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THE BODY IN QUESTION

Some Perceptions, Problems and Perspectives of  
the Body in relation to Character c. 1750-1850

by

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## ABSTRACT

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This work is a critical and historical exploration of some of the issues raised once it is posited that the appearance of the human body is a reliable and accurate indicator of psychological life beneath the skin. Its object is not to provide a continuous narrative [say, about the rise of scientific psychology] but to assemble and juxtapose a wide array of disparate materials and thereby resolve a number of issues. What made the appearance of the body an important subject of inquiry, what forms that inquiry took, and what made possible the development of a variety of discourses and practices centered on the body as a sign-system- such questions are at the centre of this study.

The thesis is divided into 3 parts. The first takes as its focus the work of a number of leading intellectual figures of the mid- and late-eighteenth century, and explores their treatment of the body. The second deals with the rise of scientific culture in Britain and with the shift in discursive structures from the realms of 'artistic' and 'literary' culture to that of the scientific. The third seeks through scientific culture to deal with a set of popular characterologies- physiognomy, phrenology, and organology- tracing the relations of each to a number of different discourses.

In what is a long and complex series of arguments and expositions, the thesis is equipped with numerous general and particular summaries and introductions to facilitate reading.

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The conclusion to this thesis suggests some perspectives on a subject which I had originally intended to make a more central part of my work- conceptions of human sexuality during the nineteenth century. During the months that I carried out research into this area (research that I still intend to bring to completion), I accumulated debts which I should like here to acknowledge. Help of various kinds was given to me by William S. Heckscher, H. Montgomery Hyde, Richard Ellmann, Nicholas Penny, Jeffrey Weeks, Eric Newman, John Stokes and the staff of the Records Division of the Home Office, London.

The work presented in the following pages was carried out in a number of libraries: Edinburgh University Library, National Library of Scotland, Leeds City Library, British Library, Library of the Royal Society of Medicine, Library of the Wellcome Institute for the History of Medicine. For the most part, however, my home was in the convivial surroundings of the Brotherton Library of the University of Leeds (though I also made use of other university libraries, the Boyle Library, and the Medical and Dental Library). The staff of the

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## INTRODUCTION

This work is intended to explore some of the issues and problems raised once it is posited that the appearance of the human body is an accurate and reliable indicator of psychological life beneath the skin. The approach is both critical and historical and falls into three parts. Before introducing the major aims of the thesis, a brief word of explanation about the overall strategy pursued might be useful. The aim has not been to provide a continuous narrative about the development of knowledge about the mind or the body, nor indeed do I seek to advance a single comprehensive explanation of how, when, or why certain theories of the mind-body relation rose as they did. Instead, I have sought first and foremost to assemble and juxtapose a wide array of disparate and dispersed materials, some of which are presented in a neutral, 'documentary' tone and others of which are treated critically and in one case investigated with the help of the analytical tools recently developed by so-called 'structuralism'. The purpose of the thesis at this level has been to suggest some of the elements which combined to produce and to make possible a body of thought which to many seemed for the first time to offer an account of how human appearance could reflect or express human essence. These elements range far beyond what one would expect to find in a history of 'characterology', and they are differently organized. By moving across the realms of art and aesthetics, across literature and the theatre, across theories of deportment and elocution, and then onto developments in physiognomy, organology, pathognomy and phrenology, the thesis underscores the fact that neither a history of medicine (which might trace the way the body was opened up to inspection) nor a history of morals and religion (which would suggest the manifold

ways in which the body was closed off from the gaze) is well-suited to represent the complex historical developments which made possible the practico-theoretical positions I depict in the third part of this thesis.

At another level this work is historical and critical in that it explores conceptually and epistemologically the range of options and positions available within certain discourses once it is claimed that physical appearance reveals mental essence, and then shows which of these options and positions has actually been articulated, defended and debated during the time span of my thesis, 1750-1830.

In abstract terms it is not too difficult to conjure up the kinds of problems and possibilities which arise once the physiognomical or the pathognomical supposition is allowed, once, that is, it is accepted that the fixed or the transitory aspects of the body reveal the stable or flitting features of the mind. What, first of all, is one to make of the body's appearance as a whole? How is it to be described? What parts are to be judged significant and what parts ignored? How are we to decide which alterations in appearance are due to the normal processes of development and which are the changes resulting from conscious efforts to deceive? And what of the features of the mind themselves? How are they to be described? Which parts of the mind are connected or correlated to which parts of the body, and how are such links to be established? Is the body an envelope for the soul- or can science demonstrate precise organic relations between the external aspect of the body and the internal make-up of the mind? These are some of the many

questions that spring to mind when one considers for a moment the discourses of physiognomy and pathognomy. But it needs hardly be stressed that such questions surface in different guises depending on the discourses in which they appear.

The first three chapters of this thesis cover the posing and the attempted treatments of such issues as those above in the domains of art and aesthetics, in the novel and criticism, in elocution and the theatre, from the mid-eighteenth century to the 1790s. The choice of dates was made partly so as to lay the basis for the subsequent contrasts I would seek to draw with the period of the early 1800s, and because it was during this earlier period that issues of representation became central as the novel developed for the first time, as new theories of acting and new acting styles evolved, as a real elocutionary movement came into being, and as for the first time there grew up a significant body of art and literary criticism in England- a body which, without wishing to be over-simplistic, can be seen to have controlled the agenda of debate concerning the issues tackled in this thesis as much as science and scientific culture would half a century or so later. With an academy of arts, a budding commercial arena, and the growth of a critical discourse, patterns of approach to the question of representation of character in art came to be set down. Elsewhere similar issues were debated in different, but I show not unconnected, ways.

In chapter one, I examine a major aesthetic-critical response to representation- that articulated by Richardson, systematized by Reynolds and then transmitted by him from his position in the Royal Academy. The response can be expressed in a series of

oppositions: rule is preferred to individual expression, art to nature, the ideal to the real, and most crucially, the general is held above the particular. In thinking about an object- natural or human- the artist is to distil from the peculiarities and details of that object a uniform, common nature which is then equated with beauty, morality and truth. As far as human representations are concerned, this moral prescription results in a moral proscription, namely that passions as they are expressed on the exterior of the body must not be depicted. Failing this complete denial, the artist who cannot achieve a complete elevation and 'improvement' of nature may seek to paint the simple emotions. What discussion there is in Reynolds about depictions of the body and character is informed by such moral-aesthetic considerations; what is implicit here is rendered explicit in other contemporary writings which I explore- in those of Johnson, for example, which take the general and the uniform not as the result of a filtering process of perception but instead as its cause. Put bluntly: the mind itself- reason- is unchanging. Human nature remains the same.

In opposition to such positions I have set those of Hogarth, apparently the finest expressions of the popular, highly local and detailed, particularist. Next, I have sought to examine the Hogarth of the novel, Henry Fielding, to see whether his complex characters are presented with any regard for physiognomical or pathognomical beliefs. Apart from his other qualities, Hogarth had- and still retains- a reputation for depicting character, for being able to place expression onto canvas. Some have said that he succeeded where others had failed through his own patient

observations; others have delineated the influence upon him of Charles Le Brun. I have tried to show that this success is illusory; indeed, that on Hogarth's own terms, he failed in depicting passions and expressions. By reasoning through his claims and arguments, and then by looking at his practice and that of Fielding, I have sought to piece together something of the ground on which physiognomy and pathognomy would later be established.

My treatment of Hogarth and Fielding do not require much introduction. Broadly speaking, my claims are that both reject physiognomy and pathognomy because of the prevalence of affectation and hypocrisy in society and because those discourses were each incapable of dealing with the problems that arose as a result of such social and personal masking. There are so many 'false' men and women in the world- so many 'actors'- that even the most careful 'reader of bodies' is doomed to mistake the false appearances of people for their true features- this, put simply, is the position of both Fielding and Hogarth. In addition, both claim that the means to prise off the masks of the hypocrites and actors have not yet been perfected. What is required is a new mode of perception, a new structure of explanation, a new form of knowledge- in short, a new means of seeing which can deal with the most pressing problems raised by the discourses of physiognomy and pathognomy.

The rejection of these discourses by Fielding and Hogarth does not prevent them representing character; it simply ensures that they do so in non-physiognomical and non-pathognomical ways. In the case of Fielding, I show that it is not men and women's looks

which betray their personalities but their actions and behaviours; more precisely their actions and behaviours relative to moral standards, to stated objectives, or to past record. This focus on actions, coupled with the widespread reliance on theatrical metaphors (amongst which the actor-hypocrite is just one) suggests that the world of the stage might be one in which the relations of character to action, or even character to changing appearance, would be sharply posed.

Because the subject matter of chapters two and three has to my knowledge never been treated at length, my procedure has been expository and explanatory. In the case of acting, or rather of theories of acting, I set out a number of positions regarding natural versus artificial playing, regarding the methods to be employed in displaying emotions, and regarding the number and character of those emotions, which parallel in a most interesting and informative manner those expressed in chapter one. This being so, it is hoped that my studies have resulted in fleshing out the at times conceptual issues raised at the start of my thesis.

In addition to adding historical evidence to my general claims, my work traces a series of changes which allow the development of a coherent body of phrenological and physiognomical doctrines. Such changes as the gradual split of stage from audience and the break-up of the theatrum mundi imagery (studied in Part I) make possible physiognomy, pathognomy and physiognomy (studied in Part III). The change which I describe and examine most carefully is that between a public and a private presence, and this is expressed most strongly in Diderot's Paradox on Acting. This is an important exemplary text, for here the rules of

stage behaviour are specifically set out, yet at the same time they are set out as specifically theatrical. The actor in Diderot's text needs rationally, intellectually and relentlessly to disassociate on stage his real self from his character and this actually sets up a kind of frontier between the two worlds and assigns to the hypocrite and the affected a definite position beyond the common world as depicted by Hogarth, Fielding and others. Terms like verisimilitude, sympathetic imagination and naturalness no longer straddle the two worlds and this renders the association of inner self and outer image considerably easier to establish.

The 'common world' itself came to stand as an identifiably separate world in contrast to other domains such as that of nature or that of ideas. This 'common world' was distinct in large measure because it was easily accessible and populated by clear, unambiguous signs. The language of this world, for example, was judged to be direct and simple, in contrast to the mathematical language of nature or the ideological language of theoretical systems. But separate as this world was, it was also prey to distortion from outside, to cynicism and hypocrisy. The elocution movement developed in large measure to retrieve the unambiguous, pure and stable language from the grip of those who would distort and destabilize it. The force of this movement derived, as I show, from agitation in Church circles in reaction to the decline in pulpit oratory, from rebellion against classical instruction in schools, and from those who believed that new styles of acting could serve as a model for behaviour in the streets and parlours of Georgian England. In addition, a further input

to the elocutionary movement derived from those who felt the need to respond to the masses, to react to the breakdown of old rural means of communication and to replace these by means appropriate to the anonymous crowds in the new urban conglomerations.

This suggests a political dimension to my study and this theme is taken up again when I turn to a study of Lavaterian physiognomy in chapter eight, as I build upon the distinction previously established between the natural and the artificial approaches to elocution and acting. Whilst these approaches share many features in common, particularly on the question of which kinds of gesture to make to convey particular passions and emotions, they were differentiated along the line of the public and the private. Broadly speaking, the artificial school saw no need for private emotions to have anything to do with public persuasion whereas the natural school required a ready identification of the public actor or orator with the private meanings and content of a message. The breakdown of the public and the private, or rather the opening to public scrutiny of private emotions and beliefs, heralds a decisive shift in favour of the characterologies which form the subject of part three of this thesis.

In that part, starting with chapter eight, I turn to the work of Lavater and then of other physiognomists and phrenologists of the early nineteenth century. My claim is that this work as a whole represents a delayed fulfilment of the hope expressed by Hogarth, Fielding and others more than half a century earlier for a new discourse of perception, for a new means to monitor bodies in such a way as to read off accurately from them the



signs of inner character and constitution. It has to be admitted that whether one can see developments in the early 1800s as a direct response to the demands of some theorists in the mid-1700s remains an undecided question. My answer is a tentative and I believe helpful 'yes'. Part of the problem in being more forthright about the relations in question is that one is moving from a problem, from a lack of theory, to an apparent solution, an abundance of theory. The trouble with absences, with ideas and systems (in this case physiognomical and pathognomical ideas and systems) which have been rejected at a whole number of levels is obviously that they disappear from view. I would claim that the same kinds of issues which troubled those already predisposed to accept physiognomical ideas in the mid-1750s (that is to say not those like Reynolds, Richardson and Johnson whose philosophical, aesthetic and ethical beliefs made the ideas repellent) appeared in the early 1800s. Why then was it that what proved to be a barrier in one period was surmounted in another?

There is no simple answer to this question; indeed, to resolve the issues involved in it fully would require a full-scale enquiry into changing socio-political conditions over the period. The major weight of my argument, however, falls onto two other explanations. First of all, I focus upon a number of texts which were widely disseminated through British society at first slowly and then rapidly in the 1820s and 1830s which formulated new approaches to the body and mind. These texts claimed to provide ways of linking body and mind, of reading the

latter from the former. What these approaches are, how the links between the inner and outer man are established, and what means of reading are provided- these issues form the core of the third part of this thesis.

But this can only represent at best half an answer. The second strand in my explanation of the rise, development and overall character of the discourses of physiognomy and phrenology is one made up of a number of threads. Put simply, my claim is that the growth of Baconian science made these discourses possible, provided them with means of communication, and greatly assisted their diffusion through Britain. Conversely, the spread of popular and even populist sciences like physiognomy and phrenology gave a great boost to the growth of Baconian science and helped to assign it an image and a general character. Phrased in this way, my position may seem either trivial, or absurd, or perhaps chronologically suspect. One of the reasons why I have decided to devote a large portion of my thesis to the development of a scientific culture in Britain, and a large section of that portion to suggesting the Baconian features of that culture is to anticipate and then to respond to such charges. It will help if I briefly run through the broad claims and aims of this portion- part two- and try to specify more exactly why I have written it.

Part two has a number of focal points and opposing views, but I believe the reader will find it helpful to have in mind a basic contrast as between Baconianism and Whewellianism. What I try to establish is first of all that the first 'ideology' of science

was an important current in the early 1800s and that even the most renowned scientist of the day, John Herschel, was to all extent and purposes a neo-Baconian. Second, I argue that this ideology was important both in articulating the aims and practices of the early scientific organizations of the time and in spreading those aims and practices far and wide through all levels of society. Third, I show in detail what image of science is conveyed and sustained by Baconianism and then what forms of scientific investigation, scientific explanation, and scientific validation come together to make the apparently impossible demands of Baconianism wholly practical. Next, having demonstrated the power of Baconianism to shape scientific culture in the early 1830s and inspire leaders of the phrenological movement to alter the practices and the theoretical- or rather non-theoretical- bases of their science, I show by means of a careful study of the early years of the British Association for the Advancement of Science how a new ideology came into being. It is always dangerous to reduce a complex ideological formation to a single individual; this suggests that the one almost emanates from the other. Dangerous, yet if approached with caution, such a device has the merit of great explanatory power. In the same way that I reduced a certain ideological system to the figure of Bacon, so I have treated the reaction against it under the name of Whewell.

Under that name I have ranged not only a philosophy of science, as might be the convention were Whewell (like Bacon) to be studied as serious forces in the early nineteenth century, but also an image of science and the scientist, an ideology of science, and a whole structure of explanation (this term and its role in my

work is treated in the introduction to part two). The ideology of Baconianism is based, as I depict it, on the 'three Ps'- Perception, Patience and Precision. These are the three qualities required of the Baconian scientist whether he be a geologist, star gazer or physiognomist, and as I show in chapters eight, nine and ten, these are also the major features of the phrenological science of the 1830s. As I have said before, it is difficult to disentangle the complex and multi-faceted developments I chronicle such as to speak of cause and effect. It is, conversely, all too easy to speak of influences. The first demands that we purge the historical record of any subtlety; the second that we refuse to make any distinction as between the important and the incidental, between the central and the peripheral. Be that as it may, the reader will be disappointed if I fail to attempt more than the presentation of a historical conjunction.

To do more requires first of all great care with the chronology of the developments treated in my work; it is for this reason that I have focussed so minutely on the changes in the British Association, on the development of a powerful interest in physiognomy, and on crucial changes in the character of phrenological discourse. Thus, to offer one example, I show that although Lavater's work originated in Germany in the 1770s, it arrived in England at the turn of the century and then spread first of all as a science of physiognomical perception in the period 1810-30 and then from the late 1820s was increasingly wedded to phrenology. Since as I have explained, my purpose is not to provide a general cultural history of physiognomy, the character and reception of Lavater's work in Germany is of wholly marginal interest. With

a clear and definite focus on Britain in the 1820s and 1830s what is of interest is the character of British physiognomy in this period. Lavater may have been pious or he may not; he may have been Baconian or he may not. Such questions do not concern me, for the physiognomical phenomenon (if I may term it that) in Britain is in no way reducible to the author of the Physiognomische Fragmente; indeed, there is good reason to believe that Lavater would have had severe reservations about the method by which his works were transmitted to Britain. That he would have disapproved of the incorporation of physiognomy into populist phrenology, though it is only a matter of historical curiosity, does illustrate the wide chasm between the origin and the development of any idea or system of idea and the problems involved in not clearly separating the two.

It is hoped that a careful attention to the chronological development of Baconianism, of scientific culture, and of the characterologies examined in part three will suggest to the reader some of the historical links between all these. A second way in which I seek to enforce my claims that physiognomy in Britain was a phenomenon intimately associated with Baconianism is by trying to engage in a coherent and consistent reading of the most popular version of Lavater's text: Holcroft's translation, Essays on Physiognomy. Others have denounced this text as wholly ambiguous, as being a mixture of rhetoric and unfounded assertion. At this point it is perhaps worth stating the obvious, namely that criteria of what constitutes the ambiguous, the absurd and the unfounded have a history. As I suggest in my discussion of Bacon, those that dismiss his importance in the same breath as they denounce

his philosophy debar themselves from writing history, just as do those who persist in reading Whewell as a Kantian and then assuming that Kantianism was rampant in the 1830s and 1840s in Britain. The, perhaps painful, fact that Bacon's views were widely championed in the early decades of the nineteenth century and the, perhaps reassuring, fact that Kant was almost unknown in Britain in the 1830s and 1840s need to be recognised before we can begin a reconstruction of scientific and philosophical culture during that period.

