE MODERNS

In constructing my argument I have used the writings of many participants in the battle, and divided them broadly into three groups: the supporters of the Ancients, the Moderns, and those that I see as intermediaries between the two hostile camps. No doubt, this tripartite division is crude, and in making several writers represent a single point of view, I have done an injustice to the many different shades of opinion that were held by the individuals involved. Some simplification, however, was necessary for the sake of presenting a clear argument.

In essence, this dissertation is a simple story with a small beginning, a fat middle, and a quick end. The beginning is lost in the mists of time; the middle is on the cusp of the modern period, and the end is nigh.

And so to the beginning.

## II

*The Ancients*

The Battle of the Ancients and the Moderns was born out of the triumph of the natural sciences at the end of the seventeenth century, after Galileo, Descartes, and finally Newton successfully challenged the authority of the Ancients in matters of natural philosophy. Up until then, what J. B. Bury called “that profound veneration for antiquity which seems so natural to mankind” had been a pervasive influence on the human mind.

While the veneration of ancestors and of traditional ways is an obvious feature in primitive societies, custom-bound as they are and lacking historical records, but until recent times even societies that experienced great material and cultural advance generally remained backward-looking in their general outlook<sup>3</sup>. This view often found expression in legends of the ‘Lost Paradise’ or the ‘Golden Age’ from which mankind had degenerated. The great civilisations of classical antiquity were deeply coloured by this nostalgic pessimism, and Horace’s dictum that “time depreciates the value of the world”<sup>4</sup> can be taken as typical of the classical sensibility.<sup>5</sup>

Since time was the enemy of humanity, the immutable was considered to possess a higher value than that which varied. All things which were not immutable were subject to the same organic cycle of growth and decay: beginning, progress, perfection, corruption, and end. Plato’s philosophy is exemplary in this regard; the immutable, eternal principles on which he attempted to found his ideal social order reflect the then common view that change led to degeneration.

While, in the arts and sciences, new discoveries and advances in technique had to be admitted (Plato has Socrates agree with Hippias that in many arts “the craftsmen of the past compare ill with those of today,”<sup>6</sup>), no conclusion was drawn from this that the state of mankind was better now than before, and would be better still in the future: it seems that the classical mind harboured some deep aversion to this idea. Progress in the arts and sciences was considered subject to severe limitations: each art and science could advance towards its perfection, but it was commonly thought that many arts had already been perfected, or were close to such a state. Aristotle believed that already in his own day “almost everything has been found out,”<sup>7</sup> and the unknown author of an essay *On Ancient Medicine* (ascribed to the later fifth century), while acknowledging that “many splendid discoveries have been made over the years,” believed that the rest could be discovered by “a competent man, familiar with

<sup>3</sup> B. A. van Groningen (*In the Grip of the Past*, 1953) has pointed out that while speculation about the past was abundant in ancient Greece, explicit pronouncements about the future are extremely rare.

<sup>4</sup> *Damnosa quid non imminuit dies?* Odes, 3. 6.46ff

<sup>5</sup> For a more detailed and qualified examination of this subject, see E. R. Dodds, *The Ancient Concept of Progress*, Oxford, 1973, pp. 1-25. Dodds finds that the only time in classical antiquity when belief in progress had any widespread currency was in Greece in the fifth century – a period in which progress was *actually experienced* across a broad cultural front. Before this period the idea of progress is entirely absent. After the fifth century, belief in progress was confined to increasingly specialist fields in the arts and sciences, and towards the end of the Roman Empire even this gradually disappeared.

<sup>6</sup> Plato, *Greater Hippias*, 281 d.

<sup>7</sup> Aristotle, *Politics*, ii 5.

past findings.”<sup>8</sup> Even this limited idea of progress was further qualified: Herodotus, while recognising that the Greeks had outgrown the “silly nonsense”<sup>9</sup> associated with barbarism, spoke for many when he expressed the view that whatever people may do to better their condition, human perversity and disaster will inevitably undermine their efforts: the greater the civilisation, the greater will be the calamity that destroys it.<sup>10</sup> And Seneca, while admitting that the arts and sciences had progressively ameliorated the lot of mankind over the centuries, expressed the common view that these arts themselves contributed to our eventual corruption, decline and destruction, by ministering to luxury and vice: for Seneca, any advance in human knowledge will be matched by a corresponding advance in human wickedness.<sup>11</sup>

The dissolution of the Roman Empire did nothing to mitigate the general belief in the decay and degeneration of mankind. To the Medievals, the fall of man, which was the source of all corruption in the world, had corrupted nature too, which, like man, was subject to decay and death. Nature was believed to have grown old, becoming ever more impotent. The earth was less fertile, the sun shed less heat, and mankind had become smaller, weaker, less intelligent, and shorter lived than in the first age of the world. If any advantage of later ages over the Ancients in the arts or sciences was acknowledged, it made no difference to the overall view, and could be explained by the analogy used by Bernard of Chartres:

We, like dwarfs on the shoulders of giants, can see more and farther not because we are keener and taller, but because of the greatness by which we are carried and exalted.<sup>12</sup>

The men of the Renaissance, who reacted against the barbarism and ignorance of their medieval ancestors, did not cast off this attitude of reverence towards the past; they reacted against medievalism, but looked back beyond the Middle Ages to the golden age of classical antiquity, which they enthroned as their ideal, by which all modern achievements were to be judged. The Protestant revolt against the traditions of the Church followed a similar pattern to the revolt of the Humanists against the Schoolmen: in both cases the authority of ancient authors (of the Bible or the Greek and Latin classics) was affirmed with even greater zeal than ever before. Luther likewise believed that the present corruption of the world was a sure sign of its decay and imminent destruction.<sup>13</sup> Just as the Humanists set about purging the accepted classical texts of corruptions and accretions, so Luther and other Christian scholars sought to recover a purer Christianity by applying the same techniques to the Bible.

The revolt of the Humanists against the Schoolmen was, in part, a revolt against a cosmology which, though built up from venerable foundations in Greek philosophy and Christian teaching, had come to seem corrupt and decadent; poisoned by endless metaphysical disputes and sterile verbal controversies that revolted the earnest and led to a confusion which did harm to the causes of faith and of truth. But if Christian and classical scholars, in seeking a purer antiquity, sought a purer source of truth, their discoveries could only multiply doubts and harden philosophical and

<sup>8</sup> Quoted in E. R. Dodds, *The Ancient Concept of Progress*, Oxford, 1973, p.11.

<sup>9</sup> Herodotus, *The Histories*, I. 60. 3

<sup>10</sup> E. R. Dodds, *The Ancient Concept of Progress*, Oxford, 1973, p.12.

<sup>11</sup> See J.B. Bury, *The Idea of Progress*, London, 1920, pp. 13-15.

<sup>12</sup> Quoted in R.F. Jones, *Ancients and Moderns*, Washington University Press, St. Louis, 1961, p.281.

<sup>13</sup> See J. Goodfield and S. Toulmin, *The Discovery of Time*, Hutchinson, London, 1965, p.76.

religious discord. As ancient thinkers and schools – Stoics, Epicureans, Sceptics – that had been little more than names for the Schoolmen took on fuller identities, the depth of their disunity became ever more apparent and troubling. The more that was uncovered about the Ancients, the clearer it became how fundamentally they disagreed with one another. While the Humanists were, for the most part, only too willing to defer to the Ancients in matters of learning, they were increasingly faced with the necessity of choosing who among the Ancients they should defer to. As Copenhaver put it: “now that there were more giants for the dwarfs to ride upon, travel became treacherous. In an age so given to deference, dissent among the authorities caused scandal and bred despair.”<sup>14</sup>

At the same time, new discoveries in the arts and sciences were bringing a new awareness of the limits of ancient learning. The astronomical investigations of Copernicus threw doubt on the authority of Ptolemy and his predecessors, and the anatomical researches of Vesalius undermined the prestige of Galen. Aristotle, the most influential of the ancient philosophers, came under increasing attack for his scientific theories from men like Telesio, Cardan and Ramus. These men of the sixteenth century who criticised the Ancients in particular departments of knowledge were in no position to formulate any general view on the privileged position of antiquity; while their discoveries were slowly undermining the cosmology of the Ancients, they had as yet no credible system with which to replace it. This bewildered condition of knowledge manifested itself in the scepticism and speculative mysticism so notable among the educated in the sixteenth and seventeenth centuries, and which culminated in the writings of Montaigne and Charron, Bruno and Campanella. Even the faithful made use of sceptical arguments<sup>15</sup>, not simply to undermine the subtle science of the Schoolmen, but to deny the very possibility of intellectual knowledge, in the interests of a purer faith. As Cornelius Agrippa von Nettesheim (1486-1535) demanded:

How can one perceive ... truth? Is it by scientific speculations, by the pressing witness of sensation, by the artificial arguments of logic, by evident proofs, by demonstrative syllogisms, by the lights and efforts of human reason? Bah! Get rid of all that: the only means of discovering truth is faith.<sup>16</sup>

---

<sup>14</sup> Brian P. Copenhaver and Charles B. Schmitt, *Renaissance Philosophy*, Oxford, 1992, p.197.

<sup>15</sup> These were made available through works such as Cicero's *Academica* and the *Hypotyposes* of Sextus Empiricus. The Pyrrhonic and Academic Sceptics of antiquity had attacked the dogmatic philosophies of their day and written extensively on the complete relativity of knowledge.

<sup>16</sup> Quoted in Hiram Haydn, *The Counter-Renaissance*, Charles Scribner's Sons, New York, 1950, p. 101.

## III

*The Moderns*

It was only with the arrival of Bacon, Galileo and Descartes, that these doubts and isolated criticisms could grow into a systematic rebellion against the Ancients. Believing that no true science could be built on the basis of an authority that had proven so fallible, these Moderns proposed a new system of philosophy, which would draw its principles from the practical authority of direct experience and observation. Dismissing the teachings of the Ancients as based on opinion rather than truth, and mired in ignorance and fantasy, the Moderns sought to restore faith in science and human reason by effecting, in Bacon's words, "a total reconstruction of sciences, arts, and all human knowledge, raised on proper foundations." Inspired by the new discoveries in physics and mathematics, medicine and astronomy, the proponents of the new philosophy soon developed the principles of a cosmology that could challenge that of the Ancients. Convinced of the superiority of modern science, and eager to promote their new-found sense of potency, the Moderns extended the comparison of ancient and modern science to all aspects of life, marshalling the evidence for historical progress since antiquity in all the various fields of human endeavour.

This assault of the Moderns on the hallowed status of the Ancients made relatively easy inroads where ever the successes of the new science made their presence felt, but its extension into the broader cultural sphere was met with fierce resistance. After a prolonged series of literary skirmishes, all-out cultural war was declared in France on the 27th of January, 1687, when the great champion of the Moderns, Charles Perrault, in delivering his poem, *Le Siècle de Louis le Grand* to the assembled *Académie Française*, succeeded in dividing the members of that august institution into two hostile camps. France was the most obvious location for the battle, for it was there that the position of the Moderns was strongest: Louis was himself the most radiant symbol of the age's self-glorification, and the Moderns lost no favour with him by insisting that his reign was at least as great as those of Augustus and Alexander. The literary and artistic glories of the *Grand Siècle* were taken as proof that Louis was presiding over his own golden age, the equal at least of those of antiquity. As Perrault declared:

Antiquity 'tis own'd, does well deserve  
 Profound respect, yet not to be adored.  
 The *Ancients* I with unbent knees behold,  
 For they, tho' great, were Men as well as we,  
 And justly one may venture to compare  
 The Age of Lewis, to Augustus's Days.  
 What Time more Conquering Chiefs did ere produce?  
 What Time more Rampiers forc'd by brave Assault?  
 Or when did Victory ere urge her steeds  
 With Speed more rapid thro' the glorious Course?  
 Would we at last throw off the specious Veil,  
 Which Prejudice has cast before our Eyes,

Errors traditionary cease to praise,  
 Thro' our own Opticks view the homely Scene;  
 Plainly we might perceive the Ages past  
 No Title to our Adoration Claim,  
 And that with them for skill in Lib'ral Arts  
 Without the least Presumption we may vie.<sup>17</sup>

Perrault declared that Corneille, Racine and Molière were superior to the ancient dramatic poets, Aeschylus, Sophocles and Euripides; that Plato was a bore and that Homer would have written a better epic if he'd been born in Paris, where he would have had civilised heroes as models, rather than those vulgar, brutish and dishonest Greeks. As for the great classical painters, Zeuxis, Timanthes and Apelles, the praises bestowed on them by their admirers shows the pathetic state of the art in that age:

Great Master-piece indeed a Bird to cheat,  
 Most wondrous art a curtain to describe,  
 And was it such a matchless piece of skill;  
 To part a slender, by a nicer Line?  
 These singular exploits would hardly serve,  
 At present for a learner's first Essay.  
 So trifling was these early Painters skill,  
 They knew no more than their Admirers now.

The ancient works of sculpture, too, were not without their defects; the *Hercules* was absurdly muscle-bound, and the *Laocöon* bore not the least proportion to his sons:

The slimy Bodies of the furious Snakes  
 Grasp not his Children but encircle Dwarfs.

In oratory, Perrault set Bossuet against Pericles, Flechier (Bishop of Nismes) against Isocrates, Bourdaloue against Lysias, Voiture against Pliny and Balzac against Cicero. In poetry Horace, Menander, Virgil, Ovid and Martial were acknowledged to be supreme, but this supremacy had more to do with age than anything else: "Twas Time alone established their Renown." In time, too, the great poets of the present age – Boileau, Regniers, Maynards, Cambauds, Malherbs, Gaudeaux, Racans – will come to be as much admired as their ancient predecessors:

What Mortal can conceive the mighty Fame,  
 These wonderous Authors shall hereafter gain;  
 When Time, that is, in future Minutes drown'd,  
 To late Posterity their works transmits;  
 And by his growing irresistible Pow'r,  
 Shall usher in their Apotheosis

In order to justify these criticisms, Perrault had recourse to the principles of the new

---

<sup>17</sup> This blank verse translation was published anonymously by John Nutt (London, 1705), along with a translation of the *History of the War of the Ancients and Moderns* (attributed to Fenelon, but now thought to be by François de Calliere), as *Characters and Criticisms upon Ancient and Modern Orators, Poets, Painters, Musicians, Statuaries, and other Arts and Sciences*.

philosophy. Indeed, his point of departure was the belief that was most fundamental to the new philosophy; the constancy of nature. The stability of natural laws was a necessary hypothesis, without which, as Descartes demonstrated, science would be impossible. Perrault uses this to affirm the permanent power of nature to produce men of equal talent in every age.<sup>18</sup> The point was expanded in Perrault's *Parallèle des Anciens et des Modernes*; the lions of Africa in our days do not differ in fierceness from those of the days of Alexander the Great, and men of all times are equal in vigour. It was obvious, then, that the Moderns could not be intrinsically inferior to the Ancients, but while he maintained the equality of the Ancients and Moderns in terms of native genius, he acknowledged that their productions might be unequal, given that social conditions change and that not all such conditions were favourable to the arts and sciences. But given equally favourable conditions, however, Perrault believed that the latest comers must be the best, since they can inherit and improve upon the achievements of their predecessors. The sciences and arts both depend upon the accumulation of knowledge, which increases and improves as time goes on. Just as the Ancients knew only seven planets and the most remarkable stars while the Moderns had discovered the satellites of planets and numberless tiny stars, so the Ancients had only known the passions of the soul *en gros*, and displayed them as such in their arts, while the Moderns knew an infinity of little affections and their accompanying circumstances. It seemed, therefore, that far from inevitably degenerating through time, the arts and sciences could both be expected to improve.

For Perrault, this not only meant that the best modern painters were better than the best of the Ancients (Zeuxis, Timanthes and Apelles), but that a contemporary painter such as Lebrun could be expected to surpass the great painters of the previous century – Raphael, Titian and Veronese:

... I make bold to state that, if we consider the art itself, considered as an accumulation; a collection of precepts, we shall find it more accomplished and perfect at present than it was at the time of these great masters  
[– Raphael, *et al.*].<sup>19</sup>

Perrault tries to prove his point by making a detailed comparison of two paintings that hung opposite one another in the King's Cabinet in the Tuileries: Veronese's *The Disciples at Emmaus* (c.1560, now in the Louvre) and Lebrun's *The Tent of Darius* (1661, now in Versailles), which comparison, he believed, showed the clear superiority of Lebrun. Veronese is faulted for, among other things, an error of perspective "that we would find unpardonable today in the work of a schoolboy of fifteen",<sup>20</sup> and for not observing the 'three unities' of time, place and action.

---

<sup>18</sup> *À former les esprits comme à former les corps  
La nature en tout temps fait les mesme efforts;  
Son être est immuable, et cette force aisée  
Dont elle produit tout ne c'est point épuisée.*

*De cette mesme main les forces infinies  
Produisent en tout temps de sembles genies*

Quoted in J.B. Bury, *The Idea of Progress*, London, 1920, p.84.

<sup>19</sup> *Parallèle des Anciens et des Modernes*, Paris, 1688, 2<sup>nd</sup> Dialogue, (trans. Christopher Miller) quoted in Harrison, Wood & Gaiger (eds.) *Art in Theory 1648-1815*, Blackwell, Oxford, 2000, p.59.

<sup>20</sup> *Ibid.*, p.61.

It was inevitable that the Battle of the Ancients and the Moderns would degenerate into a literary dispute – the Battle of the Books satirised by Swift – since it was in that field that the claims of the Moderns were most suspect, most easily challenged. Boileau came forward on behalf of the Ancients in France with his *Reflexions Critiques sur Quelques Passages du Rhétour Longin* (1694), as Sir William Temple did in England with his *Essay on Ancient and Modern Learning*: Both accused Perrault of ignorance and bad taste, and were moved by a resentment and indignation, that the wisdom of the ages should be dismissed by some upstart critics whose heads had been turned by a new theory. In Temple's view the Moderns represented the epitome of bad criticism; he defended the notion that neither beauty nor wisdom were cumulative, and that excellence in the arts and sciences depends upon the judgement and integrity of the individual who practices them. It was thus absurd to believe, as Perrault did, that the arts and sciences could be expected to progress of their own accord; the great achievements of the past would always prove exemplary. If anything, Temple's belief that the Ancients had been greater men than the Moderns was only reinforced by the shallow and foolish criticisms of men like Perrault: the natural force of genius so discernible in the Ancients

has not been equalled in any Persons that have set up for Promoters of knowledge in these latter Ages; and [if we] compare the Actual Performances of them both together, we ought in Justice to conclude, that the Learning of the present Age, is only a faint, imperfect copy from the knowledge of former Times, such as could be taken from those scatter'd Fragments which were saved out of the general Shipwreck..