With this in mind, I have tried to read the Essays on Physiognomy as an early nineteenth-century Baconian would read it, that is, to read it as proposing a science of physiognomical perception. Perhaps surprisingly, this dispelled almost all the ambiguities which have commonly been found in the text (to have read the text as a nineteenth-century Whewellian would, no doubt, have uncovered these ambiguities and more). The more coherent and impressive the text becomes, the easier it is to see it as a really potent, radical and, in the sense in which I use and explain the term, political intervention. Conversely, the more coherent and structured the text becomes the less absurd and trivial become my claims concerning the relations between Baconian scientific culture and physiognomy.

\* \* \* \* \*

The work that follows is provided with short introductions to each of its three parts which situate or otherwise make clear the aims of the chapters that follow. As I have explained, this thesis

does not succumb to any simple summary; its objective, if I might say so, is rather to make such a summary of the developments under examination impossible. To those who would press me into throwing bridges between my work and say, a history of medicine or even a general social history, I would say that things are not that simple. It may be, of course, that even so, things are not quite as complicated as my multi-levelled work suggests. Quite possibly. Where appropriate, I have tried to summarise for the reader's use my aims, methods and conclusions. In a brief general conclusion I shall take the opportunity to anticipate some of the objections and difficulties a reader might be expected to have. More than that I cannot, at present do. My hope is that this study may prompt others to extend, refine, criticize and develop what I have begun.

PART ONE: LARVATUS PRODEO. THE PROBLEM OF THE BODY

The growth of aesthetic criticism in the eighteenth century was very rapid, and artists played an important part in the discussion and development of aesthetic ideas. Yet until the 1750s, foreign imports dominated the English art world. Artists came to settle in England from Germany, Italy and France; antiquities and old master oil paintings arrived from Venice and Rome; prints came in enormous tea chests from Paris and Amsterdam. In the shadow of the splendours of continental baroque, native art was marked by its technical failings and idiosyncratic mania for portraiture. The painter James Parsons wrote in 1747 that the only encouragement in England was for painters of faces, adding that, "if we were bless'd with the same academical endowments that other Nations can boast of, we should undoubtedly have as great Proficients in the Arts of Painting and Sculpture as any Nation."<sup>1</sup> Half a century before the renowned snob William Aglionby in his Painting Illustrated in Three Dialogues (1685) declared, "We have never had, as yet, any of Noble, that was an English Man, that pretended to History Painting", adding significantly, "I cannot attribute this to anything but the little encouragement it meets with in this Nation, whose Genius more particularly leads them to affect Face-Painting. Till the gentry of this Nation are better judges of the Art, 'tis impossible we shall ever have an Historical Painter of our own, nor that any



excellent Foreigner should stay amongst us."<sup>2</sup>

Organised art schools did not exist in the early decades of the eighteenth century; artists took apprentices, or students subscribed to informal 'academies' for rare opportunities to draw from casts and nudes. "About two hundred paintings, and other prize pieces, of the Academy of Painters at Paris, are daily visited by the curious of all nations at the Louvre", the Gentleman's Magazine wrote in 1737, "What a discouragement... it is to the ingenious men of Great Britain that we have no yearly Prizes to reward their Pains and Application!"<sup>3</sup> Only in 1768, after intense lobbying and pamphleteering and decades of agitation was the Royal Academy able to provide the training, the opportunities, and the public recognition for artists with its drawing and life classes for qualified students. Some gentlemen had, it is true, founded the Society of Dilettanti in 1734, and twenty years later the Society of Arts was established,<sup>4</sup> but it was in 1760 that the first organised art exhibition occurred in England and that a now-established commercial art trade enabled the painter to secure a reputation without depending entirely on a few well-placed and wealthy patrons.<sup>5</sup> Travel to Italy was then hailed as a necessary stage in a young artist's career and was sometimes paid for by scholarships and sponsors. The landscape, conversation piece and sporting scene joined the portrait as favourite subjects, and the more innovative young artists embarked on history painting.

By 1760, for the first time in centuries, England's leading artists were Englishmen, by birth or by naturalisation: Joshua Reynolds and Thomas Gainsborough, painters; Joseph Wilton and Joseph Nollekens, sculptors; and William Woollett and Robert Strange, engravers. With the encouragement of patrons who were developing independent tastes and overcoming Protestant reservations about the veneration of images, the English art world reformed and expanded. What had been a marginal and slightly dubious occupation in the early years of the century blossomed in the 1740s into an enormous commercial enterprise as printsellers, drawing masters, auctioneers, art dealers and art critics catered for public taste rather than to the artists whom they had previously served. Painting and drawing became respectable pastimes for ladies and gentlemen of leisure and were integrated into the standard polite education. A century later preparation for society would require the ability to tell Venus from Mars in the sky and perhaps the acquirement of a fossil collection and a set of scientific instruments. In 1750, the need was for the capacity to tell a Raphael from a Michelangelo, or better still to own an example of each.

Central to the commercialisation of art stood William Hogarth, arguably the finest English artist of the century. But there were others who brought into being a native artistic culture. Figures like Thomas Hudson, Joseph Highmore, Arthur Devis, John Smibert, Arthur Pond, and Allan Ramsay are now beginning to attract increasing attention

from historians of art.<sup>6</sup> We know enough about them to question the traditional- one might say the Hogarthian- image of them as plodding imitators of Sir Godfrey Kneller or Sir Peter Lely, as slavish followers of French or Italian fashions, or as marketeers of fakes and copies to guillible 'connoisseurs'. We know enough, yet too little to replace this picture by any other. All we can do is to refer to this still-buried presence as a general cultural and commercial factor shaping the rise of the likes of Hogarth and Reynolds.

Away from 'pure' art, earlier trends have been studied in more detail. It is clear, for example, that in the fields of country-house building, garden design and art collecting, the English were both innovative and extravagant.<sup>7</sup> When they were not wholly original, patrons had foreign forms moulded and bent to suit their own purposes, as in the great iconographic programmes uniting architecture, landscape, art and poetry at Stowe, Stourhead and Houghton.<sup>8</sup> Those who could not collect or build explored the rapidly expanding world of literature for news, views, education and entertainment. The evolution of the novel and the newspaper may be seen as creative responses to changing patterns of patronage and demand, fitted to the requirements of middle-class town dwellers and the country gentry; likewise the museums, shows, curiosities and divertissements on the streets of the metropolis and provincial towns.<sup>9</sup> New theatres were built and English actors, composers and singers began to compete with notable success against the Italians and the

French. Consumer demand- whether of porcelains, prints, paintings, patent medicines or pamphlets- was great enough to provide a very real impetus to the Industrial Revolution.<sup>10</sup>

Certainly, none of this was plain to see in the period 1700-1740. James Thomson, whose own Seasons (1726-30) inaugurated a new era in English poetry, wrote in 1732 of the French: "Their notion of (England) is, I reckon, of a cold, dark, dull, dirty country, where there is nothing but money."<sup>11</sup> Neither he nor anyone else would have found this view from Paris especially distorted.

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The first English work to deal comprehensively with the art of painting was The Painting of the Ancients (1638) by Franciscus Junius<sup>12</sup> and from this time onwards a considerable English literature on painting came into being, which mixed the practical with the aesthetic rule in the form of a manual or treatise.<sup>13</sup> The most important of these was Charles Alphone Du Fresnoy's De Arte Graphica (1668) which sought to construct the equivalent of a classical doctrine for painting, based primarily on a system of classically-inspired rules.<sup>14</sup> As Roger de Piles, his friend, editor and translator said, De Arte Graphica was able to furnish the ignorant lovers of painting with "infallible Rules for judging truly."<sup>15</sup> But it was the work of Jonathan Richardson which for the first time in English proposed to debate the bases of painting without recourse to classical texts, to Apelles or Lomazzo, the ancients or the muses, referring only to reason and

experience- notwithstanding the fact that he borrowed a great deal from de Piles.<sup>16</sup> In his Theory of Painting (1715), Essay on the Art of Criticism (1719), The Connoisseur (1719) and An Account of Some Statues, Bas-Reliefs, Drawings and Pictures in Italy (1722), Richardson applied consistent, often plainly logical standards to all aspects of the art of painting. Logic, he claimed, was as necessary to the connoisseur as to the philosopher or theologian.<sup>17</sup> Richardson sought to elevate the status of the artist, pressing for the introduction of aesthetic appreciation as part of the education of the gentleman and made such appreciation apparently straightforward, stressing that the most important feature of criticism was the ability to make distinctions by reducing painting to its constitutive parts.<sup>18</sup> Having done so, each aspect was to be assigned a numerical value.<sup>19</sup> This was crude, but as Lipking has said, "no superior critical eye or critical vocabulary was available."<sup>20</sup> In any case, as if sensing the mechanical debasement of art which would follow his logical distinctions, Richardson at key moments makes a move we shall find common in neo-classical thinkers. He has recourse to an ideal nature superior to the real- in this case to a category of Grace and Greatness, and to an artist, Raphael, who embodies this ideal perfectly.<sup>21</sup>

Though Richardson shared the continental vision of history painting as the head of a hierarchy, he did make efforts to promote an English School of painting and sought to make art collecting and appreciation both respectable and practicable. That painting was boosted in prestige in the

eighteenth century may be gathered from the fact that it came to be the dominant paradigm by which other arts from poetry to music were judged and described.<sup>22</sup>

In 1719, a term which would become established to denote a gentleman interested in fine art was established by Richardson- the 'connoisseur'. Yet until at least 1740 the connoisseur was often conceived as a dull creature and a figure of satire, and not infrequently associated with subversion, spying, and sexual delinquency- something we may, post-Anthony Blunt, perhaps appreciate without too much strain.<sup>23</sup> Two years later, in 1742, an Act of Parliament made 'connoisseurship' cheaper and more rewarding since the basis of tax was altered from the value of a work of art to its size, custom duty was lowered, and fraud consequently reduced. By 1732, the Earl of Shaftesbury's Characteristicks of Men, Manners, Opinions, Times (1711), with its stress on the importance of artistic appreciation as a way of higher understanding, had gone through five editions.<sup>24</sup> The Renaissance concept of the gentleman as a man of taste was beginning to penetrate into English consciousness. The result was not only that painting could be established on sound principles, but that art became an area of knowledge: a target for rules, criticism, and judgement.

\* \* \* \*

These three aspects of the development of English art-

the rise of commercialism, of the academy, and of the connoisseur- are all crucial to understanding the overall importance of 'artistic' discourse from the mid-century onwards. Richardson's reference to an ideal nature has been briefly mentioned. Discussing the difference between Raphael and Dürer, Richardson noted: "Perhaps Albert Durer drew as correctly, according to the idea he had of things, as Raphael; and the German eye saw (in one sense) as well as the Italian; but these two masters conceived differently; nature had not the same appearance to both, and that because one of them had not his eyes formed to see the beauties that are really there, the perception of which lets us into another world, more beautiful than is seen by untaught eyes: And which is still more improvable by a mind stored with great and lovely ideas, and capable of imagining something beyond what is seen."<sup>25</sup>

Generality and beauty, in short, are preferable to particularity and the literal truth. Moreover, the eye can be taught to discern the ideal, to perfect nature. As we shall attempt to show in the following chapter, Richardson is in many respects anticipating the later and more influential views of Reynolds on ideal beauty. The theory of ideal beauty came to England both direct from Italy and, more commonly, through French channels- Du Fresnoy's De Arte Graphica represents an example of both processes as John Dryden in his preface cited a passage from the Italian writer Bellori, the teacher of Du Fresnoy whilst the latter was in Rome from 1633-53.

According to Bellori, God created first forms of things

which were perfectly beautiful. In the celestial sphere they remained so; but on earth they became corrupt, so that some imperfections could be distinguished in every natural object. Bellori saw it as the task of every artist to select from nature her most perfect parts and weld them into an harmonious whole. Bellori mentioned with approval the story of Zeuxis, the Greek artist, who made a picture of the ideal woman from a choice of five virgins. Plato's abstract Idea, which the visible earthly form shadows imperfectly, is thus grafted by Bellori on the Christian theology and made the basis for his aesthetic theory. Neither Bellori nor Du Fresnoy, it should be said, are important writers apart from their historical influences. Dryden's translation of De Arte Graphica ran through several editions, until it was superseded in 1783 by William Mason's translation with illustrative notes by Reynolds who takes up the theory of ideal beauty and gives it an empirical content.<sup>26</sup>

Du Fresnoy is only one of a school of French writers who adopted or developed Italian theories of art, but his scheme was undoubtedly the most ambitious. He attempted to establish a canon for art comparable to that of Horace and Boileau for poetry. The other French authors (whom we shall refer to later), such as Félibien and Roger de Piles were the best known, and were theorists and commentators on different genres of painting who instituted a mode of discourse about painting which was determinedly rule-governed and dogmatic.



It is common to trace a tradition in art theory for the concept of Ideal Beauty from Alberti and Bellori, through Du Fresnoy, Fréart de Chambray and de Piles, up to and including Richardson, Reynolds, Pope and Dr Johnson. If this is so- and we shall explore the range and the implications of this tradition in the following pages- one should counterpose to this another tradition. Or rather, since Hogarth may be judged to have pioneered the counter attack, we should refer to another approach. Put simply, we might say that whilst Reynolds looks through nature for beauty, Hogarth looks at nature for truth. Each sees and knows differently.

Both however fall squarely within the empiricist paradigm which views all ideas as arising from sensation and feeling rather than being innate. It should further be noted that eighteenth-century empiricist philosophy has an overwhelming tendency to reduce sense perception to variations of sight, as in the familiar example of the blind man who 'saw' purple when he heard a trumpet. Moreover, the operations of mind are frequently described in a language borrowed from the observation of visible phenomena. In Locke's basic metaphor, to give one example, our ideas are clear and obscure in precisely the same way as "what we call clear and obscure in the objects of sight."<sup>27</sup> On the other hand, the problem which is judged to impede the formation of clear ideas is the problem of language. The use of a corrupt language leads to the corruption of ideas.<sup>28</sup> The distrust of the word

is a familiar pose in earlier writers, particularly Bacon, Hobbes and many Fellows of the Royal Society, and by the 1700s it was common to accept that errors flowed from thinking in words instead of about the things those words signified. Culture, in other terms, was judged to be dominated by concepts rather than by precepts; this is a well-known theme in The Dunciad (1728, 1743), in Tristram Shandy (1760, 1761-62, 1765, 1767) which often substitutes ideograms for words, in Hume's Treatise on Human Nature (1739-40), and in Burke's Philosophical Inquiry into the Sublime and the Beautiful (1757), just as it is in the poems of Blake and Wordsworth. Equally, the doctrine of the primacy of sight had a long tradition and may be found in Cicero's De oratore as well as in Horace's Ars poetica, where demonstration by the ocular is stated to have greater and more lasting effect than demonstration by the oral.<sup>29</sup> It should also be recalled that the Puritan tradition also elevated vision about the verbal. "In a world charged with meaning by the Creator", says a recent critic of Bunyan, "the elect are distinguished by their accurate sense of vision, and this in turn involves not only seeing but interpreting correctly."<sup>30</sup> As we shall see in the following discussion of the visual and the verbal, there were many different ways of escaping the tyranny of certain syntactic and semantic structures and seek a more immediate form of communication.

In the three chapters which follow we shall be concerned with three aspects of character and the body in the latter half of the eighteenth century, or rather, with conceptions and images of character and the body in the realms of art and aesthetics, in the theatre, and in the elocution movement. The general aim will be to attempt to lay the basis for an account of the oft-remarked decline in status of physiognomy and pathognomy during this period. The three realms I have chosen to focus upon all witnessed profound and far-reaching developments, and each of them may be thought to have broached the problem of representation: that is, how to represent character, thoughts, passions and emotions and how to represent the communication of these from one subject to another.

The mediums deployed were of course different- the painting and engraving, the novel, the stage, the public speech. And each medium imposed its own constraints upon what expressions could be conveyed, and how. In the first chapter I shall turn to what Ernst Cassirer has termed the "basic and central question" of aesthetics and criticism in mid-century- the issue of the relations between the general and the particular, the rule and the exception.<sup>31</sup> As we shall see, the notion that the distinction between the general and particular could be used as a basis for artistic and ethical judgement had far-reaching implications in many cultural fields. If physiognomy and pathognomy are to be deemed acceptable

forms of knowledge, some account needs to be given of the links between particular parts of the body and regions of the mind. Immediately then, both discourses would seem to require a microscopic, or at least discriminatory, perception of the human frame coupled with a differentiated model of mind. It will be claimed in what follows that the emphasis on the ideal, common, general features of Man which marked the hegemonic aesthetics of mid- and late century served to problematize both physiognomy and pathognomy. This may appear a startling conclusion to reach; particularly once the importance of Lockean epistemology is accepted. After all, did not Locke (and Reid and Hume) stress the particular and concrete in their works, and argue that ideas derived from an examination of the local, factual and specific features of nature are the most reliable and powerful? One critic has even claimed that any appeal to experience and to Nature must tie "criticism down to the actual and the concrete."<sup>32</sup> Others have made similar claims about the necessary connection between a visual sense and a particularism, suggesting that the new epistemology was corrosive of artistic and critical uniformitarianism.<sup>33</sup>

Having shown that such equations cannot be upheld with reference to major currents in eighteenth-century aesthetics, other practical problems appear upon the horizon. There can surely never have been a more detailed, local and particularistic set of representation than those in Hogarth's series. Yet Hogarth remained disillusioned

with the idea that bodily appearance could convey anything important about true inner character. The problem was affectation. He judged that it was impossible to 'see through' false and deceptive appearances to tell apart the honest man and the hypocrite. Physiognomy and pathognomy necessitated not only that connections be instituted between parts of the body and parts of the mind, but that these connections should be direct and unequivocal. For many thinkers of the period- we shall dwell on Hogarth and Fielding- the pathways linking passions and expressions, character and appearance, were judged to be so devious, so complex, and so multiform that a rigorous network of correspondences could not be established.

If the physiognomical medium was continuously prey to distortion and misuse, perhaps the same could not be said of the pathognomical realm. If man's appearances were either incapable of providing access to his character or were not allowed to do so, might it be better to rely on monitoring his actions? If anything seems more evident than the fact that a look tells a story, it must be that behaviour tells it better. We may or may not be what we seem- the story may be a fiction, as made up as the face itself. But surely we are to some degree the sum of what we do. This in any event was an underlying presupposition of many actors and theorists of acting, as well as of those who judged that the world was itself a stage.

But as critics, artists and actors soon discovered,

behaviour can be as mysterious and as deceptive as appearance. Man's actions can signify different things in different settings, to different people, at different times. The puzzle grows particularly acute when, as was the case, it became common to dress up the old adage of the world as stage in all manner of new ways. In chapter two, we shall turn to study the effect of the growing popularity of the theatre and of theatrical discourse upon notions of acting, deportment, gesture and bodily expression. The imagery of the theatre as the site of life, like so many other cultural forms we shall attend to, was not indigenous to the 1700s- it can be found in Epictetus and Seneca and reappears frequently in medieval literature.<sup>34</sup> One cannot fail to see it granted a new lease of life in the eighteenth century however, and as we shall see, it gains authority and a political dimension it previously lacked. One can preface the discussion which follows by drawing attention to the fact that Jaques's famous speech in As You Like It ('All the world's a stage, And all the men and women merely players...') connotes the inevitable movement from one role to the next. During the eighteenth-century (at least in the hands of Hogarth and Fielding) the imagery suggests instead the wilful adoption of roles, that is, acting to deceive.<sup>35</sup> The famous discussions of the world-as-stage in the Spectator early in the century do little more than wrestle with this distinction.<sup>36</sup>

One of the functions of the imagery was, as Richard

Sennett has shown, to detach human nature from social action, by separating actor from act.<sup>37</sup> This however was a gradual process whose full implications only became manifest at the end of the century, in the work, I shall suggest, of Diderot. More immediately, changes in the notion of the actor and the stage put into question the kinds of extrapolations thought justified on the basis of man's behaviour in the 'real' world. If the actor can so successfully weave a web of illusion, how can we be certain that we are not continuously duped in our daily commerce in the world, at home, on the street, in business? Are we unwitting members of a fool's paradise in which hard and fast distinctions between truth and falsity, the natural and the artificial, behaviour and 'acting' are dissolved?

Many theorists of acting sought to respond to such issues by striving to establish fixed rules applicable to stage acting, rules which would make it possible to communicate certain emotions by means of appropriate gestures and expressions. If, for example, a particular motion of the arm can be assured to suggest to an audience one passion, then this at least provides some guideline to the interpretation of other bodily movements on stage, and then by a process of substitution, off stage as well. If on the other hand, acting does not involve adherence to fixed pathognomical and physiognomical rules, then the lessons of the stage will be of little applicability in the world. It may well be, of course, that performances

on the boards are 'natural' and governed by no more than an actor's subjective interpretation of a role. One of the surprises of the following study of acting and the theatre is that no easy distinction between natural and methodological acting can be drawn in relation to eighteenth-century theories and techniques. The call to 'nature' in this realm, as in others, was a device of rhetoric: nature as a category remained in any case contested throughout the period, as Lovejoy has shown.<sup>38</sup>

Man's appearance, like his behaviour, is a form of communication. The medium of a message. In the third chapter of this section, we shall turn to the most visible kind of communication: public speaking. The kinds of new approaches to literary, aesthetic, philosophical and theatrical representation pioneered in the eighteenth century were more than matched by developments in theories and practices of speaking. So close were the changes in all these realms that similar problems will be seen to lie in each. Within the elocutionary movement, however, these took a distinct and peculiar form. One issue often raised by elocutionists was whether it was possible to speak 'correctly' without having recourse to gesture and expression. The answer was a qualified no; qualified because once it had been accepted that the voice had to be amplified by other forms of communication, it was realised that these other forms were themselves highly problematic. Might rules be established which would



guarantee natural, unaffected oratory when rules were judged by definition to be artificial? Did a deep and irresolvable conflict exist between speaking, writing and acting, between cultural products and natural expressions?

Such questions lay at the centre of many elocutionist debates, and beneath them lay smouldering the seemingly intractable oppositions of the general and the particular, the true and the false, the real and the illusory, the moral and immoral, culture and nature. The life or death of physiognomy and pathognomy hung on a balance; the fate of either depended on what bias was given to each side of these equations. We begin with one of the most pervasive oppositions in eighteenth-century culture: that between the general and the particular.

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NOTES: PART ONE, INTRODUCTION

1. James Parsons, Human Physiognomy Explain'd: in the Crounian Lectures on Muscular Motion (supplement to the Philosophical Transactions, XLIV, 1746), 1747, iv-v.
2. Quoted in J. Isaacs, 'Thornhill and the Baroque Age', Listener, XLIII, 27 April 1950, 732-34, 753, 734. See also Tancred Borenius, 'An Early English Writer on Art', Burlington Magazine, XXXIX, 1921, 188-95 on Aglionby.
3. Quoted in John Pye, The Patronage of British Art, 1845, 44.
4. See Lionel Cust and Sidney Colvin, History of the Society of Dilettanti, 1898; Nikolaus Pevsner, Academies of Art, Past and Present, Cambridge, 1940.
5. See Ronald Paulson, Hogarth: His Life, Art, and Times, 2 vols, New Haven, 1971, II, 318-53.
6. To date, only the last four have been seriously treated in published works; Ellen G. D'Oench, The Conversation Piece: Arthur Devis and his Contemporaries (New Haven, 1980); Henry Wilder Foote, John Smibert, Painter (New York, 1969); Louise Lippincott, Selling Art in Georgian London: the Rise of Arthur Pond (New Haven, 1983); Alastair Smart, The Life and Art of Allan Ramsay (1952). For other artists of the period, see Ellis K. Waterhouse, Dictionary of British 18th Century Painters in Oils and Crayons, Woodbridge, 1981.
7. See, for example, Mark Girouard, Life in the English Country House. A Social and Architectural History, 1978; and Francis Haskell and Nicholas Penny, Taste and the Antique: the Lure of Classical Sculpture, 1981..
8. See Ronald Paulson, Emblem and Expression: Meaning in English Art of the Eighteenth Century, 1975.

9. See Ian Watt, The Rise of the Novel. Studies in Defoe Richardson and Fielding (Harmondsworth, 1981); Harrison R. Steeves, Before Jane Austen: the Shaping of the English Novel in the Eighteenth Century (New York, 1965); E.D. Spector (ed), Essays on the 18th-Century Novel (1964); R.A. Donovan, Shaping Vision: Imagination in the English Novel from Defoe to Dickens (1966); R.D. Mayo, The English Novel in the Magazines 1740-1815 (1962); John Richetti, Popular Fiction before Richardson: Narrative Patterns 1700-39 (1969). On newspapers: G.A. Cranfield, The Development of the Provincial Newspaper 1700-1760 (Oxford, 1962); James R. Sutherland, 'The Circulation of Newspapers and Literary Periodicals, 1700-1730', Library, XV, 1934, 110-24; Richard D. Altick, The English Common Reader. A Social History of the Mass Reading Public 1800-1900 (Chicago, 1957, chapter 2). On other important cultural developments which are not treated later in this work, see Richard D. Altick, The Shows of London (1978); W. Boulton, The Amusements of Old London (1900); and Roy Porter, English Society in the Eighteenth Century (Harmondsworth, 1982).
10. See J.H. Plumb, The Commercialization of Leisure in Eighteenth Century England (Reading, 1973) and Neil McKendrick, John Brewer and J.H. Plumb, The Birth of Consumer Society: The Commercialization of Eighteenth-century England (1983). The last-named work quite unaccountably neglects all developments in the commercialization of art, but remains useful as a general account of the commercial revolution throughout the 1700s.
11. James Thomson, James Thomson (1700-1748). Letters and Documents (ed. Alan Dugald McKillop), Lawrence, 1958, 83.
12. See Lawrence Lipking, The Ordering of the Arts in Eighteenth-Century England, Princeton, 1970, 109-26.
13. See Henry and Margaret Ogden, 'A Bibliography of

- Seventeenth-century Writings on the Pictorial Arts in English', Art Bulletin, XXIX, 1947, 196-201; Luigi Salerno, 'Seventeenth-century English Literature on Painting', Journal of the Warburg and Courtauld Institutes, XIV, 1951, 234-58.
14. See F.P. Chambers, The History of Taste, New York, 1932, 86-92.
  15. De Piles in C.A. Du Fresnoy, The Art of Painting, 1716, lviii.
  16. See Samuel H. Monk, The Sublime: A Study of Critical Theories in XVIII-Century England, Ann Arbor, 1960, 174-78; idem, 'Some Remarks on French Eighteenth-Century Writings on the Arts', Journal of Aesthetics and Art Criticism, XXV, 1966, 187-95.
  17. Jonathan Richardson, The Works of Jonathan Richardson, 1792, 237.
  18. ibid., 182.
  19. On this element of Richardson's theory and its derivation from de Piles, see John Steegman, 'The "Balance des Peintres" of Roger de Piles', Art Quarterly, XVII, 1954, 235-61.
  20. Lipking, Ordering of Arts, 115.
  21. See Richardson, Works, 190f. For comment, see Monk, Sublime, 174-78; Walter J. Hipple Jr., The Beautiful, The Sublime, & The Picturesque in Eighteenth-Century British Aesthetic Theory, Carbondale, 1957, 244-45.
  22. See on this: J.H. Hagstrum, The Sister Arts: the Tradition of Literary Pictorialism and English Poetry From Dryden to Gray (Chicago, 1958); Paul and Svetlana Alpers, 'Ut Pictura Noesis? Criticism in Literary Studies

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23. According to the Oxford English Dictionary, the first example of the word 'connoisseur' as a judge of art being used in England is in the first part of Mandeville's Fable of the Bees in 1714. But it was first explicated by Richardson in the first of his Two Discourses (1719). On the connoisseur/virtuoso as subversive, see Lippincott, Selling Art, 99-100; and Lesley Lewis, Connoisseurs and Secret Agents in Eighteenth Century Rome, 1961.

24. On the editions, see Stanley Green, Shaftesbury's Philosophy of Religion and Ethics. A Study in Enthusiasm, Ohio, 1967, xi.
25. Richardson, Works, 80.
26. Passages from Bellori are included in Dryden's preface to his edition of Du Fresnoy; on pp. v-xvi of the 1716 edition. With Dryden's translation, it is also included in the 2 volume edition of The Literary Works of Sir Joshua Reynolds (ed. Henry William Beechey), 1890, II, 379-418.
27. John Locke, An Essay Concerning Human Understanding, in J.A. St. John (ed), The Philosophical Works of John Locke, 2 vols, 1898, I, 499 (II, xxix, 2).
28. See Locke, Essay, IV, iii; III, xl; and II, xxxiii, 10. For Berkeley's similar position, see G.J. Warnock, Berkeley, Harmondsworth, 1969, 45, 57.
29. See F.G. Robinson, The Shape of Things to Come, Cambridge, Mass., 1972.
30. David J. Alpaugh quoted in Ronald Paulson, Emblem and Expression. Meaning in English Art of the Eighteenth Century, 1975, 33. Paulson provides an excellent treatment of the issues of the verbal and the visual in eighteenth-century philosophy and aesthetics.
31. Ernst Cassirer, The Philosophy of the Enlightenment, Princeton, 1951, 287.
32. See R.L. Brett, 'The Aesthetic Sense and Taste in the Literary Criticism of the Early Eighteenth Century', Review of English Studies, XX, 1944, 196-223, 203-04.
33. For a discussion, see Wilbur S. Howell, 'John Locke

- and the New Rhetoric', Quarterly Journal of Speech, LII, 1967, 319-33; and Ernest Tuveson, 'Locke and the Dissolution of the Ego', Modern Philology, LII, 1954, 158-70, esp. 165. See also Chester Chapin, Personification in Eighteenth-Century Poetry, New York, 1955.
34. See E.R. Curtius, European Literature and the Latin Middle Ages, New York, 1953, 138-44.
35. On this see Ronald Paulson, Popular and Polite Art in the Age of Hogarth and Fielding, Notre Dame, 1979, 217.
36. See The Spectator 10, 12 March 1711; 219, 10 November 1711; and 237, 1 December 1711 (all by Addison) for examples. My edition is: Joseph Addison, Richard Steele and others, The Spectator, 4 vols, 1970.
37. Richard Sennett, The Fall of Public Man, Cambridge, 1977, 107-22.
38. A.O. Lovejoy presents 66 different senses of 'nature', many of which were still the basis for praise and and dispraise during the eighteenth century in his article '"Nature" as Aesthetic Norm', Modern Language Notes, XLII, 1927, 444-50. See also his Essays in the History of Ideas, Baltimore, 1948, 69-78; The Great Chain of Being, Cambridge, Mass., 1978, 289f. and 296f. and A.O. Lovejoy and G. Boas, Primitivism and Related Ideas in Antiquity, Baltimore, 1935, 447-56.



## CHAPTER ONE: MEDIUM, MESSAGE AND MASK

### I. The Particular and the General

No better introduction to the role and the importance assigned to the distinction between particular and general can be gained than by examining the work of the foremost artist of his day, Sir Joshua Reynolds.<sup>1</sup> In 1759, at the urgent request of Dr Johnson, Reynolds contributed three letters to the Idler. In these he set out clearly and concisely the theory of ideal beauty which was to become the guiding principle of all his writings on art. The most visible target of the essays was William Hogarth, though Reynolds took care to conceal the butt of his criticisms by putting his opponent's theories into the mouth of a 'connoisseur' recently returned from Italy and full of the grace of Raphael, the purity of Domenichino, and "all the rest of the cant of criticism."<sup>2</sup>

Hogarth's dispute with the connoisseurs had begun in earnest in 1724 when the artist published Masquerades and Operas, Burlington Gate as a kind of formal declaration of war. The satire includes an attack on Lord Burlington, who was a recognised leader of the connoisseurs in the country, 'Swiss' Heidegger, Cuzzoni the singer, Raphael, and Michelangelo. His intention was to show that conn-

oisserieurship, with its foreign airs and predilections, was damaging both to English classics and the talent and interests of living Englishmen. Besides disputing the views of the connoisseurs, however, Hogarth had a theory of his own to propound. In 1745, partly to mystify the connoisseurs, but mainly to draw attention to this theory, he painted a self-portrait (now in the National Gallery). The canvas rests upon three volumes labelled respectively 'Shakespeare', 'Milton', and 'Swift', and his favourite pug dog Trump sits at the right of it. In the left corner is a palette bearing the serpentine line and the inscription, 'The Line of Beauty'.

Shakespeare, Milton, and Swift were easily recognized as symbols of the artist's faith in the English tradition. The line of beauty however excited curiosity without satisfying it. In the same year Vertue noted that comments were buzzing around the capital as critics (and indeed connoisseurs) sought to decipher the sign.<sup>3</sup> It was not until 1 December 1753 that the long-awaited exposition of Hogarth's aesthetics appeared in print. His Analysis of Beauty (1753), though warmly defended by men of letters, was savaged by artists and connoisseurs. Paul Sandby satirized the author in a series of prints, depicting Hogarth as an obstinate ignoramus who deliberately spurned the Old Masters. It was the theory of the serpentine line that attracted most attention when the Analysis was published. According to this theory, those forms most please that combine harmoniously the principles of variety and unity. Straight lines

and plain curves are, in themselves, too unvaried to be beautiful; but the S-like waving line is perfectly elegant and genteel, provided that it is not too gross or clumsy, or so straightened as to be mean and poor. When the precise waving line is extended to three dimensions, like the body of a serpent twined round a cone, it becomes the line, not only of beauty, but also of grace.<sup>4</sup>

This fascination for the beauty of a particular form led Hogarth to postulate a norm for beauty, a formal criterion by which every composition was to be tested. The interest in form springs not from a study of art but from his own relationship with nature. In his introduction, Hogarth describes an elaborate scheme for conceiving mentally the shape of bodies. The student is to consider solid objects as thin shells composed of lines, like the outer coat of an onion. The artist must first conceive the inside of surfaces, and by considering objects in a shell-like manner, he will naturally enter into the vacant space within the shell, and there at once, as from a centre, view the whole from within. Only thus can he retain an idea of the whole, and be master of the meaning of every object, as he walks around it, and views it from without.<sup>5</sup>

According to Reynolds's satire in the Idler, the 'connoisseur' conceives that the whole length of Charles the First by Vandyke had not the flowing line without which a figure could not possibly be graceful. The connoisseur has similar

faults to find with Raphael's cartoons St Paul Preaching and the Charge to Peter. The former suffers because the art of contrast, and 'above all, the flowing line, which constitutes Grace and Beauty' were unknown to Raphael; the second could be vastly improved by applying the pyramidal principle. In his third letter, on 10 November, Reynolds again attacked the serpentine line and certain other ideas of the Analysis, including the theory of fitness.<sup>6</sup>

The letters as a whole pour ridicule on those critics who seemed to Reynolds to be 'unable to comprehend the whole' and who 'judged only by parts.'<sup>7</sup> Only by actively and persistently eliminating the specific and the individual, Reynolds believed, could the artist rise to a higher truth, to an abstract idea embodied in the family of forms. The same might be said of art criticism: the realists of the Dutch School, painters like Hals, Vermeer and Rembrandt are deemed by Reynolds 'degenerate' because of their obsession with a 'scrupulous exactness and mean style'.<sup>8</sup> The Italian masters of the Renaissance on the other hand are praised for their attention to the 'invariable, the great and general ideas which are fixed and inherent in universal Nature.'<sup>9</sup>

Important though these early pronouncements were, the distinctions upon which they were founded were given greater currency once they appeared again in Reynolds's Discourses, delivered to the Royal Academy from 1769 to 1790.<sup>10</sup> A decade had passed, and Reynolds was now able to

claim with some justification that the tide had turned in his direction. He was no longer in conflict with a majority opinion, but simply codifying the practice of artists which had become the accepted norm.<sup>11</sup> Yet to read the Discourses is to become immediately aware that the norm itself was riven with inconsistencies, particularly marked once we compare the views expressed here with those set out in the Idler.<sup>12</sup> Some, indeed, have detected a gradual abandonment of the neo-classical ideals defended in 1759 as Reynolds's aesthetic and philosophical views develop.<sup>13</sup> William Hazlitt, for example, found that Reynolds had failed to reconcile the contradictions between an insistence on rule and conformity and the admission of the rarity of genius and the great style.<sup>14</sup> In his annotations to the Discourses made at the turn of the century, William Blake likewise defended the 'genius' against what he took to be a spurious notion that art should be preferred to nature.<sup>15</sup>

These two critiques may serve as a reminder of how far Reynolds remained from the full current of Romanticism. Still, the apparent inconsistencies in the Discourses may perhaps be ironed out once we recall that the lectures were delivered to an audience of men and women who ranged in ability and training from near beginners to experienced artists; Reynolds saw his role as turning the former into the latter. His discourses began at an elementary level and rose gradually, it was hoped with the audience, to a point where Reynolds's advanced positions could be given.<sup>16</sup>

In other words, many apparent shifts in opinion may be seen to dissolve once passages in the text are read in context, with due attention to the level of the student or artist to whom they were addressed.<sup>17</sup> What ambiguities remain once such considerations are taken into account may be reduced to those deriving from Reynolds's treatment of the rules of art.<sup>18</sup> The notion of generality is if anything extended and strengthened in the lectures into a stringent uniformitarianism, whereas in the earlier talks the concept functioned as a sharp, startling, polemical device. Even Hazlitt, who disagreed so violently both with what Reynolds said and with his inability to say it clearly, found with some measure of relief that: 'Sir Joshua's general system may be summed up in two words, - "*That the great style in painting consists in avoiding the details, and peculiarities of particular objects.*"'<sup>19</sup>

This great style or Grand Manner demands also that the formation of taste derives neither from emotion, nor feeling, nor sentiment, but instead from the power of distinguishing right from wrong. The contemplation of the universal harmony of nature begins with taste and, as it is refined, concludes in virtue.<sup>20</sup> Indeed, 'the terms beauty, or nature, which are general ideas, are but different modes of expressing the same thing.'<sup>21</sup> The conception the artist and the critic have of nature is judged here to be the root from which spring his general aesthetic outlook and ethical sense.<sup>22</sup> If Reynolds can be summed up at all, it would be with a composite quotation as follows:

the ultimate function of art is moral- art must strive to fulfil this function by the pursuit of beauty- beauty is a general, ideal, distillation from the particular objects in the real world.