Temple believed that modern innovations, like the Copernican system in astronomy, would ultimately turn out to be less original, or less true, than their adherents believed. Both Boileau and Temple were of a sceptical disposition, and neither paid much attention to the new discoveries, or to the principles of the new philosophy, which Perrault and the Moderns made the basis of their argument.

## IV

*Fontenelle and Wotton*

It was only with the intervention of leading intellectuals with an interest in both camps, such as Bernard le Bovier de Fontenelle in France and William Wotton in England, that distinctions were developed that could resolve the conflict into something like a theoretical compromise.

Fontenelle, being himself a Cartesian, an amateur scientist and permanent secretary to the Academy of Sciences, was as convinced as Perrault of the permanence of the forces of nature. As he saw it, then, the question of the superiority of the Ancients was reducible to another: were trees in ancient times greater than today?<sup>21</sup> A little Cartesian philosophy was enough, in Fontenelle's eyes, to prove that they were not. And so he concurred with Perrault on a second point; nature never forgot how to mould the head of a Cicero or a Livy. She produces in every age men who might be great men, but the age does not always allow them to exert their talents. He also agreed that knowledge was cumulative, and that it was thus to be expected that ancient attempts to explain the universe would be surpassed by later theories; "We are under an obligation to the Ancients for having exhausted almost all the false theories that could be formed."<sup>22</sup>

But Fontenelle did not believe that all human intellectual activities could participate in this kind of demonstrable progress; some fields of endeavour did not depend, in his view, on the accumulation of knowledge. He was thus led to formulate a distinction which, at least in this form, had never been clearly expressed before; between the different principles that govern the different forms of human activity. As he explained it in his *Digression sur les Anciens et Modernes* (1688):

Eloquence and Poetry require a certain Number of Views less extended than the other Arts, and which depend chiefly on the vivacity of the Imagination. Now Men in a few Ages may have amassed a considerable Number of Views; and vivacity of Imagination has no need of a long Train of Experiences, nor a great many Rules to form it to all the perfection 'tis capable of. But Natural Philosophy, Physick, and Mathematick are composed of an infinite number of views, and depend upon Justness of Reasoning, which ripens by very slow degrees, and is always improving. Besides, 'tis often necessary that these Arts be assisted by experiments which chance makes, and does not carry to the propos'd Point. 'Tis evident this is endless, and that the last Physicians or Mathematicians must naturally be the most accomplished.<sup>23</sup>

<sup>21</sup> "Toute la question de la preeminence entre les anciens et les modernes etant une fois bien entendue, se reduit a savoir si les arbres qui etaient autrefois dans nos compaignes etaient plus grand que ceux d'aujourd'hui." – *Digression sur les Anciens et les Modernes*, ed. R. Shackleton, Oxford, 1955, p.161.

<sup>22</sup> Quoted in Bury, *The Idea of Progress*, p.104.

<sup>23</sup> "L'éloquence et la poésie ne demandent qu'un certain nombre de vues assez borné, et elles dépendent prinipalement de la vivacité de l'imagination; or les hommes peuvent avoir amassé en peu de siècles un petit nombre de vues, et la vivacité de l'imagination n'a pas besoin d'une longue suite d'expériences, ni d'une grande quantité de règles pour avoir toute la perfection dont elle est capable.

In other words, Fontenelle is making a tentative distinction, between what we might call the fine arts, or arts of imagination, which in his view occupy a restricted field, and the “other arts” which occupy the field of what we would call science and technology, and which, because they are based on the accumulation of knowledge, are inherently progressive. In these latter disciplines, progress since the time of the Ancients can be easily demonstrated, and is only to be expected. Thus, while natural philosophy, physic (medicine) and mathematics are capable of infinite extension, and seem to gain something simply through the lapse of time; through the accumulation of knowledge, the continual revision of results and the refinement of tools and methods, imaginative arts like poetry and eloquence always have to aim at perfection within their immediate context, and so cannot gain through constant accumulation or revision; their limits are essentially those of the human imagination itself. Such arts, therefore, cannot be expected to improve or progress indefinitely through time; refinements of technique can be made, but they can only serve the art within certain limits, set by sensitivity of our organs, our understanding, and our innate talent or genius. Exactly where these limits lie it is impossible to say, but beyond them, further refinements of technique cease to benefit the artist, and rather detract from the merit of his work; the artist overreaches himself, and lapses into excess and mannerism. Once sufficient skill has been developed for artists to reach this ‘optimal point,’ significant technical development has ended, and the art has reached maturity; its best works can serve ever after as models for those who follow. But when, where, and if such perfection is reached is, of course, an historical question, and thus open to dispute, since an endless number of social and geographical constraints, and fortuitous circumstances would have to be taken into account. For example, it might be the case, as Fontenelle believed, that eloquence had reached its highest perfection in Demosthenes and Cicero, which was easily explainable, once one took into account the importance of eloquence in the republics of the ancient world. Since public speaking dominated all forms of public life, from the law courts to the Senate,

Eloquence was a recommendation to everything in the Greek and Roman Republics; and it was as fortunate to be born with a Genius for speaking well, as it would be now to be born worth some Thousands a Year.

It was not surprising, therefore, that the art of persuasion had been brought to its highest perfection in the ancient republics, and that standards of eloquence had fallen as the demand for it disappeared, with the disappearance of the ancient republics themselves.<sup>24</sup> Thus the superiority of the Ancients in eloquence could be admitted,

---

*Mais la physique, la médecine, les mathématiques, sont composées d’un nombre infini de vues, et dépendent de la justesse du raisonnement, qui se perfectionne avec une extrême lenteur, et se perfectionne toujours; il faut même souvent qu’elles soient aidées par des expériences que le hasard seul fait naître, et qu’il n’amène pas à point nommé. Il est évident que tout cela n’a point de fin, et que les derniers physiciens ou mathématiciens devront naturellement être les plus habiles.”* (Ibid., p.166. Also quoted in Saisselin, *Taste in Eighteenth Century France*, New York, 1965, p.21. Original English translation by Mr Hughes, published in London, 1719, with Glanville’s translation of the *Plurality of Worlds*.

<sup>24</sup> William Wotton made the same point in his *Reflections upon Ancient and Modern Learning* (1694): “When Orators are no longer constituent Parts of a Government, or, at least, when Eloquence is not an almost certain step to arrive at the chiefest Honours in a State, the Necessity of the Art of Speaking is, in a great measure, taken off; and as the Authority of Orators lessens, which it will insensibly do, as Tyranny and Absolute Power prevail, their Art will dwindle into Declamation, and an Affectation of

without implying the innate inferiority of the Moderns, or sacrificing the principle of the constancy of the forces of nature. It might be the case, then, that Demosthenes and Cicero might never be surpassed in eloquence, Livy in history, and Virgil in certain verses; if so, it can be attributed to any number of personal or political circumstances, most of which can be classified (in the Abbé Du Bos' terms) as 'moral' rather than 'physical' causes. Even so, for Fontenelle the question of whether or when or who among the Ancients really achieved perfection in these arts is an open one; he merely sets it down that

as Eloquence and Poetry are pretty much limited, there must have been a Time when they were carried to the highest perfection; and that Time, I take it, for Eloquence and History, was the Age of *Augustus Caesar*. I have no idea of any thing superior to *Cicero* and *Titus Livius*: not that they are without their Faults; but I believe it impossible to have fewer faults, with so great Excellencies; and everyone knows, that there is no other way in which we can ascribe any Perfection to Mankind.

But even if the possibilities for improvement in these fields are exhausted, this is still no cause for despair, since modern artists can still achieve all the perfection that is humanly possible in these arts, within the constraints imposed by fortune. In any case, situations change; different circumstances demand different sorts of perfection, and new discoveries and inventions can even bring forth whole new genres, unknown to the Ancients, such as the novel or the opera. And even if the Ancients appear to be unsurpassed in certain genres, this does not mean that their achievement is beyond criticism, or should be accepted unconditionally. In the sciences, a definite judgement concerning the superiority of the Moderns over the Ancients is possible, because science is a matter of knowledge, not opinion or taste. But this is not the case in the arts, therefore no definitive judgement on the superiority of the Ancients or Moderns in artistic matters can be arrived at. It may well be the case that the Ancients cannot be surpassed in certain fields, but this does not mean, as their enthusiastic admirers claim, that they cannot be equalled. The constancy of the forces of nature, while precluding the intrinsic superiority of the Ancients *or* Moderns, ends up leaving the question of their respective achievements open to dispute.

It might seem, then, that Fontenelle had effectively declared a draw in a rather futile conflict, but it would be more accurate to describe his intervention as marking a revolution in critical thought about the arts. For a start, Fontenelle's distinctions between what we might call the arts and sciences won immediate approval. In England, William Wotton published his *Reflections upon Ancient and Modern Learning* (1694); perhaps the most clear-headed and comprehensive work of criticism to emerge from the conflict, and which elucidated and expanded Fontenelle's view of the two sorts of human intellectual activity:

one, of those wherein the greatest part of those learned men who have compared Ancient and Modern Performances, either give up the cause to the Ancients quite, or think, at least, that the Moderns have not gone beyond them. The other of those, where the Advocates for the Moderns think that the

---

Sentences, and Forms of Wit. The Old Men, who out-live their former Splendours, will, perhaps, set their own Scholars and Auditors right, and give them a true Relish of what is Great and Noble; but that will hardly continue above one or two Generations." (p.36 of the 1697 edition.)

case is so clear on their side, that they wonder how any Man can dispute with them. *Poesie, Oratory, Architecture, Painting, and Statuary*, are of the *first* sort; *Natural History, Physiology, and Mathematics*, with all their dependencies, are of the *second*.<sup>25</sup>

In the case of the first sort of activity, the question of the superiority of Ancients or Moderns is not proper

for a Discourse, wherein Men are supposed to reason severely; because, for want of Mediums whereon to found an Argument, it cannot easily be decided; for though there be no surer Way of judging of the comparative Force of the Genius's of several Men, than by examining the respective Beauty or Subtilty of their Performances; yet the good Fortune of appearing first, added to the Misfortune of wanting a Guide, gives the First Comers a great Advantage.<sup>26</sup>

In the case, however, of the second sort of activity, which comprises the "*Mathematical and Physical Sciences*, considered in their largest extent," a clear decision in favour of the Moderns is possible, since what is here contended for is "*Knowledge of Nature*"; These sciences, therefore,

have no Dependence upon the Opinions of Men for their Truth; they will admit of fixed and undisputed *Mediums* of Comparison and Judgement: So that, though it may always be debated, who have been the best Orators, or who have been the best Poets; yet it cannot always be a Matter of Controversie, who have been the greatest *Geometers, Arithmeticians, Astronomers, Musicians*<sup>27</sup>, *Anatomists, Chymists, Botanists*, or the like; because a fair Comparison between the Inventions, Observations, Experiments and Collections of the contending Parties, must certainly put an End to the Dispute, and give full Satisfaction to all Sides.<sup>28</sup>

Fifty years later, Turgot could take it for granted that Fontenelle's and Wotton's basic distinction was generally understood and accepted:

The knowledge of nature and of the truth are as infinite as they are. The arts, whose object is to please us, are limited as we are. Ceaselessly, time hatches new discoveries in the sciences; but poetry, painting, music, have a fixed point determined by the spirit of language, the imitation of nature, the limited sensitivity of our organs; they reach a certain point with slow steps and cannot go beyond it. The great men of the century of Augustus reached it, and they are still our models.<sup>29</sup>

---

<sup>25</sup> William Wotton, *Reflections upon Ancient and Modern Learning*, London (1697 edn.), p.19. (Also quoted in Paul O. Kristeller, "The Modern System of the Arts" in *Renaissance Thought and the Arts*, Princeton, 1990, p.193.)

<sup>26</sup> *Ibid.*, p.8.

<sup>27</sup> Here it will be noted that music maintains its position as a 'mathematical art,' as it did in the old system of the Liberal Arts, along with astronomy.

<sup>28</sup> *Ibid.*, p.81.

<sup>29</sup> Quoted in Gay, *The Enlightenment: The Science of Freedom*, (1969), p.124.

Furthermore, after Fontenelle's intervention, the absolute authority of antiquity was effectively at an end. The deference with which Fontenelle or Wotton or Turgot treated the Ancients was, no doubt, sincere and well meant, but it masked the change of consciousness which had been wrought in their attitudes to the past; the principle of the permanence of the forces of nature had achieved victory over the theory of natural degeneration, and so, after millennia of dominance, the myth of the golden age had finally been philosophically discredited. It was no longer plausible to believe that the Ancients were intrinsically superior to us; their achievements were, of course, to be applauded, but it was obvious, said Fontenelle, that in their shoes we would have done much the same.<sup>30</sup>

It was clear, then, that there was no sense in exalting the Ancients; the invariability of nature implied that, fundamentally, they were no different to us; their pre-eminence is a matter of perspective. In his *Dialogues of the Dead*, Fontenelle has Socrates remark how antiquity is enlarged and exalted by distance: "In our own day we esteemed our ancestors more than they deserved, and now our posterity esteems us more than we deserve. There really is no difference between our ancestors, ourselves, and our posterity."<sup>31</sup> This implied that though the Ancients might appear to be unsurpassed in certain fields of artistic endeavour, their pre-eminence should not be submitted to blindly. Their achievements might seem intimidating at a distance, but they were just as subject to criticism as our own:

Since the Ancients may possibly have arriv'd to the Greatest Perfection in certain Things, or may not, we ought, when we examine whether they have actually arriv'd to that Perfection, or no, to have no respect for their great Names, no indulgence for their Faults, but to treat them, in short, as if they were Moderns. We should be able to hear or say, without any softening, that such a Thing is an Impertinence in Homer or Pindar: we should have the courage to believe, that mortal Eyes may spy Faults in these great Genius's. We should be able to suffer Demosthenes and Cicero to be compar'd to some Person with a Modern Name, and perhaps not of the first Rank. How great and Prodigious an Effort of Reason!<sup>32</sup>

Once such principles were accepted, the absolute authority of the Ancients was effectively at an end, both in the arts and in the sciences. An ode by Cowley in honour of Bacon addressed to the Royal Society summed up the sense of achievement that the

---

<sup>30</sup> In Fontenelle's view, it was only because the Ancients were prior in time to us that they were the authors of the first inventions. Even if they had discovered and perfected the arts of poetry and eloquence, painting and sculpture, that did not make them superior to us. Fontenelle used a metaphor which writers since Bacon had used to turn the tables on antiquity: *Antiquitas seculi iuventus mundi*; what we call antiquity was in fact the youth of the world. Since humanity is older now than in the past, we might paradoxically call ourselves the Ancients and our ancestors the Young. Humanity in its infancy had been absorbed by the most urgent needs of life; in its youth it succeeded in things of the imagination such as poetry and eloquence. Now humanity was beginning to perfect its powers of reason and achieve wisdom and enlightenment. Yet unlike Bacon and other writers, Fontenelle refuses to press the metaphor, which implied both the wisdom of experience and the decay of old age; this would be contrary to the principle of the permanence of the forces of nature. He asserts, therefore, that humanity will have no old age, and will always be capable of achieving the successes of its youth: "to drop the metaphor, men will never degenerate."

<sup>31</sup> Quoted in Bury, *The Idea of Progress*, p.99.

<sup>32</sup> Quoted in Saisselin, *Taste in Eighteenth Century France*, p.22.

sciences inspired in liberating the human mind from the yoke of ancient authority:

“Bacon has broke that scar-crow Deity”<sup>33</sup>

---

<sup>33</sup> Quoted in Bury, *The Idea of Progress*, p.96.

## V

*Reason and the Rules*

In the arts, this revolution was expressed by artists' liberation from the 'rules', which had been derived from the example of the Ancients, and particularly from the writings of Horace and Aristotle. In antiquity, the cultural centrality of the art of public speaking had tended to dominate critical thinking about the other arts too, so that the strict sense of propriety and decorum vital to the law court and the Senate, and which was taught by the rules of rhetoric, came to be extended indiscriminately to other fields of artistic endeavour. The humanists of the Renaissance, following in the footsteps of their ancient masters, inherited their concern for stylistic correctness, and so they too became obsessed by form. The result was pedantry on an unprecedented scale, as scholars attempted to revive and enforce the artistic conventions of a bygone age in a new and different cultural context. The endless battles waged by seventeenth-century artists, and writers in particular, in defence of creative freedom, did much to provoke the Moderns' contempt for antiquity, and inflame the passions on both sides in the Battle of the Books. It was, however, the sort of philosophical distinctions made available by Fontenelle and Wotton at the end of the century that provided the means for dismissing the whole conflict as altogether futile and absurd.

If the Ancients were not intrinsically superior to the Moderns, it made no sense to submit blindly to their example, and if the rules derived from their example were of any value, it was not because they were *ancient*, but because they were *reasonable*, in the sense of being appropriate to the art or genre or work in question. One outcome of the Battle of the Ancients and the Moderns, therefore, was a philosophical defence of artistic freedom, and its implications were quickly grasped and assimilated by those who needed it. Jonathan Richardson's *Essay on the Art of Criticism* (1719) may be taken as a case in point. Richardson, himself a painter, claimed to advance "nothing upon the foot of authority.