'All the objects which are exhibited to our view by nature, upon close examination will be found to have their blemishes and defects. The most beautiful forms have something about them like weakness, minuteness, or imperfections. But it is not every eye that perceives these blemishes. It must be any eye long used to the contemplation and comparison of these forms; and which, by a long habit of observing what any set of objects of the same kind have in common, has acquired the power of discerning what each wants in particular.'<sup>23</sup>

Here we have a clear and important statement of the kinds of aesthetic and philosophical positions which develop on the basis of an initial distinction between the general and the particular. Only the trained, rule-governed artist has the visual power to detect the particular degraded and defective forms in the appearances of men and things. In itself, such a position can do nothing detrimental to the status of physiognomy and pathognomy. Quite the contrary: the imputation of moral-aesthetic categories to the appearances of things suggests an elementary connection of mind and matter, of essence and appearance. Nature is moral; flesh is ethically significant. Yet once the aesthetic detective work has been accomplished, the artist-as-critic is called upon to implement a monumental cover-up, a form of deception, imposed in the name of improving nature. It is as if having used a microscopic gaze to detect the

minute aspects of appearance, the painter must change his optical instrument and so weaken the focus. Such visual readjustments have a cosmetic purpose. Their final aim is however both moral and psychological. The general is the beautiful, the beautiful the moral, and the moral that which is common to the minds of men.

In painting, the notion of improving nature was not a new one. Richardson had already argued that 'Nature must be the foundation... but Nature must be Rais'd; and Improv'd, not only from what is Commonly Seen, to what is but Rarely, but even yet higher, from a Judicious, and Beautiful Idea in the Painter's mind".<sup>24</sup> But the demand to improve, and to deceive with the improvement, only becomes a strong moral injunction in the mid-century. It remains so for the following decades,<sup>25</sup> to be accepted even by Blake.<sup>26</sup> The aim remains towards 'Nature', so even when as in portraits, details are the foundation of a work, the details are rigidly categorized and unified. The popular metaphor of the mirror of nature brings together, as it were, the typical and the ideal, nature being both the way things are and the way they ought to be. In his Dictionary (1755) Johnson defines 'mirror' in both ways. First, a 'looking-glass; anything which exhibits objects by reflection', and next, 'a pattern; that on which the eye ought to be fixed; an exemplar; an archetype'.<sup>27</sup> So we hold the mirror to nature to discern our flaws, or the mirror points to some kind of artistic generalization of the natural. Of course, the 'looking-glass' is in truth highly artificial; actuality has been



rearranged by art so that it is not at all what we would see in a mirror. It is nature but nature methodized.

This raises a problem: how can characterization by the typical and the general also be realistic? How can the artist be general and specific simultaneously?<sup>28</sup> For Reynolds, 'it is from a reiterated experience and a close comparison of the objects in nature, that an artist becomes possessed of the idea of the central form.'<sup>29</sup>

This notion of the central, or average, was no more novel than that of improvement- one can find it, for example, in Adam Smith's Theory of Moral Sentiments (1759).<sup>30</sup> But it is only in the latter half of the century that it serves as a conceptual glue in a determinedly moral aesthetics. Only then were efforts made to replace a standard of taste based on the consensus of the ages and nations by reasonings drawn from the general principles of human nature. As Walter Hipple, Jr. has suggested, the shift can be seen in miniature in Johnson's Prefaces to Shakespeare where the original argument 'no other test can be applied than length of duration and continuance of esteem' gives way to the principle that 'nothing can please many and please long, but just representations of general nature'.<sup>31</sup>

What is briefly mentioned in Smith's work functions in the Discourses to wed together emotion and reason, the rule to the canvas. It does so because the Ideal is empirical. Reynolds- if I may emphasize the point- develops an empirical notion of the general as part of a theory of

vision. He demands not that critics should think in terms of the general but that they should see this way.

When Reynolds equates the deviant and the deformed, he is opposing both not to a notion of beauty as such, but rather to what Burke termed the '*complete, common form*.'<sup>32</sup> Reynolds's principles of taste in fact derive substantially from Burke's Philosophical Inquiry into the Origin of our Ideas of the Sublime and the Beautiful (1757), particularly from the Essay on Taste prefixed to the second edition of the Inquiry in 1759.<sup>33</sup> Yet, once again, while Burke had stressed the purely aesthetic or 'sublime' appeal of the uniform in nature, Reynolds traces the moral and the sense of the beautiful back to the same faculty.<sup>34</sup>

To Burke, beauty was 'for the greater part, some quality in bodies acting mechanically upon the human mind by the intervention of the senses.'<sup>35</sup> It does not, in other words, stem from an inner aesthetic sense. This apparently straightforward account of the development of good taste must, if principles are to be discovered at all (and this is the aim of Burke's project), to some degree deny the empirical differences in nature. Either that, or it must reduce the various likings and dislikings which constitute cultural diversity to a dull uniformity. So, the stress on the general while it may establish the mechanical nature of the growth of taste, is often perverse and degraded. Burke appears to recognise this, and concedes that natural sensibilities might after all have their effect upon perceptual

and moral discriminations, that rational faculties may intervene at the very least to affect the observer's attention to the object.<sup>36</sup> The difference amongst men and the diversity of nature are both evident, empirical truths. Reynolds, like Burke, deals with these truths by making appeal to a uniform rationality which informs taste in general, whether it must impose itself on poetry, painting, or nature.<sup>37</sup> It is 'Reason without doubt, which must ultimately determine every thing'.<sup>38</sup> This view adds another dimension to Reynolds's thinking on the subject of perception. It is because Man's reason is general—Johnson would later say 'uniform'—that his vision is so indiscriminating. To see the particular is to be morally degenerate, aesthetically disreputable, and above all to be irrational. The variety of tastes merely reflects the conflict being waged between deep, mysterious passions and clear, open reason.

Reason may determine everything but, Reynolds writes, 'at this minute it is required to inform us when that very reason is to give way to feeling.'<sup>39</sup> Such a position is confusing and gave rise to much rage amongst Reynolds's critics. What, after all, does it mean to state that 'we perceive by sense, we combine by fancy, and distinguish by reason'.<sup>40</sup> For our sense is policed by rules, our fancy is constrained by ethics, and our reason is the underlabourer to beauty. It will be noted that Reynolds is only able to make such a statement once he steps away from a concern with Platonic beauty and truth.<sup>41</sup>

Until well into the century, the notion of the Ideal was

used in a Platonic sense, and some commentators have suggested that Reynolds's notion of ideal beauty follows in this line.<sup>42</sup> Others have claimed that Aristotle endorsed the theory of Ideal Beauty and proceeded to judge Reynolds to be an 'unconscious Aristotelian'.<sup>43</sup> But there were many sources nearer at hand than the Greek since amongst writers on art and literature the theory is explicit in Alberti, Bellori, Du Fresnoy, Boileau, Pope and Johnson, yet Reynolds's position is innovative in being an empirical rendering of ideal beauty. What the Platonists call the divine, he states, 'is not to be sought in the heavens, but upon the earth'.<sup>44</sup> Against this sentence Blake wrote in the margin of his copy, 'a lie! a lie! a lie!'- Blake was on the side of Plato.<sup>45</sup> Perhaps as some critics have recognised, we must look to Locke for an influence, for it seems clear that if there exists a progression from the Idler essays to the Discourses, it is one which sees Reynolds putting empirical flesh on the bare bones of the doctrine of universal nature.<sup>46</sup>

My point may perhaps be summarized in a sentence: for Reynolds the average is approached by, and fixed through, the senses; it is the product of a rational, rule-governed, trained observation rather than what might be termed 'inspiration'.<sup>47</sup> One should remember the closeness of Reynolds to Burke, to a thinker for whom the moral and aesthetic properties of general nature are purely sensible. The 'beautiful' in Burke's Inquiry is an amalgam of the 'small', the 'varied', the 'smooth', the 'delicate', the 'clear' and the 'bright'. Beauty was an accumulation of features existing in nature, amenable to natural apprehension through vision.<sup>48</sup>

One may see that the views of Burke and Reynolds entail not only the rejection of minute particulars in the representation of individuals, but also the 'improvement' of the individual characteristic itself. The life-study for instance would submerge the parts of a subject's countenance under an elevated representation; the aim of this would be to reveal the subject's relationship to the average (simple or amalgamated) form which is judged to constitute the 'beautiful'. In Reynolds's third Discourse the artist is confronted with a dualism: on the one side, the idea of the perfect state of Nature, and on the other, nature as she really is, marred by faults and irregularities. Nature is never perfect; even at their best her forms have something particular, imperfect, or blemished about them- although not every eye can perceive this. It is by peculiarities that we recognize individuals; as Reynolds would put, by their deformities. Nevertheless, imperfect Nature provides the key to Ideal Beauty. By comparing her forms and observing what they have in common, and in what they differ, the painter can not only train his eyes to distinguish actual deformity, but he can also conceive in his mind an abstract idea of perfect form. It is with this idea of perfect Nature that he will warm his imagination and by expressing it be able to warm and ravish the imagination of others.

With the logic of complete sincerity, Reynolds foresees and accepts all the consequences of the theory of Ideal Beauty. Everything ephemeral, personal, local, or particular must be banished from the ideal scene. The artist must speak

a universal and eternal language. In depicting the great events of history he must not show his heroes in costumes of contemporary dress, for that is to record fashion.. His heroes must look great, whatever their known appearance: Alexander must be tall, St Paul majestic. In his draperies he must not distinguish between silk and satin, velvet and linen, but clothe his figures in garments that do not distract the mind with the trivialities of a particular material or handicraft. The landscapes of Claude Lorrain, composed of drafts from various scenes, are to be preferred to those of Rubens, who made faithful and therefore confined portraits of what he actually saw. Every personal expression must be modified to suit characters of ideal dignity; and Bernini is blamed because he makes the boy David, about to cast his stone at Goliath, bite his under-lip.<sup>49</sup>

There is no place then in Reynolds's schema for the depiction of passions, feelings, and sentiments; these are fatally corrosive of the general ideal unity making up the overall portrait. Reynolds is explicit in this regard, noting that 'if you mean to preserve the most popular beauty' (that is the middle form), '*in its most perfect state, you cannot express the passions*'.<sup>50</sup> In such cases as when the artist's skill cannot achieve the perfect state, some indication of characteristic expression, writes Reynolds, may be depicted. But even so, only the simplest, crudest sentiments can be broached. So-called 'mixed emotions' are deemed to be 'out of the reach of our art'.<sup>51</sup>

It is common to see Reynolds's notion of ideal beauty and

character being challenged decisively by Diderot who began his Essai de la peinture with the cry, 'La nature ne fait rien d'incorrect', and by Benjamin West.<sup>52</sup> Not long after he had delivered his first Discourse, Reynolds called on the American painter in order to dissuade him from painting the Death of Wolfe in contemporary costume. West resisted Reynolds's arguments, and shortly afterwards invited him with the Archbishop of York to see his painting. As West recalls:

'They came accordingly, and the latter without speaking, after his first cursory glance, seated himself before the picture, and examined it with deep and minute attention for about half an hour. He then rose, and said to his Grace, Mr. West has conquered. He has treated his subject as it ought to be treated. I retract my objections against the introduction of any other circumstances into historical pictures than those which are requisite and appropriate; and I foresee that this picture will not only become one of the most popular, but occasion a revolution in the art.'<sup>53</sup>

The success of the Death of Wolfe in 1771 made it fashionable to paint the great events of contemporary history with all the apparent realism of a scene from Hogarth's Rake's Progress. But even before the 1770s, Hogarth had attacked the ideal theory with a startling and heretical question: 'Who but a bigot, even to the antiques, will say that he has not seen faces and necks, hands and arms in living women, that even the Grecian Venus doth but coarsely imitate? And what sufficient reason can be given why the same may not be said of the rest of the body?'<sup>54</sup>

## II. Hogarth and the Future Art of Seeing

Reynolds's position, and this comment by Hogarth, are each so striking that it is worthwhile seeking to establish how widespread they were. Hogarth, as we have suggested, stands out in a different tradition as an artist renowned for his great attention to detail, individualised gesture, dress, coiffure and adornment. In 1764 Johnson wrote to Garrick suggesting a quatrain for the painter's epitaph:

'The Hand of Art here torpid lies  
That traced the essential form of Grace:  
Here Death has closed the curious eyes  
That saw the manners in the face.'<sup>55</sup>

The Reverend Clubbe also pointed out the care with which Hogarth analysed and then laid down on canvas the appearance of physical features, and noted that Hogarth had 'found the Philosopher's wished-for Key to every Man's Breast'. He dedicated his witty and curious Physiognomy (1763) to Hogarth, suggesting that the artist had established the characterology on a sound footing.<sup>56</sup>

We have mentioned already the rise of a native school of history painters in the decades from 1730, where previously only portraitists had managed to make a living from their work. Though Hogarth himself turned to portraits occasionally during his life- from 1738-42 and then from 1757 onwards- it would be wrong to see him as a transitional figure between the reign of foreign artists like Kneller and Lely and the later rise of Reynolds and Gainsborough. From as early as 1736, Hogarth had invited comparison with



contemporary history painters by presenting a large Biblical painting to St Bartholomew's Hospital. His ambition, indeed, was to be a history painter, or more properly a 'comic history painter'.<sup>57</sup> This genre was intended to separate him from two other kinds of depiction: the caricatural on the one hand, and on the other the heroic, ideal portrait of character. In many places he made efforts to draw distinctions between character and caricature, and the need to do so became particularly pronounced, as he saw it, as caricatural prints grew fiercely in popularity from the 1730s. The caricature itself originated in the late sixteenth century from the work of the Carracci brothers, and was implemented in the theoretical discussions of Agucchi in 1646, Belloni in 1671 and Baldinucci in 1681, all of whom defined it as the bringing to life of a victim's faults.<sup>58</sup> In itself caricature distorts the human image by exaggerating certain individual human characteristics. It was differentiated from the character study mainly by scale, as Francis Grose pointed out in his Rules for Drawing Caricature in 1791: 'The Sculptors of ancient Greece seem to have diligently observed the forms and proportions constituting the European ideas of beauty; and upon them to have formed their own statues. These measures are to be met with in many drawing books; a slight deviation from them, by the predominancy of any feature, constitutes what is called Character, and serves to discriminate the owner therefor, and to fix the idea of identity. This deviation, or peculiarity, aggravated, forms Caricature.'<sup>59</sup>

Hogarth's unease with the caricature was aggravated by the publication in 1735 and 1736 of Arthur Pond's Prints in Imitation of Drawings, which sought to emulate the highly successful sets of reproductive prints etched by the Comte de Caylus in 1729.<sup>60</sup> Following the Imitation, Pond in collaboration with Charles Knapton issued two sets of caricatures based on Italian originals, this time modelled on the Comte de Caylus's Receuil de testes de caractères et de charges dessinés par Léonard de Vinci (1730), and with drawings by the Caracci, by Ghezzi and others.<sup>61</sup> The two sets sold well and were completed in 1742.

Behind the term 'comic history painting' lay a change in values in painting, poetry, in drama and in the new literary form which developed in Hogarth's time- the English novel of Henry Fielding and Tobias Smollett. Hogarth's genre was to focus on modern moral subjects, to situate itself between the sublime and the grotesque. In The Champion in 1740, before he embarked on his career as a novelist, Fielding praised Hogarth as 'one of the most useful satyrists any Age hath produced. In his excellent Works you see the delusive scene exposed with all the force of Humours, and casting your Eyes on another Picture, you behold the dreadful and fatal Consequence.'<sup>62</sup> Two years later, he published Joseph Andrews and in its pathbreaking preface, there was set out a bold programmatic statement for the character of the novel to be, for a 'kind of Writing, which I do not remember to have seen hitherto attempted in our Language.'<sup>63</sup> Fielding also took the

opportunity to launch an attack on burlesque and caricature. He argued against the hierarchy of values which placed the comic novel in an inferior position, just as the comic genre suffered by comparison with history painting. The categorical depreciation was one of Hogarth's chief complaints against the connoisseurs, and Fielding aptly identified his case with that of the painter, whose Harlot, Rake, illustrations to Hudibras and to Don Quixote he knew well.