Whatever authorities there may be for any proposition, the single value of these themselves consists in their being derived from reason; and they weigh with me in proportion as I can see they do so; they then become my own, and I have no occasion to produce the author, but the reason: or (if this be obvious) leave it to be observed by the reader.<sup>34</sup>

Indeed Richardson went so far as to put forward a delightful paradox to prove the pointlessness of disputes about the authority of the rules:

though we had a book of rules for painting said to be written by Apelles himself, and it were allowed that what Apelles said was infallibly true; ... then instead of saying are these rules good, are they founded upon reason? the question would only be, Are they really of him? Their authority will rest, not on the credit of Apelles, but upon the testimony of those who affirm they are his. Which I shall not want, if I find the rules be good; and if I do not, it

---

<sup>34</sup> Richardson, *Works*, p.173.

will be insufficient: And all this without the least prejudice to the profound respect I have for Apelles; nay, it is a necessary consequence of it.<sup>35</sup>

Richardson, however, lost no time in qualifying his profound respect for Apelles and company, dismissing with pride and satisfaction their claims to infallibility: “Of the works that are left to us by the Ancients themselves, nine parts in ten are but indifferent, and many are wretched.”<sup>36</sup>

The authority of the Ancients was thus trumped by the authority of reason, but the important point to note is that the latter was taken to guarantee artistic, as well as critical, freedom, for it left the final creative decision in the hands of the artist. What was demanded of artist and critic alike was neither obedience to ancient precedent, nor a rigorous demonstration that the work was founded upon the eternal and immutable principles of reason. Since it was evident that the rules of composition were properly derived from exemplary works, rather than the works being derived from rules, it was obvious that these rules could not be deduced from first principles, fixed *a priori* or considered abstract conclusions of the understanding. They could be no more than general observations concerning what was known to please in successful works; they had no other basis than that of experience, and it was taken for granted that experiences differed, and that different people in different ages and countries were pleased by different things. The rules were not, therefore, matters of certain knowledge, capable of demonstration, but matters of taste, which were naturally liable to dispute. What was required of artists and critics, then, was ultimately good judgement, or taste; the ability to think critically about the rules, to be aware of their fallibility, and to apply them only as they saw fit, in the light of *their own* experience.

This not only meant that artistic judgement depended on freedom of thought from all authority; it meant that the sort of passionate, doctrinaire, partisan attachment to particular schools of artists, which had fuelled the Battle of the Ancients and Moderns – not to mention all previous artistic controversies – was inimicable to serious criticism. Roger de Piles wrote in his *Première Conversation sur la Connaissance de la Peinture* that the good critic ought to have no prejudices for or against any manner of painting.<sup>37</sup> Richardson amplified the same point:

We should consider ourselves as rational beings at large, no matter of what age, or of what country, nor even of what part of the universe we are inhabitants, no more than it would be to consider ourselves as of such a city, or of such a parish. Opinions taken up early, and from those we have loved and honoured, and which we see to be approved and applauded as such, be the numbers ever so great, must have no advantage with us upon these accounts. Neither must our own passions or interest be allowed to give the least bias to our judgements when we are upon a rational enquiry. A connoisseur must consider the Ancients, the Italians, Vandyke, Annibale Caracci, Giulio Romano, Michael Angelo, and even the divine Raphael himself as fallible, and examine their works with unbiased indifferency, as if he had never heard of such men.<sup>38</sup>

---

<sup>35</sup> *Ibid.*, p.174.

<sup>36</sup> *Ibid.*, p. 169.

<sup>37</sup> See Saisselin, *Taste in Eighteenth Century France*, p.58.

<sup>38</sup> Richardson, *Works*, p.167-8.

## THE BATTLE OF THE ANCIENTS AND THE MODERNS

Good criticism, it seems, required the establishment of a certain psychological distance between the judge and the work to be judged. An unprecedented level of cultural detachment was thus implied. The artist and the man of taste might be as free from the authority of the Moderns as from the Ancients; as free from the present as from the past.

## VI

*History and the Arts*

It might seem paradoxical to suggest that this conception of critical judgement as a-historical and universal was bound up with a new, heightened historical sense, but this was actually so. It could be said that before the Battle of the Ancients and the Moderns, there simply was no conception of the nature of historical change. There was, of course, a past, but it was conceived in terms of the present, and merely removed in time. Each society had, so to speak, *its own* past, which was understood in terms of present circumstances and judged in terms of present values. Civilisations, past or present, that were perceived to be alien – based on other values – were regarded with hostility. This facilitated the sort of cultural wholeness that has become an object of modern nostalgia; the prevailing style of art grew organically out of the prevailing social conditions. Each society in each age produced *its own* art, in conformity with *its own* taste, and was intolerant towards such art of other times or places as failed to conform to its standards; dispassionate and disinterested appreciation of the achievements of foreign cultures was simply off the agenda. The art of a past civilisation, such as classical antiquity (from which all European societies with cultural pretensions claimed descent) might, therefore, inform the art of the present, but it could not determine it. This relation of past to present was, as Rémy Saisselin has said, “*par excellence* artistic: it allowed the poet or painter the latitude needed for the creation of original works.”<sup>39</sup> It was only within this a-historical context that the rules of art could be seriously put forward as absolute – true of all times and places – but it was also the denial of the historicity of the rules in the seventeenth century that finally brought about a reaction against them. The chauvinistic attempts of scholars to enforce classically derived rules without regard to how things had changed since the days of Horace or Aristotle provoked modern artists to repudiate the rules as evidently false. Molière, defending his ‘aberrant’ works against the classical pedants, wrote that “If works written according to the rules do not please, and those not done according to the rules do, it follows that the rules were ill-conceived.”<sup>40</sup>

Of course, Molière could say this because there was really no question about who or where or when the works were supposed to please, or whether the same work might not please in different times or places; it was taken for granted that the only judgement that counted was one made *here and now*, not in some remote antiquity, or for that matter, in some remote posterity. This led the Moderns to denigrate the achievements of the Ancients as inferior to their own, and to dismiss the classical rules of composition as irrelevant, with the same zeal that the pedants used to uphold them. “The Ancients”, said Molière, “are the Ancients; we are the people of today.”<sup>41</sup>

Ultimately, the position of the Moderns was untenable; seventeenth-century society was too deeply steeped in classical ideals for such an outright rejection of the classical heritage, as their own works showed only too well. But the recourse of the

<sup>39</sup> *Taste in Eighteenth Century France*, p.39.

<sup>40</sup> *Ibid.*, p.10.

<sup>41</sup> Quoted in Bury, *The Idea of Progress*, p.83.

Moderns to the achievements of the new science in order to prove their point made the Battle of the Ancients and the Moderns unlike all previous artistic disputes, which had been generally fought out as rival claims to represent some hallowed and venerable tradition. This sort of appeal to a mythologised past had allowed artistic revolutions to be made in the name of restorations. The scientific revolution, however, was not of this sort; it dramatised a rupture between past and present, and made Europeans perceive their particular civilisation, and the achievements of their age, as unique; unprecedented; unlike all other civilisations, past or present, including those of their hallowed ancestors. The past could no longer be thought of as just like the present, only better; it was different, and with this insight classical antiquity, and the classical rules, receded into history.

## VII

*The Uniformity of Nature*

What finally prevented, however, the wholesale rejection of the past and the rules as an irrelevance at this early stage in the history of modernism was also tied up with the new science. At the same time that scientific achievements were setting off modern European civilisation against all others, the principle of the permanence of the forces of nature, on which that science depended, was working, to some extent, in the opposite direction, since it implied that *human* nature too must remain the same in all times and places, despite all appearances to the contrary. In his *Dialogues of the Dead*, Fontenelle has Socrates profess his hope to Montaigne that the latter's age will show a vast improvement on his own; that men, having profited from the experience and mistakes of so many centuries will be much wiser than him. Montaigne, however, assures him that it is not so, and that the vigorous types of antiquity, such as Socrates himself, are no longer to be found. To this assertion Socrates opposes the principle of the invariability of nature; she has not degenerated in her other works, so why should she produce degenerate men? Men may exalt their ancestors, but there can be no real difference between them and us; "*C'est toujours la même chose.*" Montaigne counters that surely things are always changing; different ages have different characters. Are there not ages of learning and ages of ignorance? True, replies Socrates, but these are only externalities. The heart of man does not change with the fashions of his life. The order of nature remains constant: "*l'ordre général de la Nature a l'air bien constant.*"<sup>42</sup> The principle of the permanence of the forces of nature, therefore, while it guaranteed the cumulative achievements of modern science, prevented Fontenelle from maintaining a belief in human progress. The invariability of nature applied to the passions, the weaknesses, and the intellectual limits of human beings and implied that, psychologically, humankind was always and everywhere the same; neither better nor worse, and subject to the same fundamental passions and needs. Science itself, therefore, implied a distinction between that which was constant and universal in man, and that which was subject to change and variation, and this was articulated as a distinction between nature (which was the object of science, and which yielded knowledge that was abstract and eternal; true of all times and places), and culture (which was the object of judgement, or taste: it included all forms of human activity, but was exemplified by the arts of imagination). In the case of the latter, there was no possible recourse to demonstrably certain principles; the ultimate arbiter was practicality, and the judge of practicality was experience, and it was to be expected that both experience and all the forms of human activity would change with the times and adapt as human circumstances changed. Human nature might always and everywhere be the same, but people nevertheless differed in their beliefs, values, pleasures, tastes, and activities because their experiences differed according to where and when they were born and the way of life they were born into. In the aftermath of the Battle of the Ancients and the Moderns, then, it became clear that beliefs, mores, and the arts were naturally subject to change and diversity, and so were ideas of beauty and taste. It became a commonplace of the eighteenth century to say that tastes

---

<sup>42</sup> See Bury, *The Idea of Progress*, p.99.

varied historically and geographically. Voltaire, summing up the wisdom of the age in his *Essay on Dramatic Poesie* (written in English, 1726) wrote that

We may define metals, minerals, elements, animals, because their nature is ever the same; but almost all the works of man change as does the imagination which produced them. The customs, languages and tastes of the closest neighbours differ.<sup>43</sup>

---

<sup>43</sup> Quoted in Saisselin, *Taste in Eighteenth Century France*, p.40.

## VIII

*Science and Sentiment*

Custom is a second nature which destroys the former. But what is nature? For is not custom natural? I am very much afraid that nature itself is only a first custom, as custom is a second nature.

– Pascal, *Pensée* 93 (126), 1662

Clearly, the search for objective, absolute laws in the arts was pointless. The social and artistic conventions that governed the arts had to be accepted for what they were; conventions. The arts were thus intrinsically historical. Every work of art grew out of a particular, unrepeatable set of historical circumstances, and aimed to please a certain historical audience with certain historical tastes and beliefs about the nature of the world. Each work of art could be seen, therefore, as the expression of a particular culture and a particular cosmology. As science progressed, and our knowledge of the world increased, it was certain that such cosmological beliefs would be discredited, and come to appear absurd to later generations, just as our own attempts to understand the universe may amuse our posterity. Even so, it might be the case that the work of art; the bastard child of contingency and error, and intended to serve an historical end, might achieve that end with all the perfection of means that is humanly possible at any time. As such, it could stand – for all time – as one of the pinnacles of human achievement. The beliefs of any age might be dismissed as absurd and based on ignorance, but its artistic achievements might never be equalled. The distinction, therefore, between the sciences, based on the immutable principles of reason and truth, and the arts, based on transient conventions and ephemeral social pleasures, turned out to be rather paradoxical. As Rémy Saisselin said:

Works of art, born of history, became a-historical, while science was not accorded this type of immortality. In the realm of the exact sciences the achievements of the past were always subject to doubt, question, reversal, replacement. We can make a *table rase* of certain systems of philosophy or science if doing so will bring us supposedly closer to the desired end. Here the past truly dies; it becomes a fund for the curious or something to be recalled for the historians of science. The Copernican theory superseded by a better explanation of the workings of the heavens is no longer of use and becomes a historical fact. But a work of the imagination, be it one, two, or three centuries, or even ten removed in time does not suffer the same fate: it may survive, it may impose itself, and though created in a past for men long since dead, it may yet exert a certain power in the present as a work of the exact sciences does not.<sup>44</sup>

It might thus be the case, as one scientific commentator recently proclaimed, that modern scientists have no need to read Newton's *Principia*, and wouldn't feel the loss

---

<sup>44</sup> *Ibid.*, p.42.

if every last copy of the work was destroyed,<sup>45</sup> but it seems likely that the works of his contemporaries, Milton or Pope, will continue to be enjoyed, admired, and (perhaps) emulated, so long as those works (and people who can read them) survive. It may be true that our pleasure in those works is not the same as that of its original readers; indeed, that we each enjoy a different pleasure, and perceive a different beauty in the same work. Hume had said that

a thousand different sentiments, excited by the same object, are all right; because no sentiment represents what is really in the object. It only marks a certain conformity or relation between the object and the organs or faculties of the mind, and if that conformity did not exist, the sentiment could never possibly have being. Beauty is no quality in things themselves: it exists merely in the mind which contemplates them; and each mind perceives a different beauty.<sup>46</sup>

If, as Hume believed, this was so, it obviously made dogmatic criticism futile. This did not mean, though, that our sense of beauty was a trivial affair, a matter of caprice; it was understood that taste involved more than simple likes and dislikes, although this might be true of the taste of the palate or the preference for certain colours or musical instruments. Taste was formed by environment and by cultural experience. This is unique for each individual, because each individual is born into a unique set of circumstances, which gives rise to a particular experience of the world, the result of which is a unique way of thinking. Before Hume, Richardson had affirmed that

No two men in the world think and act alike, nor is it possible they should; because men fall into a way of thinking and acting from a certain chain of causes which is not, nor can be the same to different men.<sup>47</sup>

The fact, however, that taste, like opinion, was considered as the outcome of a certain chain of causes prevented it from being viewed as arbitrary. It was understood that differences of taste or opinion were largely the outcome of differences of environment, of language, of social conditions and historical development. As such both were still *rational*; it was natural to expect that peoples' beliefs would reflect their experiences, and that they would seek to satisfy their bodily and spiritual needs, wants and pleasures differently, as their circumstances differed. In practical terms, all this was as it should be. Richardson could thus happily affirm that

I am very sensible, as all created beings in the universe seek pleasure as their chiefest good, there is an infinite variety of tastes with relation to it ... I neither blame nor pity those who differ from me; it is very fit there should be variety of tastes; if we were all of a mind we should be perpetually at variance with one another.<sup>48</sup>

<sup>45</sup> "... it is unlikely that a single living scientist has ever read it, professionally. If all 400 copies were to vanish from the face of the earth tomorrow, the antiquarian book trade might be devastated, but science would proceed as if nothing had happened. Science would be unaffected even if all the copies and facsimiles of the book disappeared. The truth is that Newton's own writings do not matter any more." – Tom Wilkie, *The Independent*, London, June 2nd 1995, p.21.

<sup>46</sup> 'Of the Standard of Taste', in *Selected Essays*, Oxford 1993, p.136.

<sup>47</sup> Richardson, *Works*, p.120.

<sup>48</sup> *Ibid.*

Yet this did not prevent Richardson, or any other eighteenth century thinker, from continuing to think of taste, beauty, and the rules in terms of universals, or from believing that these might have a basis in universal principles. This was not mere complacency. It was still the case that works of art, though born of history – contingency and error – and originally intended for the satisfaction of a people of singular circumstances, singular beliefs and singular pleasures, might survive, to be enjoyed and appropriated by people in different circumstances, with different beliefs and pleasures. The pleasure taken by each in the object might very well be different, but the fact that it was always taken *in the present* (thus a-historically) allowed the object to, in a sense, transcend its origins, to escape time, and enjoy at least the illusion of immortality. And if such a work continued to escape history, to give pleasure in different circumstances, to people with different beliefs and tastes, it might well be that the work *was* immortal, in the practical sense of appealing to something deep, perhaps universal, in human nature. This, as Hume noted, gives quite a twist to the distinction between the arts and the sciences:

Though in speculation we may readily avow a certain criterion in science, and deny it in sentiment, the matter is found in practice to be much more hard to ascertain in the former case than in the latter. Theories of abstract philosophy, systems of profound theology, have prevailed during one age: in a successive period these have been universally exploded: their absurdity has been detected: other theories and systems have supplied their place, which again gave place to their successors: and nothing has been experienced more liable to the revolutions of chance and fashion than these pretended decisions of science.<sup>49</sup>

The case is not the same, Hume points out, with the arts, whose excellence and beauty may survive all the revolutions of history and fashion. The scientific systems of Aristotle and Epicurus, of Descartes and Newton may each in turn be discredited and replaced by new systems, which will, in their turn, be discredited and replaced, *ad infinitum*, but

The same HOMER who pleased at ATHENS and ROME two thousand years ago, is still admired at PARIS and LONDON. All the changes of climate, government, religion, and language, have not been able to obscure his glory.<sup>50</sup>

We arrive, then, at a paradox: from the perspective of science, all taste is relative; but from the perspective of taste, all science is relative. This did not mean stalemate, however, for the contestants were not evenly matched. Science claimed objectivity and truth; it claimed to reveal the order of nature. Taste claimed subjectivity and pleasure; it revealed the order of culture. In theory, then, science, with its more imposing claims, triumphed over taste. In practice, however, taste had the upper hand: Fontenelle, Voltaire and Hume; urbane, sceptical and appreciative of the human comedy as they were, accepted that culture, not nature, was man's natural habitat. Under their leadership, therefore, taste became "the one Newtonian law of eighteenth-

---

<sup>49</sup> Hume, *Selected Essays*, Oxford University Press, 1993, p. 148.

<sup>50</sup> *Ibid.*, p. 139.

century humanism.”<sup>51</sup> The *de facto* outcome of the Battle of the Ancients and the Moderns, and of the distinction between the arts and the sciences, was not the relativity of taste, but the relativity of knowledge.

---

<sup>51</sup> I. Wade, *The Structure and Form of the French Enlightenment*, Princeton, 1977, p.282.

## IX

*From Mechanical Art to Mechanical Science*

I perceive, *said the Countess*, Philosophy is now become very Mechanical. So mechanical, *said I*, that I fear we shall quickly be ashamed of it; they will have the World to be in great, what a watch is in little; which is very regular, and depends only on the just disposing of the several parts of the movement. But pray tell me, Madam, had you not formerly a more sublime idea of the universe?