Fielding begins by stating that 'The EPIC as well as the DRAMA is divided into Tragedy and Comedy', adding that 'a comic Romance is a comic Epic-Poem in Prose; differing from Comedy, as the serious Epic from Tragedy: its Action being more extended and comprehensive; containing a much larger Circle of Incidents, and introducing a greater Variety of Characters.'<sup>64</sup> No two species of writing, states Fielding, 'can differ more widely than the Comic and the Burlesque: for... the latter is ever the Exhibition of what is monstrous and unnatural.'<sup>65</sup> He then proceeds to illustrate the distinction by reference to Hogarth's works by comparing 'a Comic History-Painter, with those Performances which the *Italians* call *Caricatura*; where we shall find the true Excellence of the former, to consist in the exactest copying of Nature; insomuch, that a judicious Eye instantly rejects any thing *outré*; any Liberty which the Painter hath taken with the features of that *Alma Mater*.- Whereas in the *Caricatura* we allow all Licence. Its Aim is to exhibit Monsters, not Men; and all Distortions and Exaggerations whatever are within its

proper Province.'<sup>66</sup> What caricature is in painting, burlesque is in the new writing; 'in the same manner the Comic Writer and Painter correlate to each other'- 'He who should call the Ingenious Hogarth a Burlesque Painter, would, in my Opinion, do him very little Honour: for sure it is much easier, much less the Subject of Admiration, to paint a Man with a Nose, or any other Feature of a preposterous Size, or to expose him in some absurd or monstrous Attitude, than to express the Affections of Men on Canvas. It hath been thought a vast Commendation of a Painter, to say his Figures *seem to breathe* but surely, it is a much greater and nobler Applause, *that they appear to think.*'<sup>67</sup>

By seeing the comic novel as a form of epic and moral satires as a form of history painting, Fielding sought to elevate his own work and that of Hogarth to a new level. A year after Joseph Andrews was published, Hogarth issued a vindication of his own position between the sublime and the grotesque in his print, On the different meaning of the Words Character, Caractura, and Outré in Painting and Drawing (see plate 1). In the bottom left are reproduced the heads of St John and St Paul from Raphael's cartoons, the most renowned form of history painting and a common source of reference for Hogarth. Between the two portraits is an apparently grotesque figure of a beggar. On the opposing side, and cleanly but thinly divided off, are caricatures by Ghezzi, Carracci and Leonardo, figures depicted in Pond and Knapton's series. Above them is a cloud of some one hundred faces which

express the variety of character, developments and plays on the image of the beggar, rather than the ideal forms of the evangelists or the caricatures- Hogarth and Fielding, it has been suggested, are also amongst the faces.<sup>68</sup> Comic history painting, as is clearly intended, descends- or rather ascends- neither from the Italian tradition of *caricare* or from the French tradition of *changer*, or is it traceable to the Platonic Ideal forms of late seventeenth century humanism. It neither exaggerates physical peculiarity nor does it ignore it.

The depiction of character in this engraving has led some critics to trace Hogarth's debt back to the work of Le Brun, rather than to early caricaturists. As an artist often judged to have pioneered physiognomy and pathognomy in France, a brief examination of Le Brun's work will shed light on later developments.

\* \* \* \*

Charles Le Brun was the *premier peintre du roi* from 1662 and under Louis XIV the Director of the Gobelins factory, from where he designed most of the furnishings for Versailles. He was in addition the foremost painter of his day and helped Jean-Baptiste Colbert to reorganize the *Académie royale de peinture et de sculpture*, over which he presided from 1663. From then on he was acknowledged as the 'dictator of arts in France'.<sup>69</sup> From this post he dispensed patronage, and proclaimed the rules that rendered the art of his time so famously disciplined, intellectual and academic. He turned

the *Académie* into a channel for imposing a codified system of orthodoxy. His lectures came to be accepted as providing official standards of artistic correctness and, formulated on the basis of the classicism of Poussin, gave authority to the view that every aspect of artistic creation could be reduced to rule and precept. In the controversy concerning the relative importance of colour and drawing between the 'Rubenistes' and 'Poussinistes', Le Brun was appealed to in 1672 and gave his verdict in favour of drawing; this then became entrenched as the officially sanctioned view of the *Académie* well into the eighteenth century.<sup>70</sup> With the assistance of the *Académie*'s secretary Henri Testelin, the organization published in 1680 a rigid and comprehensive set of precepts covering every known aspect of painting.<sup>71</sup>

The rules were imitated throughout Europe, even in politically hostile countries like Scotland and England. At the heart of the doctrine was the notion that painting appealed to reason, to the mind rather than to the eye. It was conceived of as a learned, intellectual art. It imitated nature, yet did so according to rules, so that the artist needed to select from nature according to reason, to the laws of proportion, perspective and composition.

History painting, the transposition of the heroic onto the canvas, like the epic in verse, was deemed the loftiest as well as the most intellectual genre, below which came (in order) single portraits, then depictions of living animals, dead animals, landscapes, and at the lower end of the scale, still lives of fruit, flowers and shells.<sup>72</sup> This hierarchy

became the assumption of all French seventeenth-century art criticism and supplied critics in English coffee-houses with a whole vocabulary of baroque *clichés* and aesthetic jargon. That painting of myth or allegory was an intellectually demanding task was never put into doubt. Milton said that the epic poet must be a kind of walking encyclopaedia, and the French Academy itself decreed that no one could become a professor who had not been admitted as a history painter.

One of the overriding concerns of the *Académie* was the representation of the human passions in art. This was not a new concern, but it was probably Poussin, the founder of French classicism, who first made it schematic, deploying his subjects like statues or actors, assigning each a recognizable and discrete expression. His art was based on theoretical rules of design and composition, coldly classical and intellectual, and not in the least sensual or emotional.<sup>73</sup> Le Brun studied under Poussin's guidance in Rome, following the master there in 1642. In October 1667, he lectured on Poussin's Les Israélites receuillant la manne, and from this brief presentation probably derived his important discourse on the artistic representation of character.<sup>74</sup> This was presented to the French Academy in April 1668,<sup>75</sup> and the Conférence de M. Le Brun sur l'expression générale et particulière was then printed in Paris in 1698, after which it was frequently reprinted, then translated into English in 1701 and 1734 as A Method to Learn to Design the Passions.

This work has already received scholarly attention,<sup>76</sup> but two aspects of it bear on my theme. Firstly, having derived the mechanics of his system from Descartes's Passions de l'âme (1649), Le Brun posits the soul exercising its functions via the brain and therefore assigns particular importance to the eyebrows and their proximities as regions where the signs of the passions will be displayed. Accepting the ancient distinction between the two appetites of the soul, the irascible and concupiscible, still accepted in France throughout the seventeenth century,<sup>77</sup> Le Brun argues that whenever the soul experiences attraction towards something outside itself, the brain is stimulated and the eyebrows begin to ascend. Conversely, they fall when the soul experiences repulsion from something as they lose contact with the brain (or perhaps the pineal gland; the strength of Le Brun's debt to Descartes is unclear) whose power declines under negative emotion.<sup>78</sup> Compound passions, the equivalent of Reynolds's 'complex emotions', are monitored in a similar fashion. 'Hope' for example, which results from the soul wishing for something yet fearing the results of the wish unfulfilled, raises the eyebrows close to the nose and lowers them at the far ends (see plate 2).<sup>79</sup>

Each of these representations is accompanied by a short description. Of 'laughter' Le Brun writes:

'If Laughter succeed Joy, the emotion is expressed by the Eye-brows rising over the middle of the Eyes and falling towards the Nose; the Eyes almost shut; the Mouth appearing somewhat



open and shewing the teeth; the corners of the Mouth drawn back and rising up, which make the Cheeks appear wrinkled, swelled and rising above the Eyes; the Face will be red; the Nostrils open; and the Eyes may seem wet or in the action of shedding Tears, which, being very different from those of Sadness, do in no wise alter the Posture of the Face, as indeed they do, to a great Degree, when excited by Grief or Pain.<sup>80</sup>

The description is intended to bear as direct as possible a correspondance with the image. There is meant to be a fluid interchange and translatability between the verbal and the visual, and because the latter is so limited, the former is set down with the barest outline.

The important French art historian Roger de Piles had claimed that 'the expressions are the touchstone of the Painter's understanding', but had failed to provide any theoretical guidance which could inform that understanding.<sup>81</sup> Artists like Raphael, Dürer, Holbein and Titian had all been preoccupied with the human countenance as the reflection of the motions of the mind.<sup>82</sup> But their guidance, such as it was, had been merely by example. What had been portrayed was a wide variety of types of expression conveyed in a multiplicity of genres. In Le Brun's treatise, however, the range is severely limited, most obviously by his focus on the face and eyebrows. Even the drawings which Le Brun used to illustrate his lecture, which have recently been published, only offer minor diversification and do not provide any means to adjust expression for age, sex,

temperament and complex character (see plate 3).<sup>83</sup> Some, like Félibien, sought to undercut Le Brun's dogmatism by extending the range of physical expression to other regions of the body, but this in itself did not provide any latitude for individual variation.<sup>84</sup> Constrained by the poverty of language, of description, and of range in the face of the apparently endless variability of human expression, Le Brun fell into dogmatic formalism. Each of his figures seemed to be cast in the same mould as de Piles noted:

'(Le Brun's) expressions, in all his representations, are beautiful. He studied the passions with extraordinary application, as appears by the curious treatise he composed on them, which he adorned with demonstrative figures; nevertheless even in this he seems to have but one idea and to be always the same... What I have said of the passions may serve for his designs, both of figures and the airs of his heads, for they are almost always the same.'<sup>85</sup>

Though Le Brun intended to provide the resources for the depiction of compound passions, the blandness and homogeneity of the expressions in his text prevents him from so doing, just as the single-minded focus on the eyebrows vitiates the translation of emotional conflict and contradiction onto the canvas. In his history painting, as Norman Bryson has shown, other markers and emblems are laid out to bear the weight of the message he wishes to convey, to transmit and also to influence the passions.<sup>86</sup>

Le Brun does make an original attempt to extend the range of passions by offering a series of 'zoomorphic'

images. One of the most important attempts to carry out a similar project, the first indeed to illustrate the argument, had been Giambattista della Porta's De humana physiognomonica (1586). Della Porta had earlier set out a crude physiognomy in his Magia Naturalis (1558), but this went little further than the doctrine of signatures.<sup>87</sup> This work however was translated into English, unlike the Physiognomonica,<sup>88</sup> so its influence was far-reaching.<sup>89</sup> Turning to animal and human comparisons, della Porta reduced each animal species to a fixed bodily type corresponding to its governing passions and then strove to find expressions of this type in humankind. What he compares, in other words, are general types. No characteristic differentiations are posited within species by della Porta. It was Le Brun who first queried this approach in a lecture of 1671. The text of this lecture has unfortunately been lost, but the images which accompanied it have survived; they show remarkably subtle variations on the theme of the 'humanised' beast and the 'brutalised' man (see plate 4).

J. Blanquet, who made the images available in an early nineteenth-century folio of lithographs, announced quite correctly that 'This skilful man was far from coinciding in opinion with those who admit a certain instinct to a certain species of brutes in general, and without regard to the particular propensity, suppose at first sight, an analogous affection with men whose physiognomy bears some affinity to these animals. It was doubtless, to remove

this opinion that he drew a group of heads of oxen, whose variety of character at first sight, causes one to substitute a different instinct to each' (see plate 4).<sup>90</sup> This image, as Blanquet stresses, requires careful scrutiny if its purport is to be grasped, particularly since it is not accompanied by any verbal description. Are the eyes of the oxen human or bovine? What is the distinction between the oxen and the bull intended to signify? And what of the leontine figure in the bottom left, part-Zeus, part-Leonardo: a caricature like one of Cruikshank's Zoological Sketches (1834), or a genuine attempt to explore the range of human and animal characters?

To ask such questions is problematic, not least because it might involve us in a gross anachronism. The sketches published in his Conférence are more representative and were in wider circulation. As we have shown, many judged them to be crude representations which failed to convey the real variety of human character and appearance. Hogarth found them to be 'but imperfect copies', too general and unpenetrating, too fixed to capture 'that infinite variety of human forms which always distinguishes the touch of nature from the limited and insufficient one of art.'<sup>91</sup> If this was Hogarth's attitude, how did he attempt to depict that infinite variety in his own work?

\* \* \* \*

At the centre of Hogarth's approach is a problem of perception; so great indeed does this problem loom that he

judges that it is impossible to establish any definite correspondences between man's appearance and his inner character and passions. The perceptual barrier demands powerful visual discrimination, yet in a striking passage not included in the published version of the Analysis of Beauty, Hogarth, having argued that his contemporaries did not possess enough visual penetration to read character in appearances, went on to foresee future developments. Physiognomy and pathognomy, he mused, could only develop as rigorous bodies of knowledge with great improvements in man's powers of vision.

'What farther Improvements, the Eye is capable of, is hard to say, but this particular is known to many, with regard to hearing, that some deaf people can hold a conference, and understand almost every word that is said, by the motions of the mouth, without so much as hearing the least sound of the voice, which is almost inconceivable, and extraordinary, improvement of the sight, and more so, than that of a Musician's ear with regard to sounds.'<sup>92</sup>

The analogy Hogarth makes here is an intriguing one, but as we shall see the improvements in aural discrimination brought about by the rise of the elocution movement were not matched by similar advances in visual discrimination until the turn of the century. In the printed text of the Analysis, Hogarth again stresses that physiognomical depictions might be rigorously established once what he terms '*the art of seeing*' had been perfected; but he does nothing to bring about such an advance.<sup>93</sup> The contemporary state of the visual arts is deemed insufficiently

strong to uphold physiognomy or pathognomy, even though artistic perception itself can be pressurized into focusing on the surface level of things, treating bodies like shells.

As far as his pictures are concerned, Hogarth described them as 'my stage and men and women my players, who by means of certain actions and gestures are to exhibit a dumb show'.<sup>94</sup> Compared with Reynolds's, Hogarth's series are explicitly diachronic- as Andrew Wright has said, they are 'speaking pictures'.<sup>95</sup>

Speaking pictures to be sure, but acting pictures also. Though the body is judged to be too complex to describe accurately and unequivocally in physiognomical terms, Hogarth believed that its movements could be a far better indicator of life beneath the skin. So while the human frame remained to all extents and purposes expressionless, 'deportment, words, and actions must speak the good, the wise, the humane, the generous, the merciful, and the brave'.<sup>96</sup> Actions, unlike appearances, form a coherent language with its own grammar rules, susceptible to systematization.

When Hogarth writes that actions 'must speak the good' he does so to contrast them with appearances which can be too easily feigned to be more than masks of deception. As he writes in a crucial passage, the hypocrite 'may so manage his muscles, by teaching them to contradict his heart, that Little of his mind can be gather'd from his

countenance, so that the character of the hypocrite is entirely out of the power of the pencil, without some adjoining circumstance to discover him'.<sup>97</sup>

We shall return to this important claim in the third and final part of this chapter; before doing so, it will prove instructive to look briefly at some of Hogarth's artistic representations to see what use he appears to make of the body as a physiognomically or pathognomically significant object.

A study which seems to have much in common with Hogarth's visual elucidation of the differences between character, caricature and *outré* (plate 1), is his Scholars at a Lecture (also known as Delivery of a Lecture), published in 1736. But the etching is built on a significant pun: *datur vacuum*. Vacancy is given. The faces are empty, though they are obviously individualized. They convey nothing of the character of passing passions and emotions (plate 5).

How then is information conveyed if not by the signals of the body; if the language is not physiognomical? To a large extent the answer must be symbolically. During the century a whole solid corpus of traditional symbolism, sustained in numerous art forms, settled and was a familiar language of communication. The range of symbols used, of icons and ideographs, was conventional and accepted, yet liable to variation within limits. Attempts had earlier been made to provide manuals for artists—equivalent in status to Le Brun's treatise, but far more detailed and

correspondingly more practical. Caesar Ripa's Iconologia overa Discrittone dell'Imagini universale cavate dell'Antichita et da altri luoghi (1593) was only one amongst many such works common throughout the seventeenth century.<sup>98</sup> It was translated into English in 1709, a contemporary then to Le Brun's work, with a title which is worth rendering in full: Iconologia: or, Moral Emblems by Caesar Ripa. Wherein are Express'd, Various Images of Virtues, Vices, Passions, Arts, Humours, Elements and Celestial Bodies; as Design'd by the Ancient Egyptians, Greeks, Romans, and Modern Italians: Useful for Orators, Poets, Painters, Sculptors, and All Lovers of Ingenuity. The iconology clearly had a long and illustrious history, and the symbols used in prints, engravings and etchings are recognisable even today: 'Fame', a winged female blowing a trumpet; 'Plenty' holding a cornucopia; 'Liberty' with her cap and pole; 'Justice' with sword and scales—all emblems with fixed symbolic associations which as Atherton has shown, took on new political weight during the eighteenth century.<sup>99</sup>

Hogarth's early representation of Royalty, Episcopacy, and Law (1724) makes use of a visual image— we peer down a telescope at three central figures (a solar eclipse predicted for 11 May 1724 probably gave the telescope added importance)— but the figures are robbed of any resemblance to real human beings. They have become iconographic representations: the king's head is merely a guinea, the bishop's a jew's harp, the judge's a gavel (see plate 6).



Without making a full-length study of Hogarth's artistic output, it is difficult to establish my claim that he makes no significant use of physiognomy or pathognomy in his representations and relies instead on symbolism of another kind. But perhaps evidence for the argument being proposed can come by looking at how Hogarth's most serious and scholarly critic has approached his work. Ronald Paulson has made large claims for the influence of Le Brun's treatise on Hogarth, and based his evidence on Hogarth's mention of the work in his Analysis of Beauty as well as on a study of selected prints. In one passage of his study of The Art of Hogarth (1975), Paulson suggests that an image from the fifth number of Hogarth's Harlot's Progress contains many expressions which seem to be derived from Le Brun's own description.<sup>100</sup> The representation (first printed in 1733) is reproduced in plate 7, and as instructed by Paulson, we should focus particularly on the outstretched hand of the lady protecting the dying heroine from the two quacks and the nurse who takes advantage of the uproar to steal what she can. If the outstretched hand expresses anything at all in this picture, it is surely a guard against the encroachment of the victim's purported helpers. It serves more as a single geometrical structure parallel to the lines of the ceiling and bed than as an extension of the mind. If we want to 'read' anything into the image, we shall need to decipher the objects strewn around the room, and more importantly set the image in the context of the series.