– Fontenelle, *Plurality of Worlds*, 1686

A digression may at this point serve to elucidate our picture of the relationship between the arts and the sciences. We shall, therefore, start again at the beginning, and examine the classical notion of the distinction between art and science. For the Ancients, true science was conceived as knowledge that was absolutely certain; as such, it was of necessity unchanging and eternal. The arts, on the other hand, being historical, were constantly changing and developing, and civilisation itself was caught up in the arts' cycle of progress and decay. Ancient writers were well aware of the importance of the arts in creating the means of civilised life; when they opposed art to nature, they were thinking of art as human activity in general, but even at their most progressively successful, the arts could hardly furnish a model for science to emulate. The distinction at issue between art (*techné, ars*) and science (*episteme, scientia*) was one between *doing* and *understanding*.<sup>52</sup> True knowledge was philosophical; it concerned the ultimate nature and essence of things. Thus, while the possibility of technical progress in the arts was always admitted, and was seen to have been made, this was considered as of little relevance to the natural philosopher.

Within the medieval system of knowledge, too, the ideal of science remained exclusively intellectual; the test of any hypothesis was not experience, but its congruity with a body of accepted principles that had their source in the Divine Reason that governed the universe. Everything in nature was permeated by God's intelligence, and it was the duty of man, being endowed by God with intelligence, to know God or truth by an act of his intellect. The main scientific tool remained, therefore, syllogistic logic or deductive reasoning. While some medieval natural philosophers were led to formulate a more empirically directed conception of science, even these innovators were, as A.C. Crombie said, generally less interested in the practical problems and applications of scientific knowledge "than in the *kind of knowledge* natural science was, how it fitted into the general structure of their metaphysics, and, if it extended so far, how it bore on theology."<sup>53</sup> What modest innovations the schoolmen made in scientific methodology remained largely unfulfilled, and were further neglected during the revival of letters in the fifteenth century. In their extravagant reverence for the Ancients, the Humanists naturally

<sup>52</sup> See Rupert Hall, 'The Scholar and the Craftsman in the Scientific Revolution', in L.M. Marsak (ed.), *The Rise of Science in Relation to Society*, New York, 1964, p.34.

<sup>53</sup> A.C. Crombie, *Augustine to Galileo*, London, 1952, Vol. II, p.115-16.

scorned all ‘modern’ philosophical innovations. Scholastic science had, of course, been built upon the authority of the ancient philosophers, and particularly Aristotle, whose encyclopaedic system of knowledge harmonised most easily with the Schoolmen’s own devotion to realising the ideal of a harmonious and comprehensive intellectual order. But for all the comprehensive unity of the medieval cosmology, its very perfection as a system of thought left it divorced from “the empirical world of actual fact,”<sup>54</sup> and dangerously exposed to sceptical attacks like those of Ockham, whose assertion that the universals which the Peripatetic system took for its objects were mere names implied that the whole scholastic framework was unreal; a mere intellectual fabrication. Even within a civilisation as well-integrated in its beliefs as that of the European late Middle Ages, intellectual authority had never been completely unitary, and by the time of the humanist revolt, debates on universals and scores of other issues made scholastic science proverbially disputatious. The humanist programme for the recovery and purification of ancient learning was, in part, an expression of disgust with a system of knowledge that seemed poisoned from within, but if the search for a purer antiquity was a search for a purer and simpler truth, it was also an expression of dissatisfaction with the ideal of abstract intellectual knowledge that scholastic science seemed to represent. As the Florentine Humanist Salutati wrote around 1390 to an Ockhamist doctor in Padua:

The truth cannot be in all these distinctions, questions, and suppositions. Take away the sophistic dressing, give us back a knowledge of reality ... Turn above all things to poetry, whose seal is higher than that of logical knowledge, and alone is able to speak of God.<sup>55</sup>

Here “poetry” is meant in the ancient sense of *poiesis*; it corresponds, as Santillana says, “to the fullness of activity and creation, to what was understood as *humanitas* itself.”<sup>56</sup> The Humanists who turned from metaphysics and natural science to poetry and the arts – from the Sciences of God and Nature to those of Man – were both the agents and the victims of philosophical discord. The sheer diversity of classical texts and new knowledge that they amassed so greedily were enough to destroy the synthetic pretensions of the Schoolmen, but it left the Humanists themselves both thrilled and bewildered; facing a world which lost in philosophical coherence what it gained in richness and depth. As such, the rationalistic ideal of science as purely intellectual knowledge, which had dominated European thought since Antiquity, was effectively neutralised; its principal instruments – the metaphysics and natural science of the Schoolmen – were left paralysed by too much new knowledge and too many new doubts. Under such conditions, intellectual originality inevitably shifted away from the realm of abstract thought to the concrete world of activity and creation, where the weight of ancient authority was least burdensome, and where intellectual doubts could be silenced by action.

It was in this realm, too, that the modern scientific spirit first found sustenance and inspiration, for it was in the arts – understood as the mechanical arts<sup>57</sup>

---

<sup>54</sup> Ernst Troeltsch, quoted in Hiram Haydn, *The Counter-Renaissance*, New York, 1950, p.134.

<sup>55</sup> Quoted in Giorgio de Santillana, *The Age of Adventure*, New York, 1951, p.12.

<sup>56</sup> *Ibid.*, p. 12.

<sup>57</sup> of which there were originally seven (corresponding to the seven liberal arts): *lanificium*, *armatura*, *navigatio*, *agricultura*, *venatio*, *medicina*, *theatrica*. Architecture, as well as various branches of painting and sculpture, were listed as subdivisions of *armatura* (building). See Kristeller, ‘The Modern

– that the limits of ancient learning first became apparent. These were the domain of new breed of charismatic ‘artist-engineers,’ led by Brunelleschi,<sup>58</sup> who accomplished unheard of feats of artistry and engineering that transformed their contemporaries’ view of the world, and inspired them with a new faith in their own powers, and their ability to rival the Ancients.<sup>59</sup> Alberti, in the dedication of his treatise *On Painting* to Brunelleschi, describes how, before coming to Florence, he had believed, “as many said, that Nature, the mistress of all things, had grown old and tired. She no longer produced either geniuses or giants which in her more youthful and more glorious days she had produced so marvellously and abundantly.”

Alberti entered Florence with the suite of Pope Eugene IV in 1434, just as Brunelleschi was closing the dome of the cathedral: Donatello had completed most of the sculptures for its facade and for Or San Michele; Ghiberti’s first doors for the Baptistry were in place and Masaccio was already dead. Florence was at the centre of an artistic revolution, to which Alberti gave expression:

I have come to understand that in many men, but especially in you Filippo ... there is a genius for every praiseworthy thing. For this they should not be slighted in favour of anyone famous in antiquity in these arts. Therefore, I believe the power of acquiring wide fame in any art or science lies in our industry and diligence more than in the times or in the gifts of nature ... Who would ever be hard or envious enough to fail to praise Pippo the architect on seeing here such a large structure, rising above the skies, ample to cover with its shadow all the Tuscan people, and constructed without the aid of centring or great quantity of wood? Since this work seems impossible of execution in

---

System of the Arts’ in *Renaissance Thought and the Arts*, Princeton, 1990, p. 193.

<sup>58</sup> “Brunelleschi around 1400 should be considered the most creative scientist as well as the most creative artist of his time, since there was nothing much else that could go by the name of creative science.” – Giorgio de Santillana, ‘The Role of Art in the Scientific Renaissance’, in L.M. Marsak (ed.), *The Rise of Science in Relation to Society*, New York, 1964, p.7.

<sup>59</sup> These artist-engineers proclaimed the arrival of a new type of intellectual hero; the ‘universal man,’ who was both an artist and an enquirer into Nature’s secrets, whose knowledge of ‘natural magic’ enabled him to perform unheard of wonders. Leonardo, the most famous example of the *uomo universale*, according to J.A. Mazzeo, “did not think of himself as other than an artist, however many-faceted his interests. He simply defined the artist, along with his contemporaries, as also and necessarily an anatomist, naturalist, physicist, and mathematician. This vastly broadened definition of the artist shattered the medieval distinction between the liberal arts and the so-called ‘mechanical’ arts. It served to bring the artist, the skilled artisan, even the ‘tinker’ into a closer relationship with the philosopher or man of letters, whose dignity he henceforth claimed, and prepared the way for the amalgamation of theory with technology, exhaustive observation, and experimentation which Bacon predicted as the necessary condition for the advancement of scientific learning.” (Joseph Anthony Mazzeo, *Renaissance and Revolution*, Secker and Warburg, London, 1967, p.11) As Noah E. Fehl said, “It was the artists and reformers who were the fomenters of the scientific revolution.” (Fehl, *Science and Culture*, Chung Chi College, Hong Kong, 1965, p.249-50) Many of the higher craftsmen of this time, the artists, architects and military engineers (of whom Brunelleschi and Leonardo were the supreme examples) were already accustomed, not only to experimentation, but to expressing their results in empirical rules and quantitative terms. For example, the engineer Tartaglia (c.1500-1557), in attempting to calculate the angle at which a gun must be fired to give maximum range, was led to criticise the whole Aristotelian conception of motion, and attempt new mathematical formulations, which resulted in the quite exact quantitative rules that he published in his *Quesiti et Inventioni* (1546). As Edgar Zilsel said, “These quantitative rules of the artisans of early capitalism are, though they are never called so, the forerunners of modern physical laws.” Quoted in Marshall Clagett (ed.), *Critical Problems in the History of Science*, University of Wisconsin Press, Madison, 1962, p. 68-9. See also A.C. Crombie, *Augustine to Galileo*, Heinemann, London, 1957, Vol. II p.124.

our time, if I judge rightly, it was probably unknown and unthought of among the Ancients.<sup>60</sup>

Many of the outstanding humanist scholars of the period, rejecting what Alberti called the “empty words and disputations”<sup>61</sup> of the schools, began to show a new interest in the study of the arts and the technical processes of manufacture. In Alberti’s view, the useful knowledge that issued from the arts was more noble than the idle speculations of the schoolmen, for “man is born to be useful to man,” and the arts existed only to serve him. Alberti himself shunned philosophical speculation in his writings, in order to deal with the kind of knowledge that arose from, and was bound to, practice.<sup>62</sup> Such was his reliance on practical experience and the wisdom of the *artifici* that his fifteenth-century biographer portrayed him as a modern Socrates, who sought his learning in the marketplace. Juan Luis Vives (1492-1540), another great Humanist, similarly scorned the prideful isolation of the philosophers, whose intellectual self-sufficiency led only into endless and futile disputes:

Human inquiry comes to conjectural conclusions, for we do not deserve certain knowledge [*scientia*], stained by sin as we are and hence burdened with the great weight of the body; nor do we need it, for we see that man is ordained lord and master of everything in the sublunary world.<sup>63</sup>

Inquiry for its own sake was sinful and doomed to error, Vives declared; the only worthwhile and reliable knowledge was that which served the needs of mankind and the glory of God:

The first precept in the contemplation and discussion of nature, is that since we cannot gain any certain knowledge from it, we must not indulge ourselves too much in examining into those things which we can never attain, but that all our studies should be applied to the necessities of life, to some bodily or mental gain, to the cultivation and increase of reverence.<sup>64</sup>

In 1531 Vives wrote his *De Tradentis Disciplinis*, advocating the serious study of the arts of cooking, building, navigation, agriculture and clothmaking, urging that scholars should not look down on artisans or be ashamed to ask them the mysteries of their crafts: the scholar would become more learned by consenting to apprentice himself to the craftsman.<sup>65</sup>

---

<sup>60</sup> Leon Battista Alberti, *On Painting*, Yale, p.39-40.

<sup>61</sup> Quoted in Joan Gadol, *Leon Battista Alberti*, University of Chicago Press, Chicago, 1969, p.215.

<sup>62</sup> “Even in *De re aedificatoria* which contains his most dogmatic, metaphysical ideas on nature and beauty, he consistently set aside questions of origin, final cause, and essence to take up problems of function and method instead. Only with respect to the problem of beauty did he succumb to a metaphysical ‘solution’, and then unavoidably. Elsewhere he scrupulously dismissed metaphysical ideas and the teachings of natural philosophy alike, refusing with an almost positivistic firmness to conjecture about such matters.” – Joan Gadol, *Leon Battista Alberti*, University of Chicago Press, Chicago, 1969, p.202.

<sup>63</sup> Quoted in Brian C. Copenhaver and Charles B. Schmitt, *Renaissance Philosophy*, Oxford, 1992, p.205.

<sup>64</sup> Quoted in Hiram Haydn, *The Counter-Renaissance*, New York, 1950, p.242.

<sup>65</sup> See A.C. Crombie, *Augustine to Galileo*, Heinemann, London, 1957, Vol. II p.122-23. A century later, Galileo was still making the same point: at the very beginning of his *Discourses and*

Pushing this line of argument still further, Francis Bacon contrasted the progress of the mechanical arts, in which philosophy and the authority of the Ancients did not figure, with the stagnation of ancient science. Gunpowder, the magnetic compass, printing, had all been unknown to the Ancients, and all were in the process of transforming modern civilisation. Little of this involved science in the classical sense of the word, but it was clear that real, if unwitting, knowledge of natural processes had been gained through these arts. Making nonsense of the Ancients' distinction between art and science, Bacon suggested that the mechanical arts had progressed precisely because they were firmly founded on empirical experience and utility, unlike ancient science, which was of no use to anyone – “of no substance or profit” – and therefore bound to stagnate.<sup>66</sup> Whereas ancient science had its ideal in a wisdom that was its own reward; a perfection of rational insight that involved a transformation of the inner self rather than the outer world,<sup>67</sup> the new science that Bacon proposed took its ideal from the subjection of the material world to human purposes that had formerly characterised the mechanical arts. Science was to be directed to the benefit of man, and its truthfulness would be measured by the practical power over nature that it put at man's disposal:

Fruits and works are as it were sponsors and surities for the truth of philosophies ... Truth therefore and utility are here the same things; and works themselves are of greater value as pledges of the truth than as contributing to the comforts of life.<sup>68</sup>

This obviously implied the sweeping away of the distinction between art and science – between doing and understanding – that was so fundamental to the world view of the Ancients: Bacon maintained that “the unassisted hand and the understanding left to itself possess but little power ... knowledge and human power are synonymous.” While practitioners in the mechanical arts had for generations been defending the dignity of their professions with the claim that “*ars sine scientia nihil est*,”<sup>69</sup> Bacon effectively declared that “*scientia sine ars nihil est*.”<sup>70</sup> His identification of

---

*Demonstrations Concerning Two New Sciences* (1633), he wrote that “the constant activity which you Venetians display in your famous arsenal suggests to the studious mind a large field for investigation, especially that part of the work which involves mechanics; for in this department all types of instruments are constantly being constructed by many artisans, among whom there must be some who, partly by inherited experience and partly by their own observation, have become highly expert and clever in explanation.” Quoted in Allen G. Debus, *Man and Nature in the Renaissance*, Cambridge, 1978, p.10.

<sup>66</sup> Descartes used the same argument: “We see that all the arts begin crude and imperfect, yet if they have any trace of truth in them, whose effect is demonstrated by experience, they gradually become more nearly perfect with practice; in the same way, those guided in philosophy by principles which are true cannot fail by following them to encounter other truths here and there. Indeed, there is no better proof of the falsity of Aristotelian principles than that it is noticeable that no progress has been made by their means during all the centuries in which they have been followed.”

<sup>67</sup> See Ludwig Edelstein, ‘Motives and Incentives for Science in Antiquity’ in A.C. Crombie (ed.), *Scientific Change*, Heinemann, London, 1963, p.15.

<sup>68</sup> *Novum Organum*, Book I, aphorisms 73 and 124, quoted in A.C. Crombie, *Augustine to Galileo*, London, 1957, Vol. II p.294.

<sup>69</sup> See A.C. Crombie's commentary on Giorgio de Santillana's paper, ‘The Role of Art in the Scientific Renaissance’, in Marshall Clagett (ed.), *Critical Problems in the History of Science*, University of Wisconsin Press, Madison, 1962, p.76.

<sup>70</sup> Bacon's inversion of the accepted understanding of art and science is commented on by Diderot in his *Encyclopédie* article ‘Art’ (1751). Diderot endorses Bacon's view that “the history of the

knowledge and power obviously left little room for the old idea of science, but he did not abandon the quest for the ultimate truth. Rather, he sought a more reliable method to reach the same goal of certain knowledge, ancient science having failed to reach that goal through being too narrowly conceived. By combining the intellectual virtues of the Ancients' natural philosophy with the practical knowledge and techniques of the modern mechanical arts, Bacon and his disciples believed that a new 'mechanical philosophy' would be born. Rather than starting from general assumptions, based on principles native only to the understanding, the new philosophy would start from the certainty of particular experience, and gradually work its way up to general laws, testing all hypotheses and permitting only such generalisations as were supportable by experience. Here too, the paradigm of scientific method has its origin in the arts, and could be expressed by Dürer:

Understanding must grow together with practice, so that the hand can do what the will in the understanding wants to be done. From this there results, in time, a certainty both in theory and practice. These must go together, for one without the other is of no avail.

Does such a derivation of modern empiricism sound far-fetched? We should hardly be surprised. As Peter Gay has said, "If there were a debtor's prison for intellectuals who have failed to acknowledge their obligations, it would be filled with the natural philosophers of the scientific revolution."<sup>71</sup> But the problem here is not with some trivial breach of intellectual copyright; if modern science seems remote now from what were once called the mechanical arts, the distance can be understood in part as a difference of cosmological pretensions. Dürer might appear to be speaking the same language as Bacon, but the certainty which Bacon's scientist seeks has always been of a different order to the certainty that Dürer was speaking of. If philosophy went mechanical, it could only do so at the expense of art. And of logical consistency: the very idea of a '*mechanical* philosophy' indicates a certain fudging of intellectual boundaries. As such, we can hardly be surprised that modern science has effaced its origins. As Whitehead noted, "a science that hesitates to forget its founders is lost."<sup>72</sup> Even in Hume's day, the success of the new science was such that scientists were

not commonly very scrupulous in examining the reasons upon which it is founded. It is now become a matter of curiosity to study the first writers on that subject, who ... were obliged to turn their arguments on every side, in order to render them popular and convincing.<sup>73</sup>

As Hume knew, these arguments were necessary, not just in the struggle against the natural philosophy of the Ancients and its scholastic defenders, but also to break down the distinction between mechanical art and natural philosophy, in order to make room for the new scientific enterprise. We must not forget just how hard the fathers of modern science had to fight, to convince their contemporaries that what they dealt

---

mechanical arts [is] the most important branch of true philosophy."

<sup>71</sup> Peter Gay, *The Enlightenment : The Rise of Modern Paganism*, W.W. Norton, New York, 1966, p.313.

<sup>72</sup> Quoted in Thomas S. Kuhn, 'The Function of Dogma in Scientific Research' in A.C. Crombie (ed.), *Scientific Change*, Heinemann, London, 1963, p.350.

<sup>73</sup> *Dialogues Concerning Natural Religion*, Penguin, London, 1990, p.61.

with had any claim to being science at all. Galileo, who was in many ways the heir to the great tradition of Italian artist-engineers, had to contend with this attitude throughout his life. The ‘Tuscan artist’<sup>74</sup> was for the most part treated as a technician: the professors of philosophy with whom he battled incessantly denied his capacity to deal with the ultimate causes of things, and used “logic chopping arguments,” to deny that his work could have any claim to scientific or philosophical status. Even Descartes criticised him on these grounds, suggesting that while Galileo’s method could often explain what happens under certain conditions, it could not explain

why it happens, as I have done in my *Principles*...without having considered the first causes of nature, he has merely sought reasons for particular effects; and thus he has built without a foundation.<sup>75</sup>

In a sense Descartes was right; unless it started from first principles, the new science would always lack a foundation. But from the point of view of those who hoped to found the new science on experience and the practical knowledge of the mechanical arts, it was precisely the concern with first principles and final causes that had prevented the progress of science since the time of Aristotle. As Bacon said,

the handling of final causes, mixed with the rest of physical inquiries hath intercepted the severe and diligent inquiry of all real and physical causes, and given men occasion to stay upon these satisfactory and specious causes, to the great arrest and prejudice of further discovery.<sup>76</sup>

Suspicious of metaphysics and regarding the essences and final causes of the Aristotelians as figments of the imagination, the proponents of the mechanical philosophy sought to confine their attention to the study of efficient and mechanical causes, which were more reliable, since their effects or accidents were in principle measurable. This meant abandoning, at least temporarily, the idea of physics as an enquiry into the ultimate nature and essence of things, but it did not lead them to believe that their new physics would be less scientific; on the contrary, they thought that the new physics would succeed where the old one had failed. As Galileo said:

In speculating we either seek to penetrate the true and internal essence of natural substances, or content ourselves with knowledge of some of their accidents ... But I shall discover that in truth I understand no more about the essences of such familiar things as water, earth or fire than about those of the moon or sun, for that knowledge is withheld from us, and is not to be obtained until we reach that state of blessedness. But if what we want to grasp is the apprehension of some accidents or affections of things, then it seems to me that we need not despair of acquiring this by means springing from measurement and geometry, and respecting distant bodies as well as those close at hand.<sup>77</sup>

---

<sup>74</sup> Milton’s expression. See A.C. Crombie, *Augustine to Galileo*, Heinemann, London, 1957, Vol. II p.159.

<sup>75</sup> *Ibid.*, p.162-3.

<sup>76</sup> *Advancement of Learning*, in M. B. Hall (ed.), *Nature and Nature’s Laws: Documents of the Scientific Revolution*, Macmillan, London, 1970, p.107.

<sup>77</sup> Quoted in Giorgio de Santillana, ‘The Role of Art in the Scientific Renaissance’, in L.M. Marsak

Encouraged by the recent successes encountered in the application of mathematics to concrete physical problems, Galileo was led to believe in the possibility of a physics that would be completely mathematical, which would explain the behaviour of physical objects and phenomena entirely on the basis of the basis of measurable effects of their efficient and mechanical causes. It was a daring position to take, and one that only triumphed long after Galileo's death, with the publication of Newton's *Principia Mathematica*.

Yet the practical success of the new mathematical physics still left the question of its foundation open, and in the absence of explicit first principles, it was put in the position of proceeding on the basis of beliefs *assumed* by its practitioners, which, though often fruitful, were not themselves testable or philosophically justifiable from an empirical standpoint. Copernicus, Kepler, Galileo and Newton all started their enquiries from what to them was just such an obvious assumption; that the world is a "perfect work of art,"<sup>78</sup> which could be apprehended in terms of beauty, and analysed in terms of mechanism. This belief in universal mechanism was itself derived from the mechanical arts, and it permeated the heart of seventeenth-century physics, as did the belief that the behaviour of physical things could be entirely explained by their measurable properties.

In effect, this meant that while Galileo, Bacon and their disciples renounced all claims to empirical knowledge of the first principles and final causes of things (or at least tried to consign such questions to the realm of theology), they were just as convinced as their Aristotelian adversaries that they were discovering, through and behind the particular observed phenomena, the real intelligible structure of the world. The difference was that for the mechanical philosophers, this structure was mathematical: the real world consisted, not of natural substances, but of mathematical forms. The Book of the Universe, said Galileo,

Is written in the language of mathematics, and its characters are triangles, circles and other geometric figures, without which it is humanly impossible to understand a single word of it; without these, one wanders about in a dark labyrinth.<sup>79</sup>

If Galileo believed that the Aristotelian substances were chimerical, he believed just as firmly that mathematics could reveal the enduring reality – the substance – underlying phenomena. In practice, this meant, as A.C. Crombie said, that "though Galileo rejected the kind of 'essential natures' the Aristotelians had been seeking, he

---

(ed.), *The Rise of Science in Relation to Society*, New York, 1964, p. 14.

<sup>78</sup> Galileo, quoted in Giorgio de Santillana, *The Age of Adventure*, New York, 1951, p.24. The claim that 'Nature is the Art of God' (Sir Thomas Browne), was used to rescue nature and knowledge of natural processes from their association with witchcraft, sorcery and sin. Once nature was thus reclaimed from the Devil, human nature soon followed. To uphold the theoretical legitimacy of the new physics, its proponents also made frequent use of the physico-theological proof of God's existence, otherwise known as the argument from design. In turn, the 'evidence' of design implicit in their theories was used to support the cause of religion, and became the 'scientific' basis of eighteenth-century deism. It is, naturally enough, the argument from design that bears the brunt of Hume's onslaught in the *Dialogues Concerning Natural Religion*, where the central argument concerns "the similarity of the works of nature to those of art," and the validity of the inference by analogy from human art to the divine nature.

<sup>79</sup> Quoted in Stillman Drake, *Galileo*, Oxford, 1980, p.70.

simply brought in another kind by the back door.”<sup>80</sup> Bacon and Descartes followed suit: since they set out to discover the nature of the real world by means of measurement, they naturally believed that what was measurable was supremely real. Where Aristotle had analysed phenomena into different sensible qualities, Galileo analysed them into different measurable quantities, and declared the sensible qualities to be subjective and unreal: “I hold that there exists nothing in external bodies for exciting in us tastes, odours and sounds except sizes, shapes, numbers, and slow and swift motions.”<sup>81</sup> The real or ‘primary qualities’ of matter were quantifiable, and consisted in geometrical structure, number and movement, while ‘secondary qualities’ such as tastes, odours, colours and so on were not located in matter, but products of our sensory and mental apparatus; fictions residing only in consciousness. Descartes went even further, claiming that the entire physical universe consisted of just two things: matter and movement. Taking to an extreme the idea that only the quantifiable is real, and exploiting the fact that in mathematics one quantity is much the same as another, he insisted that the universe could be understood as no more than extension, to which God had given motion. All other qualities were contingent – mere accidents – and could be explained, he said, “without having to suppose anything else in their matter but motion, size, shape and the arrangement of their parts.”<sup>82</sup>

Ironically, it was Robert Boyle (1627-91), who in his experimental ‘corpuscular philosophy’ attempted to explain all the manifest properties of bodies by these twin principles of matter and motion, that was first led to observe that the ‘primary qualities’ in terms of which mathematical physics organises and interprets experience might be no less mental than the ‘secondary qualities’: both might have equal claims to reality, or unreality.

Serious problems were beginning to emerge which cast doubt on the philosophical status of the new science. Its proponents had certainly discredited the claims of the ancient philosophies to have established a firm correlation between nature and human knowledge, but they had not relinquished their hopes that this aim could be achieved by means other than those the Ancients had employed. Rejecting the philosophical enquiry into essential natures and final causes, they had chosen the

---

<sup>80</sup> *Augustine to Galileo*, Heinemann, London, 1957, Vol. II p.142.

<sup>81</sup> *Il Saggiatore*, question 48, quoted *Ibid.*, p.86.

<sup>82</sup> I can do no better here than quote A.N. Whitehead: “The primary qualities are the essential qualities of substances whose spatio-temporal relationships constitute nature. The orderliness of these relationships constitutes the order of nature. The occurrences of nature are in some way apprehended by minds, which are associated with living bodies. Primarily, the mental apprehension is aroused by the occurrences in certain parts of the correlated body, the occurrences in the brain, for instance. But the mind in apprehending also experiences sensations which, properly speaking, are qualities of the mind alone. These sensations are projected by the mind so as to clothe appropriate bodies in external nature. Thus the bodies are perceived as with qualities which in fact are purely offspring of the mind. Thus nature gets the credit which should in truth be reserved for ourselves: the rose for its scent: the nightingale for his song: and the sun for his radiance. The poets are entirely mistaken. They should address their lyrics to themselves, and should turn them into odes of self-congratulation on the excellency of the human mind. Nature is a dull affair, soundless, scentless, colourless; merely the hurrying of material, endlessly, meaninglessly. However you disguise it, this is the practical outcome of the characteristic scientific philosophy which closed the seventeenth century...It has held its own as the guiding principle of scientific studies ever since. It is still reigning. Every university in the world organises itself in accordance with it. No alternative system of organising the pursuit of scientific truth has been suggested. It is not only reigning, but it is without a rival. And yet – it is quite unbelievable. This conception of the universe is surely framed in terms of high abstractions, and the paradox only arises because we have mistaken our abstractions for concrete realities.”

– *Science and the Modern World*, Free Association Press, London, 1985, p.68-9.

path of physical investigation, which was to ascend from the facts of experience to universal truths. But while this policy seemed, in practical terms, to be strikingly successful, in theoretical terms it resulted in a situation that was little short of absurdity: it was not just that the mechanistically determined universe of the new science was irreconcilable with the human world of self-determined organisms; it was also the case that the proponents of the mechanical philosophy, in seeking to purge their system of all metaphysical assumptions that were not based on experience, progressed so far that they began to undermine their own philosophical pretensions, and cast doubt on the very idea that the facts of experience were a sufficient basis for a true science of nature. No matter how hard natural philosophers tried to purge themselves of prejudice and achieve methodological purity, their systems always seemed to be found to depend on assumptions that were inherently speculative; that could not be proved, either in logic or experience.

An exemplary case is that of the Dutch physicist, s'Gravesande, who in attempting to establish the theoretical consistency of the Newtonian system, stumbled on a problem with an assumption at the heart of the whole mechanical philosophy – and one which we have already come across – the principle of the uniformity of nature. When, as a result of certain observations, we anticipate other cases which we have not observed, our prediction is based upon this principle. If we could be certain that nature is always and everywhere the same, then the evidence we are able to accumulate here and now for a belief or a scientific law would be enough to support its universal generalisation. Without this assumption that the truths which pertain today will continue to be valid, there can be no foundation for such generalisations, or for any conclusions about the future which are based on past experience. But can this principle be proved? S'Gravesande is forced to admit that it cannot, since no evidence can be used in its support which does not already presuppose what it seeks to prove. As such, he says, it is not a strictly logical principle, but a pragmatic one: its validity lies not in the necessity of thought, but in that of action, for all action, all practical relationships with things would be impossible, if we could not assume that the lessons of former experience will be valid in the future. Scientific prediction cannot, therefore, involve any logically formal necessity; it is rather an inference by analogy with experience, based on a physiological, and perhaps sociological, presupposition. S'Gravesande believes that we must be content with such a conclusion, for that must be true, whose denial would imply the negation of man's empirical existence and all his social life. Just as Descartes was led to appeal to the "truthfulness of God" to make the transition from the uniformity of experience to the uniformity of nature, so s'Gravesande is led to appeal to God's goodness, since it follows from His goodness that a belief so necessary to human life must have an objective basis: "The Author of nature has made it necessary for us to reason by analogy, which consequently can be a legitimate basis for our reasoning."<sup>83</sup>

We are here at the threshold of Hume's philosophy: he has only to rob s'Gravesande's reasoning of its theological justification to arrive at his position of scepticism. Hume readily accepted the necessity of the inference by analogy from the uniformity of experience to the uniformity of nature, but he vigorously argued that the mere psychological necessity of such an inference could predicate nothing with respect to its logical necessity or objective truth. The proponents of the new philosophy had already discredited the Ancients' pretensions to have grasped the objective order of nature: the enquiry into the essence of natural substances was futile

---

<sup>83</sup> Quoted in Ernst Cassirer, *The Philosophy of the Enlightenment*, Princeton, 1951, p.61.

and led to absurdity; we must be content, said Galileo, with a science of accidents or effects. Yet without knowledge of *causes*, a science of effects could never establish itself on firm ground and so provide a correlation between nature and human knowledge that would resist future revolutions in human affairs; the causes assigned by scientists to explain natural phenomena would always remain marked by their human source, and would not constitute true knowledge of nature. By denying our knowledge of natural causes, Hume effectively denied the very possibility of science as true knowledge of nature. He did not, of course, deny the practical success of the mechanical philosophy (in fact, he rejoiced in it, and idolised Newton as much as anyone in his age), but he insisted that its success was practical rather than theoretical. Scientific knowledge is not absolute but relative; its most basic assumptions are not strictly logical, but customary and pragmatic; thus their validity lies not in the necessity of thought, but of action; not in the realm of *nature*, but of *art*. By denying the very possibility of science as it had been understood by the Ancients (*scientia*, *episteme*), he effectively denied that the transition from mechanical art to mechanical philosophy had or ever could be made. As such, both arts and ‘sciences’ share the same foundation in practical experience: neither can transcend that foundation to reveal the absolute truth of nature, for there is no possible bridge from the certainty of experience to the unique validity of any set of general laws or universal principles. Science and philosophy are bound to be inherently speculative, and thus subject to all the revolutions of chance and fashion that mark human life.

Ironically, in Hume’s view, it is the arts, insofar as they take pleasure rather than knowledge for their object, and can be treated as having no serious epistemological pretensions, which hold the possibility of the highest perfection of human understanding. Because the arts depend only such knowledge as can be translated into practice, they can conform to Bacon’s ideal of the harmony of doing and understanding, in which distinctions between knowledge and power, truth and utility really are irrelevant, in a way that the sciences cannot even aspire to. If the artist knows what he is doing, that is all he needs; at no point is he compelled to distinguish between substance and accident, cause and effect, or illusion and reality, as Plato, Aristotle, Galileo, Hume, and all those who seek abstract and objective knowledge are obliged to do.

Of course, Alberti and Leonardo had both called painting a science, of the “great, small, high, low, light, dark, and all such,” said Alberti, “which are called the accidents of things [and] are such that all knowledge of them is by comparison and proportion.”<sup>84</sup> It may seem a small step, in imagination, from Alberti’s science of light and space, to Galileo’s new science of accidents, which by measurement and geometry would obtain knowledge, “respecting distant bodies as well as those close at hand.” There is, no doubt, a connection of sorts between the mathematically ordered universe that Galileo, Descartes and Newton believed in, and the image of such a universe, as it was revealed to them by Brunelleschi. Even Galileo’s telescope, the instrument with which he examined those distant bodies was, as he said, derived “from the most recondite laws of perspective.”<sup>85</sup> Perhaps it was necessary that certain valid distinctions between art and science be effaced, or at least blurred, before modern science could come into being. But the distinctions remain. To the artist,

---

<sup>84</sup> Quoted in Giorgio de Santillana, ‘The Role of Art in the Scientific Renaissance’, in L.M. Marsak (ed.), *The Rise of Science in Relation to Society*, New York, 1964, p.14.

<sup>85</sup> Hence the Latin name *Perspicillum*, or the old English name ‘perspective glass.’ See Giorgio de Santillana, *Ibid.*, p.9.

whether painter or architect or engineer, the laws of perspective simply enable him to deal with the object, by way of its geometrical qualities. Perspective can afford to be a science of ‘accidents’ precisely because the ‘substance’ is supplied by us; by what we see or paint or design or build. As Giorgio de Santillana has said:

If he [Galileo] decides he cannot know about the substance of things, he will have to be explicitly agnostic about it. The artist can be completely confident about the ‘substance’ of his quest, for it is his own creation and nothing else. If it does not exist yet, it is going to exist, of that he is pretty sure, or his life would be bereft of meaning.<sup>86</sup>

But it is precisely this sufficiency of the arts in human terms - their reference only to a knowledge of ‘what we ourselves are doing’ – which prevents them from leading to abstract and objective knowledge of nature. This is what Leonardo came to understand, and his conclusion is strikingly prescient of Hume’s:

You who speculate on the nature of things, do not expect to know the things that nature according to her own order leads to her own ends, but be glad if so be you know the issue of such things as your mind designs.<sup>87</sup>

We tend to forget that the great sceptics of the sixteenth and seventeenth centuries were generally writers and artists rather than what we would call scientists. It was not until after Darwin that science came to be seen as irreligious, and even then the tendency was towards an aggressive atheism rather than scepticism. If anything, the scientific enterprise has been afflicted by faith rather than doubt<sup>88</sup>: its practitioners often seemingly driven by a mystical urge to reveal God’s providential order in nature. Even the most intellectually rigorous examples of the scientific spirit have hardly been able to resist regarding the prevalent scientific theory as an accurate picture of reality. Until Einstein, nearly all believed that Newton had discovered the real intelligible structure of the universe; his world-machine was thought to be an *ens reale* and not merely an *ens rationis*. As Lagrange (1736-1813) said, “There is only one universe, and it can happen to but one man in the world’s history to be the interpreter of its laws.”<sup>89</sup> Most of the great scientific thinkers – Copernicus, Kepler, Galileo, Descartes, Newton, Boyle, Kant – were also models of piety; they were often

---

<sup>86</sup> *Ibid.*, p.15.