What perhaps makes a 'physiognomical' reading more problematic

is that an almost identical arm outstretched is to be found in Hogarth's 1746 Mr Garrick in the Character of Richard the 3rd (see plate 8). This shows the moment at which the king starts in horror from his dream; hardly the same feelings run through his mind as through the mind of the harlot's servant. Some critics have turned to a careful examination of the expression of Garrick/Richard III's face in this scene and 'discovered' that it matches Le Brun's description of 'horror' in his Treatise. But, as we showed earlier, Le Brun's outlines were so crude and rigid it was not to be expected that any artist would deploy them in his work. What critics have been forced to do, it seems, is to discover parts of Le Brun's verbal and visual descriptions in Garrick/Richard III: Alan McKenzie finds 'considerable fright' and 'some guilt'; Alastair Smart finds 'amazement', 'horror' and 'admiration'.<sup>101</sup>

We shall be able to understand something of the absurdity of these readings once we turn to our treatment of the theatre, for what Smart and McKenzie assume is that Garrick himself based his acting techniques on theatrical conventions also taken from Le Brun; almost the opposite of what Garrick with some good reason claimed. It should be said that Le Brun's collection of 24 dominant passions lend themselves to this type of usage; they serve, as was frequently observed, as a means to decipher representation, not as an aid to painting. (That some commentators have found Reynolds relying as much on Le Brun's descriptions and models as Hogarth illustrates as well as any particular analysis just how broadly a set of vague descriptions may be applied<sup>102</sup>).

In part, Hogarth's dissatisfaction with Le Brun derives from the latter's dogmatism, for Hogarth emphasizes throughout the Analysis that his art, though loosely informed by the curve of beauty, is strictly governed by sense perception. 'If I have acquired anything in my way it has been wholly obtain'd by observation', he notes.<sup>103</sup> Equally, 'ocular demonstration will carry more conviction to the mind of a sensible man, than all the world could find in a thousand volumes', and this, Hogarth writes, 'has been attempted in all the prints I have composed.'<sup>104</sup> At root, such statements match the whole temper of Hogarth's thinking and represent an essential bias towards the visual and away from the verbal, to the immediately grasped and from the intellectually complex. It was the weight of meaning which Hogarth infused into his images which made them so susceptible to being used as substitutes for the verbal description.

So it is that Smollett exclaims that 'it would require the pencil of Hogarth to express' a scene he cannot describe in words;<sup>105</sup> and Fielding returns again and again to Hogarth's paintings and prints to help him in his own novelistic narratives.<sup>106</sup> Such deployments may suggest that Hogarth's series and prints do not contain great depths of puns, allusions, parallels and symbols, but compared with the history painting of his time Hogarth goes considerably beyond a simple pattern of morality. Only with the cycle he aimed especially for a popular audience of tradesmen, Industry and Idleness (1745), is the ethical presentation

straightforwardly polarised into right and wrong, rewards and punishments, action and consequence, black and white; only here is morality situated at the interface between *virtus* and *vuluptes*. Indeed, Hogarth often takes up this basic polarity to extend and deform it, as in the two sets of paintings Before and After, the first completed in 1730-31 and then the next five years later when Hogarth presses a whole array of symbols and allusions into service.<sup>107</sup>

The later compositions suggest a theme that comes into play increasingly in Hogarth's pictures: the image of the theatre and its actors. His scenes often present themselves as if they were occurring on a stage, with many paintings garnished with theatrical stage curtains. His characters, one imagines, are playing out set roles. This indeed is explicitly the case in many of his cycles as he takes up a common critique of masquerades by showing how effective actors are in the social world. To play on the relations between heroic ideals and the commonplace reality was common to many Augustan satirists, but Hogarth and Fielding are the first to show the full consequences of this role-playing in all its brutality- the brutalism of the stage. The Rake's Progress (1735) takes us through the stages of role-playing, as the merchant's son pretends to be an aristocrat, paying off the girl and breaking the mirror in scene one, evading self-recognition. Then in scene two, he is Paris choosing Venus, opting for pleasure rather than wisdom. In the next scene he falls into the arms of Venus, by scene six he is Christ in the agony of

the Garden; by the end he is Christ in the Pietà, adopting the final role- madness. Similarly in the Harlot's Progress; to take but one scene (see plate-9). The attack on role-playing could hardly be plainer: the ape dressed up in fashionable attire; the mask, classical emblem of deceit, on the table; the slave boy acquired to enter society, and so forth.

It is this attack on acting and theatricality in the social world which gives such a sharp cutting-edge to Hogarth's satires; a similar purpose animates Fielding's satires in his novels and essays. The hypocrite- *ὑποκριτής*, figure of the consummate actor, is what proves the most insurmountable obstacle to physiognomy and pathognomy; likewise to the artist attempting to portray true character on canvas and to the moralist striving to build a world on the twin foundations of openness and truth. Were Hogarth's hypocrite to be merely a problem of representation, his solution to it would form little more than a chapter in the history of art and aesthetics. But hypocrisy, labelled by Molière in Don Juan, 'the familiar vice', was for Hogarth, Fielding and many others a target for political and moral censure. In Hogarth's case, it may not be too far-fetched to trace his own scepticism about power- which notwithstanding some recent criticism to the contrary remained clear and consistent throughout his life<sup>108</sup> - to the pervasiveness of acting in the socio-political world. But it is to Fielding that we must turn for a more explicit statement and development of this critique.

### III. Masks and Vizors

Fielding's most cogent statement on the uses and the difficulties of physiognomical description appears in his essay on the knowledge of the characters of men.<sup>109</sup> Hypocrisy, which so perturbed Hogarth and seemed to him to stand as a barrier to the truthful representation of body-character relations, is immediately visible as the target of Fielding's essay. It is, he declares, 'the Bane of all Virtue, Morality, and Goodness', and his work aims 'to arm the honest, undesigning, open-hearted Man, who is generally the Prey of this Monster.'<sup>110</sup> Fielding wrote his piece with an eye on the cut-throat jostle for places which stampeded through the political world after the fall of Walpole in 1742. By this time he had been enlisted into the ranks of the opposition.<sup>111</sup> Hypocrisy and what Fielding has to say about it clearly has a political, as well as a moral, dimension. How it lives and how it might be put down are issues of fundamental consequence. Affectation, deceit, lying are not characteristics of 'fashionable' society alone; they play a central role in the whole political to-and-fro of the country.

Fielding therefore speaks with authority and urgency about those 'great Arts, which the Vulgar call Treachery, Dissembling, Promising, Lying, Falsehood, &c. but which are by GREAT MEN summed up in the Collective Name of Policy, or Politicks, or rather *Pollitricks*.'<sup>112</sup> Whether one can gauge the truth of men from their appearances, from their actions,

or from their words, is not simply a question to be settled before a pleasing picture can be painted, or just taste formed. On the truth or falsity of physiognomy and pathognomy hangs the means for a general reformation of manners, of the political and moral character of Man in and out of power. Behind what Fielding writes about appearances and actions lies his burning desire to 'extirpate all Fallacy out of the World.'<sup>113</sup>

'It is', notes Fielding, 'a melancholy Instance of the Great Depravity of Human Nature, that whilst so many Men have employed their utmost Abilities to invent Systems, by which the Artful and cunning Part of Mankind may be enabled to impose on the rest of the World; few or none should have stood up the Champions of the innocent and undesigning, and have endeavoured to arm them against Imposition.'<sup>114</sup> The problem can be simply stated: should man be as he seems or seem as he is? Should how he appears truly reflect what he is, or should what he is be as artificial as the appearances he adopts for reasons of fashion, custom, or conscious deceit- a process which can turn the deceit of others into self-deceit? Generally speaking, the vehemence with which Fielding tackles the problem of deceit and hypocrisy, along with his many remarks on the pervasiveness of these vices, suggest that during this period men affected appearances, that they were as they seemed- or, since to be such is to be hypocritical, that they were what they seemed not to be.<sup>115</sup> Many examples of this might be cited, but one particularly

expressive and blatant one from the Gentleman's Review of 1756 shows how often some central tenets of Christian morality seemed to be up for renewal:

'The old maxim, that "honesty is the best policy", has long ago been exploded: but I am firmly of the opinion, that the appearance of it might, if well put on, promote a man's interest, tho' the reality must destroy it. I would therefore recommend it to persons of all locations... to put on now and then the appearance of a little honesty... To deceive behind the mask of integrity, has been deemed the most effectual method.'<sup>116</sup>

Such sentiments pose a problem for the well-meaning physiognomist, just as they offer the solution to the craft and ingenious 'pollitrickers'. The honest have little chance so long as hypocrisy has the upper hand and deceit can proffer advancement on the unscrupulous and designing. As Fielding notes, 'the whole world (has become) a vast *Masquerade*, where the greatest Part appear *disguised under false Vizors and Habits*; a very few showing their own Faces, who become, by so doing, the Astonishment and Ridicule of the rest.'<sup>117</sup>

What does this metaphor intend? It is a topical reference to the masquerades which were hugely popular and which attracted a great deal of unfavourable attention in the 1730s and 1740s. One of the earliest of Addison's contributions to the Spectator in 1711 had already fulminated against the midnight masque declaring that 'the whole Design of this libidinous Assembly seems to terminate in Assignations and Intrigues.'<sup>118</sup> In The Masquerade (1728),



a theoretical extension in some senses of Hogarth's Masquerades and Operas of four years earlier, Fielding noted that. 'The misfortune of things is, that People draw themselves in what they have a mind to be, and not what they are fit for.'<sup>119</sup> The masquerade in fact became a popular means of satirising and directly attacking political figures and the elite in cartoons and broad-sheets, Lord Bute, who had a proclivity for masques, being especially targetted.<sup>120</sup> But more crucially, the masquerade was judged to impose a distortion first on the body, and thence on the body politic. It was judged to be the first step along the road of wholesale moral and social degeneracy.<sup>121</sup>

The masquerade thrived because the world was a stage and men and women players upon it. This suggests a wide gulf in eighteenth-century England between what E.P. Thompson has termed the 'rulers and the ruled, the high and the low people, people of substance and of independent estate and the loose and disorderly sort.'<sup>122</sup> In between these two, where the professional and industrial middle-classes and the substantial yeomanry might have been present as a buffer, relations of clientage and dependency were so powerful that, at least until the late 1760s, these groups appear to have offered little deflection of the essential polarities. The world Fielding describes is one fissured according to political identity, as well as according to cultural and ideological values. A world one might say of patricians and plebs, actors and spectators. But it remains that every society has its kind of theatre; much of the

political life of our own society can be understood as a contest for symbolic authority,<sup>123</sup> and with the weakness of other organs of control- the authority of the church dissolving, that of the school and the mass media not yet in existence- the oligarchic gentry relied on symbolic, iconological forms of hegemony (as well as on a system of preferment and, where needs be, on the majesty and naked terror of the law).

The contest for symbolic authority was real enough; the plebs adopted their own 'plebian' theatricality, a kind of countertheatre, one might say.<sup>124</sup> This was not a theatre, as Fielding describes it, of studied style, but of sedition and threat, of effigy burning, hanging boots from gallows (Lord Bute again), of charivaris which often had no other aim but to challenge the gentry's hegemonic assurance.<sup>125</sup> Hence Fielding's *theatrum mundi* was political, and his audience, as Paulson has shown, retained a basic allegiance to elite forms of theatre.<sup>126</sup>

The hypocrite exists in both audiences, of course, and flourishes because the average citizen fails to make adequate moral distinctions or even to judge his or her best interests; because he or she has not the means to make such distinctions. In fact, those means do not exist. This is why the hypocrite in Fielding's novels is always set against the simple, uneducated character, the man like Parson Adams who only gradually discovers how his own good nature serves the ends of others.<sup>127</sup>

It is not physiognomical acuity which will rouse the world against hypocrisy, which will wrench the masks and vizors from the faces of the deceivers, but a kind of imbecile simple-mindedness. This is the only quality which 'when set on its guard, is often a Match for Cunning'.<sup>128</sup>

Though the means to distinguish inner character from outward appearance had not yet been perfected, Fielding anticipated Hogarth by arguing that further discriminations would be necessary at the visual perceptual level. Of the cunning politician-hypocrite, Fielding informs us, 'however foreign to his Age, or Circumstance, yet if closely attended to, he very rarely escapes the Discovery of an Accurate Observer; for Nature, which unwillingly submits to the Imposture, is ever endeavouring to peep forth and shew herself; nor can the Cardinal, the Friar, or the Judge, long conceal the Sot, the Gamester, or the Rake... if we employ sufficient Diligence and Attention in the Scrutiny.'<sup>129</sup>

This does appear to bring us tantalisingly close to a method powerful enough- with the assistance of the hand of Nature- to cut through imposture. It would be wrong, continues Fielding obviously with the Physiognomonica often attributed to the Greek philosopher in mind, 'to depreciate an Art on which so wise a Man as Aristotle hath thought proper to compose a Treatise', just because looks can be deceptive.<sup>130</sup>

The problem of the hypocrite closely resembles that of the quack in society; just because reputable physicians occasionally err through ignorance, carelessness, or the

wily ways of Nature, should not propel us to abandon all faith in medicine. Part of the problem that hangs over physiognomy derives from the presence of the quack-physiognomist who pretends to be able to tell the complete story at a glance. The cure-all is as effective in treating illness as the see-all is in recuperating character. Neither the patient nor the politician bears on him or with him a single mark which will function as a mirror to the soul. 'One has told us', Steele wrote in 1711, 'that a graceful Person is a more powerful Recommendation, than the best Letter that can be writ in your Favour',<sup>131</sup> and this simplistic notion had been handed down from, and commonly traced back to, Aristotle himself.<sup>132</sup> The equation of beauty and goodness wrapped up in the 'letter of recommendation' was indeed proverbial.<sup>133</sup> Fielding returned again and again to poke fun at it in his novels,<sup>134</sup> and it is manifest that if physiognomy is to be more than a set of such equations such letters need to be approached with care and with criticism.

This Fielding proceeds to do. To place any faith in such recommendations, he states, would be 'to throw our Arms open to receive the Poison, divest us of all kinds of Apprehension, and disarm us of all Caution.'<sup>135</sup> But what positively can come of such an attack? At what point does the smile which lies reveal itself as distinct from that smile which speaks of good character? For almost as proverbial as the recommending smile is Shakespeare's 'villain, smiling, damned villain',<sup>136</sup> or what Fielding himself refers to as 'the constant, settled, glavering sneering Smile in the Countenance', which is 'a compound of Malice and

Fraud, and as surely indicates a bad Heart, as a galloping Pulse doth a Fever'.<sup>137</sup>

Reynolds, Richardson, Burke and others discovered the ethical in the beautiful; to them such a question would not- could not- have arisen. To Fielding, and equally to Hogarth, the eye is called upon not to see sufficient to transcend the particular and settle itself upon the general. Rather, the gaze must penetrate beneath the general to discover truth. Fielding's response to the problem of finding the hypocrite behind the countenance he shares in common with the simple man is to issue a general proclamation for the reformation of vision. The only means to lift off the false vizors and habits is to become equipped with 'an accurate and discerning Eye.'<sup>138</sup>

This matches Hogarth's notion of the 'art of seeing'; except insofar as Fielding's is not simply an aesthetic project (as the artist's tends to be), but predominantly a social and political one- to extirpate all fallacy from the world. The class of hypocrites was not confined to the gaols and the two Houses. A new breed of liars, cheats, deceivers, hypocrites, quacks, mountebanks, and poseurs was walking free in every town. Of this class, which threatened to overrun the whole population, the Gentleman's Magazine noted with evident dismay, 'no Locks, no Bars will hold it... it travelled from Newgate long ago.'<sup>139</sup> This being so, Fielding's 'accurate and discerning Eye' could, as he admitted, only be 'the property of the Few.'<sup>140</sup> Unlike

Hogarth, Fielding declined to prophesy whether physiognomy could develop at a later date; he was adamant that in mid-century the bulk of mankind was doomed to 'mistake the Affectation for the Reality.'<sup>141</sup> Whatever rules might be established, these could only be of limited application, 'of Use to an Observer of much Penetration.'<sup>142</sup> To Fielding, the problem is not that physiognomy cannot be used but that its methods are such that few can use it. For it to become a practical art, we must either await major changes in man's manners and social morals in his daily business; or hope that, at some unspecified time in the future, he will be able, as it were, to 'see through' villainy and viciousness.

The use- or rather lack of use- Fielding makes of physiological description in his novels is worth drawing attention to. His characters, it has often been said, are 'flat' in the tradition of the comedy of humours of the middle ages, and are not in the 'full' sense of the word people.<sup>143</sup> Some have judged that such characterization is one of the exigencies of comedy, and that thereby Fielding, 'the master of the comic, preserves his own status, and that of the reader, as an observer.'<sup>144</sup> Ian Watt, discussing the same phenomenon, has agreed that 'Fielding's comic purpose itself required an external approach', because this effectively prevents the sort of sympathetic identification that would be prejudicial to comedy.<sup>145</sup> It is tempting to see this external approach to character as a form of anti-psychologism, as Fielding running against the stream of a deepening under-

standing of the often turbulent emotional life of characters in the novel- one thinks in this regard especially of Samuel Richardson's works.<sup>146</sup> However, enough scholarly attention has been devoted to Fielding's moral and psychological outlook for us to be able to disregard this view.<sup>147</sup>

What I should like to do briefly in the following section is to query the notion that this 'external' approach depends on a description of a character's appearance. I shall try to establish that, on the contrary, not only does Fielding seldom use such descriptions, but he occasionally goes so far as to ridicule faith in physiognomy.<sup>148</sup>

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In each of his major novels, Fielding presents a particular and basic ethical problem from which he develops his definition of a good man. His major concern in Joseph Andrews (1742) is the importance of works over faith (of action over speech) with special emphasis on charity; in Tom Jones (1749) the existence of a predisposition to do good and the fulfillment of that predisposition in society; in Amelia (1751) rational Christian action governing the passions and surpassing natural virtue. These themes are gathered under one major definition: the 'good man' is one who, under God, acts, faces life with benevolence, rationality and prudence.

Of course, there is considerable overlapping and duplication of themes in the novels, but Fielding makes no secret of his

particular interest in each novel by revealing it through discursive statements and presentational action of the conflicts within major figures. The protagonist's problems are that he or she must act ethically, and neither judge nor be judged by appearances of affected ethical action or by speech, social status, profession, clothing, pathognomy, or physiognomy.

Fielding's stress on action as the raw data for judgement forms the basis not only for his ethics, but also for his aesthetics, which in whole or in part involve the presentation of action or the conflict between the static and the active. Just as the reality of the actual world is discovered by examining and judging the actions of men, so is the reality of the fictional world around.<sup>149</sup> Fielding's most pronounced fictional technique of characterization involves the revelation of the attitude or reaction a character has to a specific incident and the subsequent action he or she takes. The character may react only by speech, but the point under consideration here is that the thing to which he or she does act is in itself an act. At the centre of the novels, in other words, are specific incidents.

This being so, a character is never introduced with the extended epigrammatic and summary analysis of the 'Theophrastan character' so popular in the previous century.<sup>150</sup> Nor is the set physical description which would dominate so much realist fiction in the nineteenth century usually employed. Instead, the major characters are almost always introduced by a biography which reveals a figure by a



statement of his or her significant experiences, supplemented by Fielding's own comments on the effect of those experiences. Such descriptions do not represent an extension of the Theophrastan technique; Fielding does not offer the reader a static end result, but reveals the growth towards that result.<sup>151</sup>

The extent to which this 'active' character presentation is used is best seen in the lengthy presentations of Joseph, Tom, and Booth. The introductory biographies of the latter two men cover all of Books II and III of their respective novels, and Joseph's life extends to two chapters. By allowing himself so long to introduce his major characters, Fielding places the emphasis on the presented action seen by the reader rather than the discursive action told by the author. All Fielding has to say about his characters is reinforced and substantiated by the characters's actions in presented incidents.

Of all his fictional works, it is in Joseph Andrews that one can find the greatest reliance placed on physical description as an aid to character portrayal. However, such descriptions are always intended to be comical or satirical; more crucially, there seems to be no connection between the length or detail of the physical catalogue and the importance of the character. Often, as we have mentioned, Fielding abandons all attempts to describe appearance and simply refers to his friend Hogarth's paintings as exemplars.<sup>152</sup> Otherwise, it is quite impossible to visualise Fielding's major characters. Parson Adams, for

example, is made up of a small handful of scattered details- a pipe, crabstick, snapping fingers- but to all extents and purposes, he is 'flat'.<sup>153</sup> Of Tom Jones we are informed merely that he is handsome, over six feet tall, and that he is a member of a class of men who possess an 'open countenance'; of Partridge, another central character from the same work, we are told merely that he is slightly less than six feet tall. Of Squire Allworthy, Thwackum, Square and Squire Western, we know nothing whatsoever respecting their appearances.

If this unwillingness to describe appearance ran rigidly throughout the novels, it would be impossible to seriously maintain that Fielding's characters- or at least some of them- take shape through physical description. Joseph Andrews, it must be said, is described- at a point sometime after his early life and upbringing have been recounted. Fielding describes him as follows:

'Mr. Joseph Andrews was now in the one and twentieth Year of his Age. He was of the highest Degree of middle Stature. His limbs were put together with great Elegance and no less Proportion. His Legs and Thighs were formed in the exactest Proportion. His Shoulders were broad and brawny, but yet his Arms hung so easily, that he had all the Symptoms of Strength without the least clumsiness. His hair was of a nut-brown Colour, and was displayed in wanton Ringlets down his Back. His forehead was high, his Eyes dark, and as full of Sweetness as of Fire. His Nose a little inclined to the Roman. His Teeth white and even. His Lips, full, red, and soft. His beard was only rough on his Chin and upper Lip; but his Cheeks, in which Blood glowed, were overspread with a thick Down.'<sup>154</sup>

This verbosity has an unmistakably comic ring, with physical attributes simply listed without any effort being made to relate them one to the other or indeed to suggest that they might have any bearing on the man who owns them. But what is most impressive is that an almost identical catalogue of features is used as a basis for the description of Fanny, again some time after she first makes her entrance:

'Fanny was now in the nineteenth Year of her Age; she was tall and delicately shaped; but not one of those slender young Women, who seems rather intended to land up in the Hall of an Anatomist than for any other purpose. On the contrary, she was so plump, that she seemed bursting through her tight Stays, especially in the Part which confined her swelling Breasts. Nor did her Hips require the assistance of a Hoop to extend them. The exact shape of her Arms, denoted the form of those Limbs which she concealed; and tho' they were a little reddened by her Labour, yet if her Sleeve split above her Elbow, or her Hankerchief discovered any part of her Neck, a Whiteness appeared which the finest Italian Paint would be unable to reach. Her Hair was of a Chesnut (sic) Brown, and Nature had been extremely lavish to her of it, which she had cut, and on Sundays used to curl down her Neck in the modern Fashion. Her Forehead was high, her Eye-brows arched, and rather full than otherwise. Her Eyes black and sparkling; her Nose, just inclining to the Roman; her Lips red and moist, and her Under-Lip, according to the Opinion of the Ladies, too pouting. Her Teeth were white, but not exactly even.'<sup>155</sup>

Other characters are either described according to similarly exaggerated anatomical criteria,<sup>156</sup> or in the very barest outline,<sup>157</sup> with an almost prurient interest in physical

abnormality and caricature.<sup>158</sup> It might be possible to see that in general physical shortcomings signal moral inadequacy in Fielding's schema, but the link is not rigorously pursued—his moral system being, in any case far more complex than his rudimentary descriptions allow. In fact critics have been more successful in applying iconographical readings to Fielding's occasional descriptions of appearance, than in seeing these are bearing any link to character.<sup>159</sup> The connection between character and appearance is often expressed so equivocally as to be almost meaningless—sometimes he describes physique as resembling that of an animal and suggests the man within is bestial, at other times he denies such links.<sup>160</sup> Sometimes he suggests that a physical description might tell us something about a character; more often than not, he ridicules the notion.<sup>161</sup>

The individual's character, psychological or moral, is immediately defined by the part he or she plays in the action at hand. If a minor character is introduced it is either by a short identification—'chambermaid', 'lawyer', 'bystander'—or by a brief biography which relates past actions through time.<sup>162</sup> The reality of action in life and the imitation of that action in fiction is opposed to the 'appearance' of the non-act. So appearance is deemed to be bad both because it is non-action and also because it seems to signal a value all-too-easily feigned. The bad people in the novels not only value appearance in their own lives, but interpret (or rather misinterpret) others by their false appearances. All the

bad people make a mockery of Parson Adams because of his ragged clothes; the good ones must not only learn to avoid being rejected by such ill-based censure as is applied to Adams, but must also learn to see through the values of rank, family and fortune.

In life, all that is not action is appearance, and the most pervasive and deceptive appearance is speech. For one thing, speech is similar to action since it is not static but a series of symbols occurring in a sequential order; it is a verbal representation of the act. For another thing, speech should be a reflection of the mind which initiates and controls act, and so it has a kinship with act. Both act and speech should reflect, one physically and the other verbally, the intention of the mind.

In the novels, speech serves as mock action, and must always be tested against the reality of benevolent action. Allworthy and Tom both speak and act with charity, and it is this positive correlation of speech and act which marks the speech as real. In like manner, Blifil and Captain James speak with charity, but their speech does not validate itself; rather, it is invalidated by their self-interested actions. The close relation of speech and action is evidenced by the ease with which these two men deceive so many people by speech which the innocent or ignorant mistake for the reality of action.

If the presentation of action is Fielding's primary aim, it can be argued that his secondary aim is the representation

of mock action or speech. Using the experience he gained as a dramatist, he delighted in allowing people to expose their reactions and unconsciously define their characters with their own words.<sup>163</sup> Thus the lack of emphasis given to pictorial description, especially of physical appearance but also of clothing (which Fielding only describes some three times)<sup>164</sup> and landscape (which he describes once and presents by prefacing the chapter in which the description appears with the words, 'The reader's neck brought into danger with a description')<sup>165</sup>, is compensated by his detailed accounts of actions and speech.

Fielding often comments on the problem of physiognomy in his novels, and what is more important, he manipulates his characters to illustrate the fact that physiognomy is appearance and therefore not real. In Joseph Andrews, he describes a scene where Parson Adams returns to an Inn where Fanny and Joseph are holed up and a mix-up ensues in which Adams and Tulliber are discovered to be blood-brothers despite their total lack of family resemblance. Fanny, who had pronounced the fact impossible because neither looked remotely like the other, has her much vaunted 'Skill in Physiognomy' ridiculed as a result.<sup>166</sup> A little later, a more elaborate account of the problem occurs in a verbal interchange between Adams and the Innkeeper. The first is honest, bookish and inexperienced—above all, a character of perfect 'simplicity'<sup>167</sup> (a term defined in Johnson's Dictionary (1755) as 'Plainness; artlessness; not subtilily; not cunning; not deceit')<sup>168</sup>—

the second uneducated but well-travelled. Joseph Andrews has consistently deferred to Adams in matters of human psychology and for guidance in personal relationships.<sup>169</sup> But the reliance is finally shattered when Joseph and Adams meet a man who has all the appearances and accoutrements of a gentleman but is nevertheless exposed as an imposter. Joseph had suspected him, but been reassured by Adams; the Innkeeper had likewise suspected but had been left unmoved by Adams's apparent knowledge. Fielding recounts the episode (Adams speaking):

"And to confess the Truth, notwithstanding the Baseness of this Character, which he hath too well deserved, he hath in his Countenance sufficient Symptoms of that *bona Indoles*, that Sweetness of Disposition which furnishes out a Good Christian". "Ah! Master, Master, (says the Host), if you had travelled as far as I have, and conversed with the many Nations where I have traded, you would not give any Credit to a Man's Countenance. Symtoms in his Countenance, quotha! I would look there perhaps to see whether a Man has had the Small-Pox, but for nothing else!"<sup>170</sup>

Adams however, will not be denied and continues by relating the story of Socrates accepting the physiological diagnosis of Zopyrus, but pointing out that he had managed to escape from the tyranny of his own ugliness by the pursuit of philosophy. He remains adamant that 'Nature generally imprints such a Portraiture of the Mind in the Countenance, that a skilful Physiognomist will rarely be deceived.'<sup>171</sup> The problem is that he is deceived, persistently and thoroughly. Whilst Adams resorts

to authoritative proof for physiognomy, his choice of example is, as we shall see, the most damning he could have chosen. In Amelia, Fielding offers some of his most forceful and clear statements against attempting to judge character by physiognomy. As author, he enters into the scene momentarily to warn the reader of how extreme the error can be when a character is evaluated by appearance:

'I happened in my youth to sit behind two Ladies in a side-box at a play, where, in the balcony on the opposite side, was placed the inimitable B----y C----s, in company with a young fellow of no very formal, or indeed sober, appearance. One of the Ladies, I remember, said to the other-- "Did you ever see anything look so modest and so innocent as that girl over that way? what a pity it is such a creature should be in the way of ruin, as I am afraid she is, by her being alone with that young Fellow!" Now this Lady was no bad Physiognomist; for it was impossible to conceive a greater appearance of modesty, innocence, and simplicity, than what Nature had displayed in the Countenance of that Girl; and yet, all appearances notwithstanding, I myself (remember, critic, it was in my youth) had a few mornings before seen that very identical Picture of all those engaging qualities in bed with a Rake at a bagnio, smoking tobacco, drinking Punch, talking obscenity, and swearing and cursing with all the impudence and impiety of the lowest and most abandoned trull of a Soldier.'172

The characters in the novel must also learn the deceptiveness of physiognomy. In Book I, the first four chapters present a vicious analysis of the unreliability of appearance. The unrelieved horror and seriousness of the situation and presentation is unusual in Fielding's



works. No face can be trusted.

'A very pretty Girl then advanced towards them, whose beauty Mr. Booth could not help admiring the moment he saw her; declaring, at the same time, he thought she had great Innocence in her Countenance. Robinson said she was committed tither as an idle and disorderly Person, and a common Street-Walker. As she passed by Mr. Booth, she damned his eyes, and discharged a Volley of Words, every one of which was too indecent to be repeated.'173.

Booth did not learn from this early experience, but he was not alone in putting his trust unwisely. After the would-be seducer, Col. James, revealed his base intentions to Amelia, she confided in Doctor Harrison. The doctor is comparable to Squire Allworthy in Tom Jones, and Fielding usually speaks through him. This time about villany, vanity, virtue and the letter of recommendation:

'Upon which Amelia said, "Is villany so rare a thing, Sir, that it should so much surprise you?"-- "No, child", cries he; "but I am shocked at seeing it so artfully disguised under the appearance of so much virtue: to confess the truth, I believe my own Vanity is a little hurt in having been so grossly imposed upon. Indeed, I had a very high Regard for this Man; for, besides the great Character given him by your Husband, and the many facts I have heard so much resounding to his Honour, he hath the fairest and most promising appearance I have ever yet beheld. A good Face, they say, is a Letter of Recommendation. O Nature! O, Nature! why art thou so dishonest, as ever to send Men with these false Recommendations into the World?"'174

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This examination will, it is hoped, have shown how and why Fielding deals with the question of depicting character in his fiction, and how in the novels he develops the view that the 'actions of Men are the justest interpreters of their Thoughts, and the truest Standards by which we may judge them.'<sup>175</sup> In his other critical essays Fielding never returned to analyse man's behaviour as evidence of his character, though his fiction demonstrates how much he developed and extended Locke's notion that the behaviour of men are the best guides to their thinking;<sup>176</sup> a view one can find in another figure who exerted strong influences on Fielding- Samuel Clarke.<sup>177</sup> For many though, 'By their Fruits you shall know them' was presumably judged to be a self-evident and perhaps banal Biblical exhortation.<sup>178</sup> Fielding's primary distinction between private and public 'fruits' is a necessary moment in developing a distinction we shall shortly be examining in some detail, that dividing the stage from the world, actor from spectator.

Though Fielding dwelt on action in his novels, one must retrospectively judge his studies of it to be crude and vitiated to a large degree by a failure to differentiate fully between public virtues and private vices; perhaps the 'act' was already the subject of purely theatrical speculations in the 1730s and 1740s. In any event, adherence to an anti-particularism entailed strong limitations on the range and variety of discriminations which could be brought to the understanding of body and character. On the other hand, such a stance also served to strengthen the notion that mind was a single, simple faculty, at least as

far as moral and aesthetic perceptions were concerned. This point is perhaps worth emphasizing before we proceed, and we shall do so by turning to the work of Samuel Johnson; an interesting case which combines the most developed non-theatrical account of rules of action and a sustained support for the notion that universalism entails mental uniformitarianism.

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Like Reynolds, Hogarth, Fielding and others, Johnson bases his criticism on the notion that there exists a world order, both as a total embodiment, that is a set of principles, and as a realm of more or less knowable objects.<sup>179</sup> In a famous passage in the discourse of the philosopher Imlac in Rasselas (1759)- a work published in the same year as Reynolds's Idler essays<sup>180</sup>- Johnson writes:

'The business of a poet... is to examine, not the individual, but the species; to remark general properties and large appearances; he does not number the streaks of a tulip, or describe the different shades in the verdure of the forest. He is to exhibit in his portraits of nature such prominent and striking features, as recall the original to mind; and must neglect the minuter discriminations, which one may have remarked, and another have neglected, for those characteristics which are alike obvious to vigilance and carelessness... He must divest himself of the prejudices of his age or country; he must consider right and wrong in their abstracted and invariable states; he must disregard present laws and opinions, and rise to general and transcendental truths, which will always remain the same.'<sup>181</sup>

Great thoughts are always general and consist in occupying positions not restricted by exceptions, and in accepting descriptions which never falter down into minuteness.<sup>182</sup>

The general is the poetic, and useful truths are universal.<sup>183</sup>

The minute, on the other hand, is pedantic.<sup>184</sup> This, briefly

but not I think inaccurately sums up central features of Johnson's outlook, one which is both moral and aesthetic:

the beautiful is morally sanctioned since both morality and beauty exist on the same level above the particular.

Milton's Satan, for example, a frequent target of attack from those who found it obscene and impious, is rescued by Johnson who claims that the devil's disfigurements and 'expressions are commonly general, and not otherwise offensive than as they are wicked.'<sup>185</sup>

More important for our purposes than his aesthetic criticism, is the manner in which Johnson deploys the parallels between universal truth and universal nature to legislate a doctrine of universal human nature. In many cases, the argument takes an opposite form: a particularist doctrine explains and sustains the wide variety of opinions which appear to make cultural and social diversity. The conflict of opinion derives from the fact that some see only the part and judge wrongly of the whole on that limited evidence.<sup>186</sup> This is deplorable since, 'from... contrary conclusions, each wonders at the other's absurdity.'<sup>187</sup> 'It is not difficult', Johnson writes, 'by an aggregation of effects to make every thing great... by a partial and imperfect representation, may every thing be made equally ridiculous.'<sup>188</sup>

Those (Johnson cites La Fontaine and La Bruyère) who offer only a partial description of appearance in the form of an epigram or a sketch are even worse.<sup>189</sup> Even if the focus is upon the actions of men, fiction should not describe manners as seen, but impose instead a sharp discrimination. It should disengage itself from the particular so as to remark on everything in the most general and complete terms.<sup>190</sup>

Nature, then, is uniform. So too are human passions and reason. Because judgement, understanding and nature are virtually synonymous, reason is universal and inflexible. Indeed, the uniformity of man's reason stands in sharp contrast- as *the* contrast- to the diversity and fluctuating desires of the beasts.<sup>191</sup> A persistent concern with particular ends, with temporal goals, marks the irrational in Man. Thus, the character of his nature is to be preferred as the subject of poetry over the character of his manners; the former being, as it were, both the result of the description of acts and its shortcut. Homer's permanence, for example, is explained by Johnson when he writes that 'his positions are general, and his representations natural, with very little dependence on local or temporary customs, on those changeable scenes of artificial life, which, by mingling original with accidental notions, and crowding the mind with images which time effaces, produce ambiguity in diction, and obscurity in books.'<sup>192</sup>

Nature as ordered reality introduces universal psychological truths, those uniform and permanent features of Man's mind.