<sup>87</sup> *Ibid.*, p.16.

<sup>88</sup> As A.N. Whitehead said: “...when Hume did appear, it was only the religious implications of his argument which attracted attention. This was because the clergy were in principle rationalists, whereas the men of science were content with a simple faith in the order of nature. Hume himself remarks, no doubt scoffingly, ‘Our holy religion is founded on faith.’ This attitude satisfied the Royal Society but not the Church.” (*Science and the Modern World*, Free Association Books, 1985, p.65.) Those that accepted the success of the mechanical science as unassailable were bound to look on the arguments of a Bayle, Berkeley or Hume as irritating sophisms, to be met by the intellectual equivalent of Dr. Johnson kicking the stone. Philosophers, like Kant, who sought to transcend the sceptical position inevitably took the truth of Newtonian theory as established to an extent far greater than subsequent scientific developments have shown to be justified. It took a later generation of scientifically minded thinkers, among them Bertrand Russell and the Logical Positivists, much time to overcome the confusions over the nature of scientific truth that Kantian Philosophy had perpetuated, and in doing so they returned to a viewpoint close, in some respects, to that of Hume and the sceptical empiricists.

<sup>89</sup> Quoted in T.S. Kuhn, ‘The Function of Dogma in Scientific Research’, in A.C. Crombie (ed.), *Scientific Change*, Heinemann, London, 1963, p.353.

unorthodox, but seldom less than devout. From Descartes's time onwards, scepticism was considered as dangerous to science as to religion: scepticism, Boyle said, was "little less prejudicial to natural philosophy than to divinity itself,"<sup>90</sup> and both Kant and Bertrand Russell, in their different ways, agreed. Indeed, Hume subjected both physical science and the 'higher' science of theology to the same fundamental criticism. As Cassirer has noted, with Hume,

it is not religion, which, thanks to its higher, 'absolute' truth can provide a solid foundation for science; it is rather the relativity of scientific knowledge which draws religion into its magic circle.<sup>91</sup>

Though Hume's present reputation is confined almost entirely within theology and the philosophy of science (where it still carries more than a whiff of scandal and licentiousness), he was not himself a scientist, nor, with his limited knowledge of mathematics, could he have found reading Newton's *Principia* much easier than we would. The spirit of his philosophy owes less to either metaphysics or the scientific thinking of the day than to the great sceptical literary tradition which permeated the humanistic culture of the *Régence*, and stretched back from Voltaire, Fontenelle and Bayle to Montaigne and Machiavelli, Lucretius and Cicero<sup>92</sup>. Hume was born into an age that witnessed the popular triumph of science; an age which came to believe that Newton had finally established a direct correlation between nature and human knowledge: despite all the errors of the past – the ideas of Plato, the qualities of Aristotle, the vortices of Descartes – the true science of nature had been finally established on firm ground that would never again be shaken or subverted. It was a belief summed up by Pope:

Nature and Nature's laws lay hid in night,  
God said: 'Let Newton be,' and all was light.

Hume, too, idolised Newton, but for slightly different reasons. Pointing to Newton's own professed ignorance of the *cause* of gravity<sup>93</sup>, Hume was led to a view at least as sublime, but closer to the twilight world of Leonardo than the 'enlightened' world of

---

<sup>90</sup> Quoted in A.C. Crombie, *Augustine to Galileo*, Heinemann, London, 1957, Vol. II p.310.

<sup>91</sup> *The Philosophy of the Enlightenment*, Princeton, 1951, p.63.

<sup>92</sup> As Cassirer says: "In the history of philosophy scepticism has very often been simply the counterpart of a resolute *humanism*. By the denial and destruction of the objective certainty of the external world the sceptic hopes to throw all the thoughts of man back upon his own being. Self-knowledge – he declares – is the first prerequisite to self-realisation. We must try to break the chain connecting us with the outer world in order to enjoy our true freedom." – Ernst Cassirer, *An Essay on Man*, Yale University Press, 1944, p.1.

<sup>93</sup> See, for example, Newton's second letter to Richard Bentley: "the cause of gravity is what I do not pretend to know." Newton was fully aware of the lack of finality in his 'system of the world,' as well as of its essentially abstract and ideal nature (despite the famous and misunderstood pronouncement, *Hypotheses non fingo*). See also his eighth Definition and Scholium in the *Principia Mathematica*: "I likewise call attractions and impulses ... accelerative, and motive; and use the words attraction, impulse, or propensity of any sort towards a centre, promiscuously, and indifferently, one for another; considering those forces not physically, but mathematically: wherefore the reader is not to imagine that by those words I anywhere take upon me to define the kind, or the manner of action, the causes or the physical reason thereof, or that I attribute forces, in a true and physical sense, to certain centres (which are only mathematical points) when at any time I happen to speak of centres attracting, or as endued with attractive force."

Pope:

While Newton seemed to draw off the veil from some of the mysteries of nature, he showed at the same time the imperfection of the mechanical philosophy; and thereby restored her ultimate secrets to that obscurity in which they ever did and ever shall remain.<sup>94</sup>

We cannot miss Hume's sense of satisfaction in drawing this conclusion: all is as it should be. Yet the inner balance, the sense of justice that this conclusion expresses cannot be understood so long as all emphasis is placed on the merely negative and destructive aspects of his philosophy, as scientists, philosophers and theologians are liable to do, for the sake of their own narrow interests. Hume's essential act is a rebalancing of the accounts between the arts and sciences, in the interests of maintaining relative peace and order across the whole range of human endeavour.

---

<sup>94</sup> *History of England*, (1780 edition), VIII, p.326, quoted in P. Gay, *The Enlightenment: The Science of Freedom*, New York, 1969, p.130.

## X

*Once more into Battle*

Let us reconsider the foregoing. It was in the arts that the limits of ancient learning first became apparent, and it was the practical achievements of the arts that first inspired the Moderns to challenge the authority of the Ancients. Led by Galileo, Bacon, and Descartes, the Moderns proposed a total reconstruction of human knowledge, raised, not on the vain imaginings of the Ancients, but on the firm foundations of experience. This new philosophy would build on the practical knowledge made available through the arts, and ascend gradually towards the ultimate truths of the universe. It was thus through the effacing of the ancient distinction between art and science that modern science was made possible: a changeling was put in place of the immutable truth of the Ancients; science was no longer to be a static, contemplative affair, but was to improve and progress towards perfection, as the arts had been thought to do<sup>95</sup>.

Unsurprisingly, this alteration of the concept of science had enormous implications for the arts themselves, and particularly for the arts of imagination, which (following intercourse with the new science), were found to be pregnant with the possibility of cultural warfare. The first phase of the conflict cost few lives, since most of the protagonists were already dead; it was a mere “paper war” or Battle of the Books, fought out on the slopes of Mount Parnassus, with the forces of Homer pitched against those of Corneille, but it provoked remarkable interest throughout the European intellectual community, which was likewise divided into two camps. On one side were the Moderns, led by Charles Perrault, who dismissed the creative achievements of the Ancients with the same patronising contempt with which they consigned the beliefs of old to the waste bin of history. On the other side were the defenders of the Ancients, led by Boileau and Sir William Temple. Associating the new science with philistinism, and accusing the Moderns of what Sir William Temple called ‘sufficiency’ (“the worst composition out of the *Pride and Ignorance of Mankind*”), they were led to defend the Ancients’ claims to learning as part of their general defence of traditional culture.

The ensuing Battle of the Ancients against the Moderns was resolved only when leading intellectuals with an interest in both camps developed a new version of the distinction between the arts and sciences. They thus achieved a new cultural equilibrium, by opposing mechanical science to an art that was now anything but

---

<sup>95</sup> The idea that science might also *decline* like the arts after reaching perfection was common in the seventeenth century: the arts and sciences were understood historically to flourish and decline together, following the same cycle of beginning, progress, perfection, corruption and end. Louis Le Roy wrote that “If the memory of the past is the instruction of the present and the premonition of the future, it is to be feared that having reached so great an excellence, power wisdom, studies, books, industries will decline, as has happened in the past, and disappear – confusion succeeding the order and perfection of today, rudeness to civilisation, ignorance to knowledge.” Quoted in J.B.Bury, *The Idea of Progress*, London, 1920, p.47. Interestingly, the idea of the decline of science has re-emerged once again: John Horgan, in his book *The End of Science* (London, 1996), argues that the great era of scientific discovery may be over, and points to the increasing dominance in physics of what he calls “ironic science”, a speculative, post-empirical mode of enquiry, largely beyond the realm of verification.

## THE BATTLE OF THE ANCIENTS AND THE MODERNS

mechanical (dominated by ideas of natural talent or genius rather than skill) and by balancing the progressivist tendency of the new science with a vision of the imaginative arts that was essentially static and contemplative. In cultural terms, art and science had effectively switched positions.

## XI

‘*The true old Humean philosophy*’

Truth is disputable; not taste: what exists in the nature of things is the standard of our judgement; what each man feels within himself is the standard of sentiment ... systems in physics may be controverted; but the harmony of verse, the tenderness of passion, the brilliancy of wit, must give immediate pleasure.

– Hume, *An Enquiry Concerning the Principles of Morals*, 1751

It was this rather humorous state of affairs to which Hume gave a sound philosophical basis. Insisting on the practical rather than theoretical success of the new science, he showed its most basic assumptions to be pragmatic rather than logical, validated by the necessity of action rather than thought, and thus belonging to the realm of art rather than nature. By in effect denying that the transition from mechanical art to mechanical science had ever taken place, he denied the very possibility of a true science of nature; a science in the ancient sense of the word (*scientia, episteme*). From Hume’s point of view, the ‘mechanical philosophy’ had progressed precisely by undermining our claims to strictly philosophical or theological knowledge. As such, it was a philosophical counterfeit; art masquerading as science, substituting technique (*techné*) for truth. The experimental method, Hume knew, could never establish any truth conclusively: the “pretended decisions of science” would always be subject to “revolutions of chance and fashion.” Whereas the Humanists of the Renaissance had turned away from the scholastic science of God and Nature to that of Man (renouncing with scorn as they did so the claims of “God’s privy councillors” and “Nature’s secretaries”<sup>96</sup> to be able to penetrate the secrets of nature or reveal the source of existence), Hume and the latter-day Humanists find that they can now *turn back* from the Science of Man to that of God and Nature, and ‘colonise’ it on their own terms.<sup>97</sup> Since, Hume says, all the arts and sciences share the same basis in human experience, their truth, for all we know, is a human truth; all are subordinate to the science of *human* nature<sup>98</sup>. By relativising theological and natural science, it became possible to construct a cosmology every bit as comprehensive and encyclopaedic as that of the Schoolmen, but in which the common source, the unity in the manifold, was not God, but man himself, conceived not as a rational intellect, but as an artist; a doer and maker, who creates his own world, and finds the purest self-knowledge, not in contemplation, but in the moment of *poiesis*; in

<sup>96</sup> See Hiram Haydn, *The Counter-Renaissance*, New York, 1950, p. 89.

<sup>97</sup> Here, Hume and his disciples find some common cause with the program of the *Philosophes*, but it should be noted that the latter were generally much less sceptical, and much closer to the modernist viewpoint.

<sup>98</sup> Some thought Hume’s ‘science of human nature’ a rather humorous affair: “It seems to be a particular strain of humour in this author, to set out in his introduction by promising, with a grave face, no less than a complete system of the sciences, upon a foundation entirely new – to wit, that of human nature – when the intention of the whole work is to show, that there is neither human nature nor science in the world.” – Thomas Reid, *An Enquiry into the Human Mind on the Principles of Common Sense*, Hildesheim, 1967, I p102.

the synthesis of doing and understanding<sup>99</sup>, for as Hume's disciple Adam Ferguson said, "we speak of art as distinguished from nature, but art itself is natural to man."<sup>100</sup> In this context, the characterisation of man as an artist was tantamount to a declaration of his metaphysical independence:

Man is formed for an artist; and he must be allowed, even when he mistakes the purpose of his work, to practise his calling, in order to find out for himself what it is best for him to perform.<sup>101</sup>

Since man is prone to error, and his grasp of any higher truth is doubtful, his proper place in relation to God and nature will be found, not in theory, but in practice: as such, man is essentially free from all metaphysically imposed constraints. This means, as Hume noted, that "Tis not solely in poetry and music, we must follow our taste and sentiment, but likewise in philosophy."<sup>102</sup>

Philosophy is, of course, here taken to include natural science and theology, and Hume is quite in earnest: A science which is progressive and subject to constant revision can provide no basis for a philosophy that has any claim to being comprehensive or perennial; its 'objective truth' is too transient and too exclusive. Indeed, if the relativity of scientific knowledge is admitted, taste and sentiment are the only possible foundations for a philosophy that can be properly considered capable of withstanding scientific revisionism. Of course, a philosophy based on subjective pleasure rather than objective truth can have no ultimate epistemological pretensions; it is not, therefore, what Plato or Descartes or a Logical Positivist would understand to be a science or philosophy; in the strictest sense it can be no more than methodical criticism, but it is still capable of being comprehensive; of embracing all aspects of human life, and even of dealing with the most abstract systems of science and philosophy, though not on their own terms. Such systems can only be gathered together and 'reconciled' if the question of their ultimate truth is put to one side; they must instead be understood as purely human creations – *works of art* – if they are to find their place in the broad framework of Hume's 'science' of human nature.

This strategy can be seen clearly at work in the *History of Astronomy* by another of Hume's disciples, Adam Smith.<sup>103</sup> Philosophical or scientific systems,

---

<sup>99</sup> At the hands of the more academic French Encyclopaedists and of Kant, this cosmological scheme was quite literally developed into a parody of the scholastic system. The architecture of this cosmology had its foundation in the structure of our mental world, and the general divisions of human knowledge were traced to subjective roots in the faculties of reason, memory and imagination, and here, too, it is imagination, and not reason, that provides the principle of unity. See, for example, D'Alambert's *Preliminary Discourse* to the French *Encyclopaedia*: "These three faculties first of all form the three general divisions of our system of knowledge: History, which relates to memory; Philosophy, which is the fruit of reason; and the Fine Arts, which are created by imagination ... in the latter faculty of mind the two others happen to be reunited in some measure, and reason is joined there to memory." The operations of reason lead to the imagination, "as these operations consist only of creating, so to speak, beings of a general nature which are different from their models through the process of abstraction and therefore no longer in the immediate scope of the senses. So Metaphysics and Geometry, of all the sciences which depend upon reason, are those in which the imagination has the greatest part."(p.11-12)

<sup>100</sup> Ferguson, *An Essay on the History of Civil Society*, Edinburgh University Press, 1966, p.6.

<sup>101</sup> Ferguson, *Principles of Moral and Political Science*, 1762, p.299.

<sup>102</sup> Hume, *A Treatise on Human Nature*, Oxford University Press, 1978, p.103.

<sup>103</sup> Published posthumously in the *Essays on Philosophical Subjects*, as 'The Principles which lead and direct Philosophical Enquiries; illustrated by the History of Astronomy.' According to Smith's literary executors, the work was originally intended to have been part of "a connected history of the

Smith declares,

in many respects resemble machines. A machine is a little system, created to perform, as well as to connect together, in reality, those different movements and effects which the artist has occasion for. A [philosophical] system is an imaginary machine invented to connect together in the fancy those different movements which are already in reality performed.<sup>104</sup>

It is from this premise that Smith proceeds to analyse the development of astronomical science. Starting from a Humean understanding of the imaginative faculty, Smith maintains that all the systems of ancient astronomy, physics and metaphysics were invented to allay the “tumult of the imagination”<sup>105</sup> and connect together the “seemingly disjointed appearances of nature” by accounting, on the basis of simple and familiar principles, for phenomena that seemed inexplicable, unexpected, or surprising. Smith describes how each astronomical system originally satisfied the needs of the imagination – its craving for beauty and order – but that as observations were refined and new phenomena came to light, these systems were subjected to a process of modification and elaboration which eventually negated their simplicity and beauty. Each system became “as intricate and complex as those appearances themselves, which it had been invented to render uniform and coherent,”<sup>106</sup> and thus failed to satisfy the needs of the imagination.

While the system of solid celestial spheres, for example, had been premised on the belief that the motion of all heavenly bodies was circular – the only motion fitting for such beautiful and divine objects – the ‘machinery’ necessary to reconcile this simple hypothesis with accumulating and increasingly accurate observations of the irregularities in the motions of the planets became ever more intricate and confusing. Numerous spheres or epicycles and equalising circles, each with a different circular motion, were necessary to explain these apparent regularities, and astronomers such as Copernicus were led to wonder whether there might be some simpler way of accounting for these motions, so that the heavens “might no longer appear devoid of harmony and proportion.”<sup>107</sup> Holding fast to the idea of circular motion, Copernicus was led to consider whether a different arrangement of the heavenly bodies might bestow a greater uniformity on their motion, and indeed, by placing the sun rather than the earth at the centre of the universe, his system managed to “render the appearances of the heavens more completely coherent than had been done by any of the former systems. It did this, too, by a more simple and intelligible, as well as more beautiful machinery.”<sup>108</sup> But since his rearrangement of the heavens “moved the earth from its foundation, stopt the revolution of the Firmament, made the Sun stand still, and subverted the whole order of the universe,”<sup>109</sup> it was not immediately accepted,

---

liberal sciences and elegant arts.” Smith’s friend John Millar referred to the work as “employed upon the true old Humean philosophy.” Quoted in the editors’ ‘General Introduction’ to the *Essays on philosophical Subjects*, Oxford University Press, 1980, p.16. The *History of Astronomy* has acquired a substantial secondary literature in this century, in relation to the ideas of philosophers and historians of science such as Karl Popper and Thomas Kuhn.

<sup>104</sup> Smith, *Essays on Philosophical Subjects*, Oxford University Press, 1980, p.67.

<sup>105</sup> *Ibid.*, p.46.

<sup>106</sup> *Ibid.*, p.59.

<sup>107</sup> *Ibid.*, p.71.

<sup>108</sup> *Ibid.*, p.74.

<sup>109</sup> *Ibid.*, p.76.

being contrary to the prejudices of sense, and inconsistent with every system of physics then known. It was only when Descartes developed a system that could account for such difficulties as the rapid motion of the earth on the basis of simple and familiar principles (such as the laws of impulse and the motions of vortices) that the Copernican hypothesis began to gain wide acceptance among the learned.

When the world beheld the complete, and almost perfect coherence, which the philosophy of Des Cartes bestowed upon the system of Copernicus, the imaginations of mankind could no longer refuse themselves the pleasure of going along with so harmonious an account of things ... This account ... joined together a greater number of the most discordant phenomena of nature, than had been united by any other hypothesis; a system in which the principles of connection, though perhaps equally imaginary, were, however, more distinct and determinate, than any that had been known before; and which attempted to trace to the imagination, not only the order of succession by which the heavenly bodies were moved, but that by which they, and almost all other natural objects had originally been produced.<sup>110</sup>

Searching critics could not, however, rest content with the Cartesian system, for in its turn, it failed to account for many of the observations, such as the elliptical rather than circular motions of the planets, made by astronomers like Kepler and Cassini. The Cartesian system was thus eventually forced to yield to that of Newton, who found that he could join together all the observed motions of the planets by the single principle of gravity. After explaining the superior beauty and simplicity of the Newtonian system and expounding all the extant proofs of its validity, Smith declares it to be the “greatest and most admirable improvement that was ever made in philosophy.”<sup>111</sup> Indeed

even we, while we have been endeavouring to represent all philosophical systems as mere inventions of the imagination, to connect together the otherwise disjointed and discordant phænomena of nature, have insensibly been drawn, to make use of language expressing the connecting principles of this one, as if they were real chains which Nature makes use of to bind together her several operations. Can we wonder then, that it should have gained the general and complete approbation of mankind, and that it should now be considered ... as the greatest discovery that was ever made by man, the discovery of an immense chain of the most important and sublime truths, all closely connected together, by one capital fact [gravity], the reality of which we have daily experience.<sup>112</sup>

Smith has not, in fact, committed himself to the truth of the Newtonian system; all he is willing to affirm is that it is “a system whose parts are all the more strictly connected together than those of any other philosophical hypothesis.”<sup>113</sup> The system of Descartes may be described as “one of the most entertaining Romances that has

---

<sup>110</sup> *Ibid.*, p.96-7.

<sup>111</sup> *Ibid.*, p.104.

<sup>112</sup> *Ibid.*, p.105.

<sup>113</sup> *Ibid.*, p.104.

ever been wrote,”<sup>114</sup> but Newton’s system offers the imagination still greater pleasures. Pleasure, rather than truth, is, in Smith’s view, the ultimate ground for preference, and both systems are left as “inventions of the imagination.” Smith is thus free to treat each system as a work of art, expressing a particular cosmology, which can be understood in purely human terms, as an attempt to satisfy the craving of the imagination for beauty and order; a craving with which we, too, are familiar. In the light of subsequent progress, such systems as that of the celestial spheres may be discredited, and come to seem implausible to later generations, but Smith is keen to point out the “beauty of that view of nature which it presented to the imagination.” Indeed, Smith suggests that if there were no objects visible in the heavens, besides the sun, moon and stars, “this old hypothesis might have stood the examination of all ages, and gone down triumphant to the remotest posterity.”<sup>115</sup>

Just as Hume, in his essay *Of the Standard of Taste*, had advised the student of ancient literature to imaginatively “enter into all the opinions which then prevailed, and relish the sentiments or conclusions derived from them”,<sup>116</sup> so Smith uses the same strategy with all the ancient systems of astronomy, seeking to understand them in their order and beauty, and in the pleasure that is to be derived from tracing their conclusions, “without regarding their absurdity or probability, their agreement or inconsistency with truth and reality.”<sup>117</sup> It is, after all, only by suspending the question of the ultimate truth of these conflicting “systems of nature” that they can be understood as essentially equivalent responses to the same basic set of human needs. Scientific progress is, of course, admitted, and the ‘mechanism’ by which each system is undermined and superseded is fully elaborated, but by taking subjective pleasure as his guiding principle, Smith can avoid making his history a story of progress towards greater objectivity or absolute truth. What progress there is only towards greater empirical accuracy and conceptual generality, and even this is balanced by the essentially static terms of Smith’s analysis; each “system of nature” is a response to the same human needs, and each in its turn gives the same satisfaction to the imagination. Of course, science progresses, but since human nature remains the same, the romance of science remains a romance; in the end, *c’est toujours le même chose*.

---

<sup>114</sup> Smith, *Lectures on Rhetoric and Belles Lettres*, Oxford University Press, 1980, p.146.

<sup>115</sup> Smith, *Essays on Philosophical Subjects*, Oxford University Press, 1980, p.56.

<sup>116</sup> Hume, *Selected Essays*, Oxford University Press, 1993, p.152.

<sup>117</sup> Smith, *Essays on Philosophical Subjects*, Oxford University Press, p.46.

## XII

*History and Taste*

At a deeper level, of course, the romance of science is also the romance of history; Smith's equivocation with regard to the truth of scientific systems must extend to history too; the facts of history may be there, but they are mere particulars; the connections or causal relations between them remain, as in the Humean epistemology, a matter of speculation. Histories, like scientific systems, are thus inventions of the imagination, and even the best history is no more than a 'likely story.' A true historical account of things as they actually happened is simply impossible, and Fontenelle explained why:

What you would have to discover would be one who had observed all things with perfect attentiveness and, at the same time, with complete impartiality. You would never succeed. At best the historian elaborates an *a priori* plan in which all the parts are dove-tailed together to form a complete whole; the sort of thing the meta-physician does with regard to his theories. He takes certain facts and assigns them causes of his own imagining. His work is still less sure, of still more doubtful validity, than the speculations of a philosophical theorist.<sup>118</sup>

History, too, is a human creation; a work of art. If the features it reflects appear familiar, we can hardly be surprised; they are our own. The scientist who misjudges nature may find his theory refuted, his apparatus destroyed, and himself burned, poisoned, electrocuted, or eaten, but the historian faces no such dangers in dealing with the past: when we try to piece the facts of history together, they prove remarkably amenable. They bend to our will, assume whatever shape we wish and become as stupid and misguided as ourselves. But if we try to ignore the past, we are liable to become more stupid still:

Madmen we are, but not quite on the pattern of those who are shut up in a madhouse. It does not concern any of them to discover what sort of madness afflicts his neighbour, or the previous occupants of his cell; but it matters very much to us. The human mind is less prone to go astray when it gets to know to what extent, and in how many directions, it is itself liable to err, and we can never devote too much time to the study of our aberrations.<sup>119</sup>

The history that Fontenelle leaves us with is not an account of truth, but a catalogue of errors. Even Smith's history is conceived in these terms: his is an account of the most distinguished errors; those which were accepted in their day as scientific truths. Yet Smith and the 'philosophic historians' were still able to write 'positive' history, and they did so by taking subjective pleasure, rather than objective truth, as their guiding principle. History might, as Gibbon said, be "little more than the register of crimes,

---

<sup>118</sup> Quoted in Paul Hazard, *The European Mind*, Fordham University Press, New York, 1990, p.52.

<sup>119</sup> Quoted *ibid.*, p.52.

follies and misfortunes of mankind,” but taste could make the past intelligible and meaningful by selecting from the chaotic flux of history that which was felt to have universal human significance. It was, in a sense, because objects survived that history was possible; though the beliefs which such artifacts embodied might no longer be taken for the truth, yet the thing itself might transcend its historical origins, and continue to give pleasure in the present, and this pleasure could allow men in the present to make sense of the past, by facilitating a distinction – however provisional – between that which was historical and that which was timeless in human nature. The ability to enjoy and admire what others had enjoyed and admired throughout historical time gave the man of taste a glimpse of the universal in human nature; “a sense of the eternal,” in Saisselin’s words.<sup>120</sup> But it was precisely because these ‘works of art’ were always enjoyed in the present (thus a-historically) that gave them the illusion, at least, of immortality, and created a dualism in history between the flux of events, dominated by the forces of death and destruction, and the achievements of human order and beauty, which, though transient, reveal that which is immortal in the human spirit. Man might seek to satisfy his craving for immortality through the quest for artistic or historical fame, but just as artistic or historical posterity materialises only in the present, so it can exist only for the sake of the living; posterity, Diderot insisted, is a present, not a future reality; it is “only the echo of the present corrected by experience.”<sup>121</sup> History offered no evidence of a providential order; even the greatest works of man survived as the scattered remnants left after so many disasters: “Here,” wrote Bayle, “you see the ruins of a flourishing city; in other places you cannot even find the ruins ... Properly speaking, history is nothing but the crimes and misfortunes of the human race.”<sup>122</sup> But even ruins could be contemplated aesthetically, and become the basis for history, as it did with Gibbon’s epic meditation on the fate of all human ingenuity:

The art of man is able to construct monuments far more permanent than the narrow span of his own existence; yet these monuments, like himself, are perishable and frail; and in the boundless annals of time his life and labours must equally be measured as a fleeting moment.<sup>123</sup>

Petrarch had said that all history is but the praise of Rome; Gibbon’s attempt to relive the past attains a tragic self-awareness through being conceived among its ruins. Both Rome and the historian may be granted immortality, and we, in reading his works, may bring Gibbon to life just as he relived Roman history, but Gibbon is well aware of the vanity of the illusion; what is gone is gone forever; Rome and the historian live on as figments of the imagination.

Gibbon’s *Decline and Fall* has rightly been called “the epic of the European Enlightenment,”<sup>124</sup> and bears out the claim that, in terms of Aristotle’s distinction between history and poetry<sup>125</sup>, the ‘philosophical historians’ were writing poetry.

---

<sup>120</sup> Saisselin, *Taste in Eighteenth Century France*, New York, 1965, p.108.

<sup>121</sup> Quoted in Peter Gay, *The Enlightenment: The Science of Freedom*, New York, 1969, p.91.

<sup>122</sup> Bayle, ‘Manicheans,’ in the *Philosophical Dictionary*.

<sup>123</sup> Gibbon, *The Decline and Fall of the Roman Empire*, VII p.305.

<sup>124</sup> J.W. Burrow, *Gibbon*, Oxford University Press, 1980, p.108.

<sup>125</sup> “The distinction between the historian and the poet is not in the one writing prose and the other verse - you might put the work of Herodotus into verse, and it would still be a species of history; it really consists in this, that one describes the thing that has been, and the other describes a kind of thing

Their purpose was neither to chronicle the reigns and battles which had been the staple of classical and Renaissance historiography, nor to give an account of “how things really were” (Ranke’s *wie es eigentlich gewesen*), but to create what J.W. Burrow called “a pathology of the human mind in action.” History, said Hume, allows us

to discover the constant and universal principles of human nature by showing men in all varieties of circumstances and situations and furnishing us with materials from which we may form our observations and become acquainted with the regular springs of human action and behaviour.<sup>126</sup>

In philosophical history, human nature is posited as a constant in the historical scheme, and the ‘problem’ of history is to reconcile the premised uniformity of human nature with the almost limitless diversity of human beliefs and ways of life. The unity in the manifold of history is man, again, conceived not as a rational intellect, but as an artist; a doer and maker, rather than a knower, who tries, through the various arts at his disposal, to create a social order that can meet his physical and emotional needs. Societies, too, are thus, in a sense, works of art, created from the materials to hand in different ages and climes, and can be treated by Montesquieu or Ferguson much as Smith had treated the systems of astronomy: each one should be comprehended as a whole; a complete cultural entity, and understood in its order and beauty.

The insistence of the philosophical historians on the uniformity of human nature did not, therefore, preclude their recognition of the diversity of human experiences, beliefs, and values. Adam Ferguson affirmed that it was precisely the propensities of human nature – the very principles of its unity – that led to the “almost infinite” multiplicity of human ways of life. Even man’s character as a social animal led to division and strife, since the instinct to ally oneself with some entailed the instinct to divide oneself from others. Such thought about the relationship between human uniformity and diversity avoided self-contradiction, but it did imply conflict; of interests, of opinions, of ideals, and of tastes.

This, in turn, made it probable that no work of art would actually transcend all social and cultural barriers: most societies had, after all, been culturally intolerant and possessive; hostile to the art, as to the manners, of other countries or civilisations. Those that learnt the lesson of the Battle of the Ancients and the Moderns, however, learnt how to think critically about the arts, and learnt that good criticism required judgement that was free from cultural possessiveness and xenophobia. Fontenelle’s distinction between the arts and sciences, and between questions of taste and knowledge, offered a theoretical resolution of all cultural conflict (albeit at the subjective level), and a practical means to pursue the ideal of mutual understanding, of cosmopolitanism and human brotherhood. The judgement of taste involved the capacity to set aside our own beliefs, in order to imaginatively enter into the circumstances of those for whom the work was intended. It thus meant transcending all doctrinal or speculative belief, and all cultural difference. As Hume said,

---

that might be. Hence poetry is something more philosophic and of graver import than history, since its statements are of the nature of universals, whereas those of history are singulars. By a universal statement I mean one as to what such or such a kind of man will probably or necessarily say or do - which is the aim of poetry, though it affixes proper names to the characters; by a singular statement, one as to what, say, Alcibiades did or had done to him.” Aristotle, *On the Art of Poetry*, chapter 9, trans. Ingram Bywater, Oxford University Press, 1920.

<sup>126</sup> Hume, *Enquiries*, Oxford University Press, 1975, p.83.

every work of art, in order to produce its due effect on the mind, must be surveyed in a certain point of view, and cannot be relished by persons whose situation, real or imaginary, is not conformable to that which is required by the performance. An orator addresses himself to a particular audience, and must have regard to their particular genius, interests, opinions, passions, and prejudices; otherwise he hopes in vain to govern their resolutions, and inflame their affections ... A critic of a different age or nation, who should peruse this discourse, must have all these circumstances in his eye, and must place himself in the same situation as the audience, in order to form a true judgement of the oration. In like manner, when any work is addressed to the public, though I should have a friendship or enmity with the author, I must depart from this situation, and, considering myself as a man in general, forget, if possible, my individual being, and my peculiar circumstances. A person influenced by prejudice complies not with this condition, but obstinately maintains his natural position, without placing himself in the point of view which the performance supposes. If the work be addressed to persons of a different age or nation, he makes no allowance for their peculiar views and prejudices; but full of the manners of his own age and country, rashly condemns what seemed admirable in the eyes of those for whom alone the discourse was calculated. If the work be executed for the public, he never sufficiently enlarges his comprehension, or forgets his interest as a friend or enemy, as a rival or commentator. By this means his sentiments are perverted; nor have the same beauties and blemishes the same influence upon him, as if he had imposed a proper violence on his imagination, and had forgotten himself for a moment.<sup>127</sup>

At the moment of judgement, the good critic had to free himself from all prejudice, passion and partisan interest; to suspend all the deeply rooted ‘tribal’ instincts that urged him to conform, or submit to authority, or ally himself with one group against others, which were at the heart of human diversity, as well as of so much conflict and strife. The ideal of taste involved the triumph of the human will over the passions and “peculiar circumstances” of life: the Man of Taste was “man in general”; a citizen of all places and ages; the epitome of enlightened, civilised values, who could say with Terence, *homo sum, humani a me nihil alienum puto*; I am a man, and think nothing human alien to me.

Taste was thus linked to the values of civility, and, through the arts, to history, since the arts were historical in nature. The order of history revealed through taste was, above all else, an artistic order, but it was also bound up with an ideal of civilised humanity, since the arts were the source of all civilised pleasures. Taste might ultimately be a matter of subjective pleasure, but insofar as it was directed towards the arts, these pleasures were cultivated and informed by social and moral values. The cultivation of taste involved self-discipline, and was qualified by an ideal of physical, intellectual and moral perfection. There was thus no question of aesthetic relativism; in matters of taste, as in morals, wrote Lord Kames, “we appeal, not to the common sense of savages, but of men in their more perfect state.”<sup>128</sup> There were,

<sup>127</sup> Hume, *Selected Essays*, Oxford University Press, 1993, p.145-6.

<sup>128</sup> Kames, *Elements of Criticism*, quoted in Saisselin, *Taste in Eighteenth Century France*, New York, 1965, p.77.

however limits to human perfectibility, and every individual was bound, in some measure, to be stupid, passionate, credulous, ill-informed or careless, just as every age had its peculiar beliefs, manners, and tastes. That perfect being, the Man of Taste might, as Hume acknowledged, be no more than an ideal: his existence was, at the very least, a matter speculation<sup>129</sup>; but this mattered little to Hume, as long as it was admitted that the ideal was desirable, and could be aspired to. We might never fix the judgement of taste authoritatively, but it was clear, nonetheless, what such a judgement required: acute perception, sound understanding, a delicate imagination, knowledge of history and the arts, and the absence of prejudice. These conditions were, in principle, objective, however difficult they might be to satisfy, and their objectivity prevented eighteenth-century thinkers like Hume from considering taste to be purely relative. In practical terms, there was, in any case, simply no need for superhuman purity of judgement; taste revealed the order of culture rather than nature; it required that whatever was submitted to its judgement be considered as a work of art; as something destined to serve the needs and pleasures of living people. Within this scheme, the arts of imagination assumed critical importance, for the limits of these arts were conceived as those of human nature, and their perfection became, in a sense, synonymous with the perfection of humanity itself. Those civilisations, therefore, in which the imaginative arts flourished and attained the utmost excellence, gained a predominant position within the eighteenth-century historical scheme. They were the *Grands Siècles*; the great ages of history, when humanity realised its full creative potential, and the arts bestowed order and beauty on life itself. As Voltaire said:

Every age has produced its heroes and statesmen; every age has experienced revolutions; every history is the same to one who wishes merely to remember facts. But the thinking man, and what is still rarer, the man of taste, numbers only four ages in the history of the world<sup>130</sup>; four happy ages when the arts were brought to perfection and which, marking an era of greatness of the human mind, are an example to posterity.<sup>131</sup>

---

<sup>129</sup> “But where are such critics to be found? By what marks are they to be known? How distinguish them [the good critics] from pretenders? These questions are embarrassing; and seem to throw us back into the same uncertainty from which, during the course of this essay, we have endeavoured to extricate ourselves.

“But if we consider the matter aright, these are questions of fact, not of sentiment. Whether any particular person be endowed with good sense and a delicate imagination, free from prejudice, may often be the subject of dispute, and is liable to great discussion and inquiry: but that such a character is valuable and estimable, will be agreed in by all mankind. Where these doubts occur, men can do no more than in other disputable questions which are submitted to the understanding: they must produce the best arguments that their invention suggests to them; they must acknowledge a true and decisive standard to exist somewhere, and they must have indulgence to such as differ from them in their appeals to this standard.” – Hume, ‘Of the Standard of Taste,’ *Selected Essays*, Oxford University Press, 1993, p.147-8.

<sup>130</sup> These are listed by Voltaire as the ages of Pericles, Augustus, Leo X, and Louis XIV. While Voltaire and the philosophical historians have been rightly criticised for exclusiveness in their selection of the four *Grands Siècles*, it should be pointed out that it was the philosophical historians that forged the tools with which other ages and cultures were historically ‘rehabilitated.’ The renewal of interest in medieval civilisation was already underway in Voltaire’s lifetime, and the argument was soon made that it, too, was a civilisation with its own ideal of greatness, its own sense of beauty and style; its own cultural unity – in affect, another *Grand Siècle*.

<sup>131</sup> Voltaire, from the introduction to *Le siècle de Louis le Grand* (1753).

The *Grands Siècles* thus mark the limits of human greatness, when men strove to bring life itself to perfection; to redeem the pain and futility of human existence, and produced an ideal of civilisation that is itself an object of supreme beauty; a work of art complete and perfect in its own right, through which men sought to allay the tumult of the imagination, and satisfy the human craving for beauty and order. The *Grands Siècles* are thus periods in which all aspects of life are qualified by an ideal of human greatness, which gives them taste, style, and cultural unity.

## XIII

*Conclusion*

The mind has lost its cutting edge: we hardly understand the Ancients.  
 – Grégoire de Tours, sixth century<sup>132</sup>

The ideal of taste thus emerges as no trivial affair; fully developed, it is nothing less than the overarching principle responsible for all civilised order. While the eighteenth century is generally considered as the ‘Age of Reason,’ it is, ironically, both our own period, and the Middle Ages which tried to create a civilised order on the basis of reason and science: thinkers like Hume and Voltaire turned to taste and the arts precisely because they knew that reason and science were not adequate to the task. What they proposed was, in a sense, a revised version of the medieval system, in which all forms of human activity would be integrated and find their proper place within a broad intellectual framework, centred on man rather than God or nature, and art rather than science. The sciences were not, of course, to be neglected; nor was the search for truth denied, but within this scheme, the truth of science remained essentially hypothetical; a human creation, without ultimate permanence. Like all human things, scientific systems were subject to decay and destruction; their ultimate human significance lay not in their truth but in their beauty; in the satisfaction they gave to the human imagination. A human, rather than an absolute or natural standard was thus posited for scientific or philosophical systems.

Of course, such conclusions were not widely accepted in the eighteenth century; they were held only by a tiny minority among the intellectual elite, and even then with varying degrees of consistency. Hume and Smith were possibly the most thorough-going in their pursuit of a complete intellectual framework based on sceptical premises, but the result was a scepticism so hostile to all received scientific and religious wisdom as to stand little hope of general acceptance, then as now. But while the religious establishment remained sensitive to sceptical arguments, the general success of science made it largely impervious to sceptical criticism. The more thoughtful scientists might be troubled by Hume’s analysis, but he failed to have any impact on the mainstream of scientific thought. As Whitehead said:

Science has never shaken off the impress of its origin in the historical revolt of the later Renaissance. It has remained predominantly an anti-rationalistic movement, based on naïve faith. What reasoning it has wanted, has been borrowed from mathematics which is the surviving relic of Greek rationalism, following the deductive method. Science repudiates philosophy. In other words, it has never cared to justify its faith or to explain its meanings; and has remained blandly indifferent to its refutation by Hume.<sup>133</sup>

The imaginative arts, on the other hand, remained bound by a different sort of

<sup>132</sup> Quoted in Giorgio de Santillana and Hertha von Dechend, *Hamlet’s Mill*, 1969, p.10

<sup>133</sup> A.N. Whitehead, *Science and the Modern World*, Free Association Books, London, 1985, p.20.

intellectual complacency: the arts remained tied to the established system of patronage and connoisseurship, whose scheme of values was largely based upon a ritual veneration for the art of antiquity, and the critics, whose minds had ostensibly been liberated by the powers of reason, remained by and large impeccably conventional in their tastes. Thus, while a clear endorsement of artistic freedom should have been one outcome of the Battle of the Ancients and the Moderns, this freedom could still be challenged by ‘anticomaniacs.’ The neo-classical programme heralded by Winckelmann in the mid-eighteenth century, for example, tried to repeal of the outcome of the Battle of the Ancients and the Moderns – to return to the authority of the Ancients in the imaginative arts<sup>134</sup>. His attempt to prove that the art of ancient Greece had a uniquely privileged claim to taste and beauty led him to reconstruct the myth of the golden age in pseudo-historical terms. In Winckelmann’s efforts to plot the precise historical moment when Greek art achieved perfection, we are, ironically, faced with questions of truth rather than pleasure, and he ends up doing what the philosophical historians had so vigorously criticised; arranging the facts to arrive at preordained conclusions; “the sort of thing the metaphysician does with his theories.” As Herder noted, Winckelmann was “more concerned to produce an historical metaphysics of beauty” than “a history proper.”<sup>135</sup> The philosophical historians had all, in a sense, been writing art history, but a history which subjected the arts to laws of historical development was technically impossible within their scheme; our pleasure in works of art was what enabled them to be used as the organising principle of philosophical history, but this pleasure could not itself be historicised, and it was this that allowed taste, and the imaginative arts, to be conceived in timeless, universal terms. Of course, these terms were too timeless and too universal to serve as a coherent defence for any aesthetic orthodoxy, which was why Winckelmann abandoned them, but by going against the logic of philosophical history, and re-engaging with an older historical model which treated the arts as determined by an organic cycle of growth and decay, he effectively *historicised* the ideal of artistic perfection. It was only when the arts were thus historicised that the idea of progress could be universalised.

We are here faced with evidence of just how vulnerable the carefully balanced cultural framework developed by the eighteenth-century Humanists was to a failure of intellectual scope from either the side of the arts or the sciences: Fontenelle’s basic distinction between the arts and sciences did become generally accepted, and remains with us to this day, but the complex intellectual framework that made sense of this

---

<sup>134</sup> “If modern artists, with regard to forms and beauty are not to be directed by antiquity, there is no other authority left to guide them. Some, in painting Venus, would give her a Frenchified air; another would present her with an aquiline nose, the Medicean Venus, as they say, having such a one; her hands would be provided with spindles instead of fingers, and she would ogle us with Chinese eyes, like the beauties of a new Italian school.” – Winckelmann, *Reflections on the Painting and Sculpture of the Greeks* (trans. H. Fuseli), Scholar Press, London, 1972, p.178. Winckelmann’s hysterical reaction to expanding cultural and artistic horizons, and the aesthetic pluralism and eclecticism that was sure to follow if works from different cultures and periods were taken to be available for artistic emulation in the present, was to reaffirm the authority of the Ancients, where the Ancients were now to be defined narrowly enough to – hopefully – preserve orthodoxy. By treating the arts as bound by historical laws to a cycle of progress, perfection and decay, and attempting to fix the moment of perfection historically in Greece of the early fifth and late fourth centuries B.C., Winckelmann believed it would be possible to fix objective rules that would ever after govern the fine arts. This, in essence, is the Neoclassical programme of the late eighteenth century; a programme which was taken up by the academies, since they required such ‘objective rules’ as the basis of their educational authority.

<sup>135</sup> Quoted in Gay, *The Enlightenment: The Science of Freedom*, New York, 1969, p.296.

distinction was lost within a few generations. The distinction that Fontenelle insisted upon was not simply between two different sorts of human activity; it opened up two radically different perspectives on the world; one timeless and static, the other historical and progressive; perspectives which it was possible to pass between, but which had, nevertheless, to be kept apart. This framework emerged from a period in which the general categories of thought in most spheres of intellectual endeavour were in a state of disintegration; the realms of art and science were not clearly distinguished, and one could pass easily from poetry to physics, metaphor to fact, and pleasure to truth, as the great spirits of the seventeenth century were wont to do. It was the confusion of the modes of thought proper to these different spheres that led to the Battle of the Ancients and the Moderns, but it is also true that this conflict could only be resolved by intellectuals who were at ease in these different spheres, and could pass between the perspectives proper to art and to science without allowing either to dominate their thought at the expense of the other. Such were Fontenelle, Voltaire, Hume and Smith; and their philosophy was built up around a characteristically seventeenth-century view of man, as what Sir Thomas Browne called

that great and true Amphibium, whose nature is disposed to live, not only like other creatures in divers elements, but in divided and distinguished worlds.<sup>136</sup>

Most men then and since, however, are singularly ill-equipped to live in divided and distinguished worlds. On the whole, it seems that insofar as the new distinction between the arts and sciences was accepted, it simply allowed artists and scientists to live apart and ignore each other; insofar, however, as the modes of thought proper to art and science were in conflict, science, with its imposing claims to objectivity and truth, increasingly held sway, and set the cultural agenda. Even in 1750, Moderns like the abbé Terrason were asking whether the subtle scholastic distinctions which kept the imaginative arts free from ideas of progress were simply excess intellectual baggage:

To separate the general view of the progress of the human mind in regard to natural science, and in regard to *belles lettres*, would be a fitting expedient to a man who had two souls, but it is useless to him who has only one.<sup>137</sup>

From our perspective, it may seem that in the Battle of the Ancients and the Moderns, victory went not to Fontenelle, but to Perrault and Terrason. The age old theory of degeneration was defeated, but the carefully balanced cultural equilibrium engineered by the sceptical humanists was only a moment of stasis, soon to be tipped in the direction, not of regress, but of progress: the golden age was shifted from the distant past to the distant future, with science playing the role of providential guide. Faith in scientific progress increasingly undermined the ideal of static perfection which was so central to the imaginative arts; when Madame de Stael came to characterise modern poetry in 1813, it seemed to her that “*tout est progressif, tout marche.*” In Gombrich’s words,

---

<sup>136</sup> Quoted in Basil Willey, *The Seventeenth Century Background*, Routledge, London, 1961, p.27.

<sup>137</sup> Terrason, *Philosophie applicable à tous les objets de l’esprit et de la raison*, quoted in J.B. Bury, *The Idea of Progress*, London, 1920, p.124.

It is this approximation of art to science which is always provisional, always arousing expectations of the next step, which I would single out as the most distinctive feature of modernism.<sup>138</sup>

When Quatremère de Quincy published his essay *De la Marche Différent de l'Esprit Humain dans les Sciences Naturelles et dans les Beaux Arts* (1833), claiming that while science is progressive, art had achieved its ends with the attainment of classical perfection, the cultural world was once more divided between Ancients and Moderns; reactionary classicists and avant-gardists, and de Quincy was firmly placed among the reactionaries. This time, however, the Battle of the Ancients and Moderns was no academic dispute, fought by pedants over the bones of dead poets, but a conflict that has engaged every living artist for two hundred years; a war of attrition which has gradually eroded the cultural centrality of the values upon which all artistic excellence depends, and left the mainstream of 'serious' artistic production trivialised to the point where the meaning and application of the term 'art' has become entirely questionable.<sup>139</sup>

At the end of his *Digression sur les Anciens et Modernes*, Fontenelle refers obscurely to the "most dreadful consequences" that would follow a victory of the Moderns over the Ancients; we may, perhaps, legitimately ask whether his warning has any relevance to the state of the arts, and of western civilisation, today. He also predicted that, with time, the 'Moderns' of the Middle Ages and the Renaissance, would appear as 'Ancients' to later generations; and perhaps here, too, we may ask whether, in comparing those 'Ancients' with our own 'Moderns'; Michelangelo's *David* to Claes Oldenburg's *Giant Ice Bag*, the metaphor of giants and dwarfs should not naturally spring to mind. The natural equality of Ancients and Moderns may be defended in theoretical terms, and scientific progress can, of course, be admitted, but perhaps we have more reason than our ancestors to believe that our Moderns are somehow smaller, weaker, and less intelligent than those of previous centuries.

---

<sup>138</sup> Ernst Gombrich, *The Ideas of Progress and their Impact on Art*, Cooper Union, New York, 1971, p.72.

<sup>139</sup> Entirely typical of the current situation is Ad Reinhardt's definition of art:

"The one thing to say about art is that it is one thing.  
Art is art-as-art and everything else is everything else.  
Art as art is nothing but art.  
Art is not what is not art."

(Quoted in Kosuth, "Art after Philosophy", in *Studio International*, October 1969, p.134-137)

## *Bibliography*

- Alberti, Leon Battista, *On Painting*, trans. John R. Spenser, Yale, 1966.
- Boileau-Despréaux, Nicholas, *Critical Reflections on Longinus*, trans. John Ozell, London, 1713.
- Bury, J.B., *The Idea of Progress*, London, 1920.
- Cassirer, Ernst, *The Philosophy of the Enlightenment*, Princeton, 1951.
- Copenhaver, Brian P. and Schmitt, Charles B., *Renaissance Philosophy*, Oxford University Press, Oxford, 1992.
- Crombie, A.C., *Augustine to Galileo*, Heinemann, London, 1952, two volumes. (ed.), *Scientific Change*, Heinemann, London, 1963.
- Debus, Allen G., *Man and Nature in the Renaissance*, Cambridge University Press, 1978.
- Dodds, E. R., *The Ancient Concept of Progress*, Oxford University Press, 1973.
- Drake, Stillman, *Galileo*, Oxford University Press, 1980.
- Du Bos, Jean Baptiste, *Critical Reflections on Poetry, Painting and Music*, trans. Thomas Nugent, London, 1758 (first published in French in 1719).
- Fontenelle, Bernard le Bovier de, *Digression sur les Anciens et les Moderns*, ed. Shackleton, R., Oxford University Press, 1955.
- Ferguson, Adam, *An Essay on the History of Civil Society*, University of Edinburgh Press, 1966.
- Gadol, Joan, *Leon Battista Alberti*, University of Chicago Press, 1969.
- Gay, Peter, *The Enlightenment*, (two volumes) W.W. Norton, New York, 1969.
- Gibbon, Edward, *The History of the Decline and Fall of the Roman Empire*, ed. J.B. Bury, London, 1912, 7 volumes.
- Gombrich, Ernst, *The Ideas of Progress and their Impact on Art*, Cooper Union School of Art and Architecture, New York, 1971.
- Goodfield, J. and Toulmin, S., *The Discovery of Time*, Hutchinson, London, 1965.
- Hall, M.B. (ed.), *Nature and Nature's Laws: Documents of the Scientific Revolution*, Macmillan, London, 1970.
- Haydn, Hiram, *The Counter-Renaissance*, Charles Scribner's Sons, New York, 1950.
- Hazard, Paul, *The European Mind*, Fordham University Press, New York, 1990.
- Hume, David, *A Treatise on Human Nature*, Oxford University Press, 1978.  
*Enquiries Concerning Human Understanding and Concerning the principles of Morals*, Oxford University Press, 1975.  
*Selected Essays*, Oxford University Press, 1993.
- Jones, Peter, 'Hume's literary and aesthetic theory,' in *The Cambridge Companion to Hume*, ed. David Fate Norton, Cambridge University Press, 1993, pp.255-280.
- Jones, R.F., *Ancients and Moderns*, Washington University Press, St. Louis, 1961.
- Kristeller, Paul O., *Renaissance Thought and the Arts*, Princeton, 1990.
- Kuhn, Thomas S., 'The Function of Dogma in Scientific Research,' in A.C. Crombie (ed.), *Scientific Change*, Heinemann, London, 1963.
- Marsak, L.M. (ed.), *The Rise of Science in Relation to Society*, New York, 1964.
- Potts, Alex, *Winckelmann: Flesh and the Ideal*, Yale University Press, Newhaven and London, 1994.
- Sausselin, R.G., *Taste in Eighteenth Century France*, Syracuse University Press, New York, 1965.

- Santillana, Giorgio de, *The Age of Adventure*, New York, 1951.  
‘The Role of Art in the Scientific Renaissance’ in Marshall Clagett (ed.),  
*Critical Problems in the History of Science*, University of Wisconsin Press,  
Madison, 1962.
- Smith, Adam, *Essays on Philosophical Subjects*, Oxford University Press, 1980.  
*Lectures on Rhetoric and Belles Lettres*, Oxford University Press, 1983.
- Temple, Sir William, *Essays on Ancient and Modern Learning*, ed. J.E. Springarn,  
Clarendon Press, Oxford, 1909.
- Wade, Ira, *The Structure and Form of the French Enlightenment*, Princeton, 1977.
- Whitehead, Alfred North, *Science and the Modern World*, Free Association Books,  
London, 1985.
- Willey, Basil, *The Seventeenth Century Background*, Routledge, London, 1971.
- Wotton, William, *Reflections upon Ancient and Modern Learning*, London, 1694.