Referring to those truths which Man perceives as constituting the structure of the natural and moral world, Johnson writes that 'truth indeed is always truth, and reason always reason; they have an intrinsic and unalterable value.'<sup>193</sup> This moral value, at once simple and fundamental, is the subject of all Art,<sup>194</sup> Art which gathers importance in lieu of the falsehood which reduces the world.<sup>195</sup>

In his criticism, Johnson praises those who show the connections between truth, beauty and uniformity and attacks those who fix on the accidental, the mutable, and the dissipating.<sup>196</sup> As with Reynolds, the uniform is not the Ideal. Beauty, for instance, is well founded on experience; it is a shifting empirical term.<sup>197</sup> Imlac's tulip, likewise, is not a Platonic Form- the discussion of its general nature (quoted above) is introduced in response to the comment, 'In so wide a survey... you must surely have left much *unobserved*.'<sup>198</sup> Plato in the Phaedo advised the poet to isolate particulars to reveal the general and universal Forms. Johnson on the other hand calls upon the general to recall particulars.<sup>199</sup>

Poetry treats essentially similar subjects, whatever its mode or metre,<sup>200</sup> and expresses and returns to Man's rationality as a result. While England 'affords a greater variety of characters, than the rest of the world',<sup>201</sup> these can be reduced beyond appearances to an essentially true reason behind the masks and habits which variety offers to the eye. 'We are all prompted by the same motives, all deceived by the same fallacies, all animated by hope,

obstructed by danger, entangled by desire, and seduced by pleasure.'<sup>202</sup> Human nature, Johnson writes, 'is always the same.'<sup>203</sup> Like other writers of the period, it is not that Johnson was incurious of, or emotionally insensitive to, peculiarities or particulars; Boswell's Life reveals that this was not so. But to many these parts only derived force, meaning, and morality when lifted up to the general, uniform consensus.<sup>204</sup> Johnson does not exclude imagination from art and literature, he simply wishes it to be tamed and trained, to be continuously guarded by reason.<sup>205</sup>

Johnson's account of human actions derives from this view.

He writes:

'Writers of all ages have had the same sentiments, because they have in all ages had the same objects of speculation; the interests and passions, the virtues and vices of Mankind, have been diversified in different times, only by unessential and casual varieties; and we must therefore, expect in the works of all those who attempt to describe them, such a likeness as we find in the pictures of the same person drawn in different periods of his life.'<sup>206</sup>

Like Hogarth and Fielding, Johnson finds that the knowledge necessary to accurately gauge outward expressions as a clue to inner passions and emotions is 'more than the most acute and laborious observers have acquired.'<sup>207</sup>

Like Fielding, Johnson discovers the reasons for this to lie in Man's essential depravity,<sup>208</sup> and in the expressions of this which impose on mankind a '*perpetual* disguise of

the real character, by fictitious appearances.'<sup>209</sup>

And like him too, Johnson finds that the best path to an outward assessment of man's moral nature remains the study of his actions.<sup>210</sup> So it is man's actions which underpin Johnson's ethical outlook,<sup>211</sup> his literary criticism, and his artistic judgements.<sup>212</sup> If a difference does exist between their respective views of pathognomy, it derives from Johnson's view of the uniformity and the constancy of Man's nature. In the widely-reprinted essays on the subject in The Rambler of the early 1750s,<sup>213</sup> Johnson elaborated a number of pseudo-pathognomical rules which were judged to serve as a basis for distinguishing the truthful and hypocritical behaviours of men and women.<sup>214</sup>

But these rules never link such behaviours to man's inner character but instead to temporary responses to changing conditions of life.<sup>215</sup> What a man or woman does says nothing about what he or she is, but only suggests whether his or her behaviour is environmentally 'appropriate', that is, basically moral or immoral. Behaviour is set against other kinds of behaviour; truthful, moral actions are put alongside actions prompted by 'forms, fashions, frolicks'.<sup>216</sup> The latter are transitory, artificial, particular; speaking of fashion, Johnson remarks that 'by the observation of these trifles it is, that the ranks of mankind are kept in order, that the address of one to another is regulated, and the general business of the world carried on with facility and method.'<sup>217</sup> Hypocrisy has its roots not in particular passions or emotional attitudes, but in mores which attract Man to actions which clash with the general



tenets of Reason upon which good taste, good society, and good culture are based.<sup>218</sup>

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This chapter has shown that within the artistic and critical culture which developed from the early eighteenth century there occurred an intense, prolonged, rigorous and wide-spread debate about the status and validity of physiognomy and pathognomy. Many aspects of this debate will be treated once again in the following two chapters, and themes from part one of this thesis as a whole will reappear in different guises in later portions of the work. This being so, it would be inappropriate to settle any of the issues raised in the foregoing in any definitive way. A couple of points can however be stressed to assist the reader to situate the material and the discussions which follow immediately.

Whilst a number of figures have been taken as broadly representative of critical and artistic culture, a particular focus has fallen on Reynolds. In his Discourses and other writings one can find expressed very sharply the rejection of what might have been thought to be a natural equation between the empirical and the particular. Moreover, Reynolds replaces this equation with another which seems at first glance even more curious- that between the empirical and the general or the uniform. His uniformitarianism, as we have shown, serves to reduce the particular details of the human body to a common nature. It is in a sense the physical counterpart to Johnson's psychological uniformitarianism

which reduces the particular capacities of the mind to a common reason.

As an alternative to this officially-sanctioned view, we have elaborated the particularism of Hogarth in art and criticism, and of Fielding in his novels and essays. This has never been attempted, and the result at first sight seems to be a complete reversal of Reynolds's position. Simply: where Reynolds emphasizes the general, Hogarth emphasizes the particular. But a careful study of Hogarth's work shows in greater detail the common features and the contrasts between this and the work of Reynolds. Let me here stress what we have shown above all else, namely that the problem of the body- and the body remains a problem for each of the figures we have treated- presents itself as a problem of representation, which in turn appears as a problem of perception. To be more accurate: Reynolds believes that his uniformitarianism serves a moral and aesthetic role and that his discourses at the Royal Academy will show artists how to perceive bodies in general terms or, failing this, how to filter all particularism from the sense impressions they receive. Hogarth believes that particularism is necessary, and that a persistent and penetrating gaze needs to be trained onto bodies, for moral and aesthetic reasons. The difference as we have argued lies in the fact that the first kind of uplifting visual discrimination was possible, widespread and guaranteed by rule, whilst the second kind of particularism was deemed to be impossible because of the existence of the actor-hypocrite in society.

The actor-hypocrite poses a problem of anarchy: he or she refuses to allow appearance (perhaps naturally) to reflect essence. Worse still, such a figure refuses even to abide by the rules involved in continuously being deceitful, in always in some way misrepresenting the inner character. Already, as we have suggested, the metaphor of the world-as-stage is beginning to assume a great importance in suggesting something that was never intended in As you like it, namely the quite wilful adoption of roles. A suggestive, even organizing, metaphor then, but to understand its importance and to probe more deeply into the significance of behaviour on stage and off, some attention must be paid to acting and to theories of acting. Here it is that we must look for rules; here too we should expect to find the issue of representing passions and emotions resolved. It is therefore to developments in acting theory and technique that we now turn in order to throw light upon those issues we have just examined in the foregoing chapter.

NOTES: PART ONE, CHAPTER ONE

1. For details, see E.K. Waterhouse, Reynolds, 1941, and F. Molly, Sir Joshua and his Circle, 2 vols, 1906.
2. The letters, dated 29 September 1759; 20 October 1759; and 10 November 1759 appeared in the Idler, 76, 79, and 82 respectively. They appear in Vol. II of Reynolds's Literary Works. The quotation is on page 124. Details of the publication of the essays are given in Beechey's Memoir (I, 134-38) and in James Northcote, The Life of Sir Joshua Reynolds, 2 vols, 1819, I, 89.
3. See Joseph Burke, Hogarth and Reynolds. A Contrast in English Art Theory, 1943, 7.
4. William Hogarth, The Analysis of Beauty, 1753, 54.
5. ibid., 8.
6. Reynolds, Literary Works, II, 131-35.
7. ibid., II, 123.
8. ibid., II, 333; see also letter to the Idler, September 29, 1759.
9. ibid., II, 128.
10. Reynolds's 15 discourses were prepared as formal lectures to students and members of the RA and were delivered at first each year and later every other year. They were widely taken to be tantamount to statements of policy for the young institution. They were printed separately and the first seven appeared in a collected edition in 1778; all 15 were issued together in 1797 after Reynolds's death.

11. See his remarks in Discourse XV (1790) in Joshua Reynolds, Discourses on Art (ed. Robert R. Wark), New Haven, 1981, esp. p. 269. Also Michael Macklem, 'Reynolds and the Ambiguities of Neo-classical Criticism', Philological Quarterly, XXXI, 1952, 383-98. On the extent to which the distinction between the general and the particular was accepted at the time see: Scott Elledge, 'The Background and Development in English Criticism of the Theories of Generality and Particularity', PMLA, LXII, 1943, 147-82 (this study, though influential, is somewhat crude in its use of the terms 'general' and 'particular', failing to recognize that these terms had different meanings in different contexts- W.R. Keast's review of the article in 'Review of Elledge', Philological Quarterly, XXVII, 1948, 130-32 is useful). Reynolds's acquaintance with other works of art and on art was deep and broad as is clear from the list of books he used or referred to in the lectures; see Discourses, 338-41. On his vast circle of influential friends and acquaintances, see Molly, Sir Joshua and Frederick W. Hilles, The Literary Career of Sir Joshua Reynolds, Cambridge, 1936, esp. chapters VII and VIII.
12. See Walter J. Hipple, Jr., 'General and Particular in the Discourses of Sir Joshua Reynolds: a Study in Method', Journal of Aesthetics & Art Criticism, XI, 1952-53, 231-47.
13. See Burke, Hogarth and Reynolds, 23-24; and Wilson O. Clough, 'Reason and Genius- an Eighteenth-Century Dilemma', Philological Quarterly, XXIII, 1944, 33-54, esp. 46.
14. See William Hazlitt, The Complete Works of William Hazlitt (ed. P.P. Howe), 21 vols, 1930, XIII, 122-31, 131-45. Also Anon., 'British Artists and Writers on Art', British and Foreign Review, VI, 1838, 610-57 (which strongly supports the attack on Reynolds) and

- George Darley, 'Painting and the Fine Arts', Athenaeum, 14 July 1838, 482-84; 21 July 1838, 510-12; and 28 July 1838, 526-28 (which finds Hazlitt's objections to Reynolds to be little more than prejudice and self-mystification). On Hazlitt's particular objections to Reynolds's notion of the Ideal and the general shift from classical to romantic sympathies in Reynolds's work, see Eugene Clinton Elliott, 'Reynolds and Hazlitt' (Journal of Aesthetics & Art Criticism, XXI, 1962, 73-79); Leonard M. Trawick, 'Reynolds, Hazlitt, and the Ideal' (Studies in Romanticism, IV, 1965, 240-47); Herschel Baker, William Hazlitt, Cambridge, Mass., 1962, 270-85 and Monk, The Sublime, 186-90.
15. See Appendix One in Discourses, e.g. 288, 292, 304, 306. Also Herbert Wright, 'William Blake and Sir Joshua Reynolds; a Contrast in Theories of Art', The Nineteenth Century and After, CI, 1927, 417-31, and the reply by D.H. Banner on page 620. Two other articles are also useful: Frederic Will, 'Blake's Quarrel with Reynolds' (Journal of Aesthetics & Art Criticism, XV, 1957, 540-49) and Edgar Wind, 'Blake and Reynolds' (The Listener, LVIII, 1957, 879-80).
16. See Discourse II (1769), Discourses, 26ff.; Discourse III (1770), ibid., 41; Discourse XV (1790), ibid., 268.
17. See the editor's introduction to the Discourses, xvii, and Elder Olson's remarks on page xiv of his introduction to 'Longinus', On the Sublime and Reynolds's Discourses on Art, Chicago, 1945. Also Lipking, Ordering, 185-87. A similar shift in Reynolds's paintings has been noted by Charles Mitchell in his 'Three Phases in Reynolds' Method', Burlington Magazine, LXXX, 1942, 35-40.
18. Compare, for examples, the two statements: 'I would chiefly recommend that an implicit obedience to the

Rules of Art, as established by the practice of the great MASTERS, should be extracted from the young students' (Discourse I (1769), Discourses, 17) and 'There are some rules, whose absolute authority, like that of our nurses, continues no longer when we are in a state of childhood' (Discourse VIII (1778), ibid., 154). Similar attention to the audience in the formulation of the rules can be found in Discourse II (1769), ibid., 27; Discourse III (1770), ibid., 44, 46; Discourse VI (1774), ibid., 97-98. The same and derivative apparent inconsistency appears in Reynolds's treatment of the relative merits of 'genius' and 'training', talent and industry. Compare for instance Discourse III (1769), ibid., 35f. and Discourse XII (1784), ibid., 209; see also Discourse I (1769), ibid., 18.

19. The Champion, 25 December 1814 in Discourses, 326-31, 326. In his 1820 essay 'On the Pleasures of Painting', Hazlitt again finds that Reynolds's major position is that 'the perfection of art consists in giving general appearances without individual details' (William Hazlitt, Selected Essays of William Hazlitt, ed. G. Keynes, 1944, 614-37, 619). On this see also Trawick, 'Hazlitt', 240-42.
20. Discourse IX (1780), Discourses, 170-71.
21. Discourse VII (1776), ibid., 124. See the interesting treatment of the issue of whether or not truth and beauty should be identified with the general in E.H. Gombrich's 'Meditations on a Hobby Horse', in Lancelot Law Whyte (ed), Aspects of Form: a Symposium on Form and Nature in Art, 1952.
22. Discourse VII (1776), Discourses, 134ff.
23. Discourse III (1770), ibid., 44. Cf. Reynolds, Literary Works, II, 312, and Discourse IV (1771), Discourses, 65-73.

24. Richardson, Works, 162; also 23, 95. This edition carries a dedication to Reynolds (p. 73, dated 1773). Similar sentiments may be found in Gerard de Lairesse's important treatise The Art of Painting, in all its Branches (1738), 1778, 102.
25. William Gilpin remarks: '... however beautiful these minuter plants, and wild flowers may be in the natural scene; yet no painter would endeavour to present them with exactness. They are too common; too undignified and too much below his subject' (quoted in Houghton W. Taylor, '"Particular Character": an Early Phase of a Literary Evolution', PMLA, LX, 1945, 161-74, 166-67.)
26. See Blake to Thomas Butts, 22 November 1802, in G. Keynes (ed), The Letters of William Blake, Oxford, 1980, 40-43.
27. See Hagstrum, The Sister Arts, 135.
28. On this see Robert E. Moore, 'Reynolds and the Art of Characterization' in H. Anderson and J.S. Shea (eds), Studies in Criticism and Aesthetics 1660-1800, Minneapolis, 1967, 332-57.
29. Discourse III (1770), Discourses, 44-45; see also Discourse IX (1780), ibid., 171.
30. Adam Smith, The Theory of Moral Sentiments, 2 vols, Edinburgh, 1808, II, 11-16 (V, i).
31. Walter J. Hipple, Jr., 'Philosophical Language and the Theory of Beauty in the Eighteenth Century', in Anderson and Shea, Studies, 213-31, 227.
32. Edmund Burke, The Works of the Right Honourable Edmund Burke (ed. F.H. Willis), 6 vols, 1906, I, 84. For equivalent remarks, see Discourse III (1770), Discourses, 45.



33. See Elbert N.S. Thompson, 'The Discourses of Sir Joshua Reynolds', PMLA, XXXII, 1917, 339-66, 357-60; Donald Cross Bryant, Edmund Burke and his Literary Friends, St Louis, 1939, 53-54; Reynolds, Literary Works, I, 185, 268-71; and Discourses, 132n.
34. See Burke, Works, I, 124-25.
35. ibid., I, 160.
36. ibid., I, 138ff.
37. See Discourse XIII (1786), Discourses, 234.
38. ibid., 231.
39. ibid.
40. Discourse IX (1780), ibid., 170. See on this Hipple, Jr., 'General and Particular', 244-45.
41. See Taylor, '"Particular Character"', 166-67.
42. See L.I. Bredvold, 'The Tendency towards Platonism in Neo-classical Esthetics', English Literary History, I, 1934, 91-119, and E.H. Gombrich, 'Icones Symbolicae: The Visual Image in Neo-Platonic Thought', Journal of the Warburg and Courtauld Institutes, 11, 1948, 163-92, 187.
43. The passage usually cited in support of this claim is from the Poetics, 1451b, 6-8. Frances Blanchard has claimed Reynolds as an unconscious Aristotelian in his Retreat from Likeness in the Theory of Painting, New York, 1949, chapter 2. It should be noted that important differences exist between the aesthetic doctrines of Plato and Aristotle. One look at the setting of Aristotle's discussion in the Poetics shows that what he is concerned with is the question of the possibility

by which a poem has an inner coherence independently of accident, not the participation of individuals in a transcendental level of the ideal (see on this W.D. Ross, Aristotle, 1937, 278). Two excellent discussions of Plato's and Aristotle's aesthetic theories, both by Richard P. McKeon are: 'The Philosophical Bases of Art and Criticism', Modern Philology, XLI, 1943, 65-87, 129-71; and the more directly relevant 'Literary Criticism and the Language of Imitation in Antiquity', Modern Philology, XXIV, 1936, 1-35.

44. Discourse III (1770), Discourses, 45; see also Discourse XIII (1786), ibid., 232.
45. See Burke, Hogarth and Reynolds, 16-17.
46. For the appropriate passage in Locke's Essay, see Philosophical Works, II, 9-21 (III, 3, 1-20). On Locke and Reynolds see: Hoyt Trowbridge, 'Platonism and Sir Joshua Reynolds' (English Studies, XXI, 1939, 1-7); Edgar Wind, '"Borrowed Attitudes" in Reynolds and Hogarth' (Journal of the Warburg Institute, II, 1938-39, 182-85, 85) and Wind's 'The Revolution in History Painting' (Journal of the Warburg Institute, II, 1938-39, 116-27). On the progression from Idler to Discourses, see Paul Goodman, 'Neo-Classicism, Platonism, and Romanticism', Journal of Philosophy, XXXI, 1934, 148-62.
47. It should be noted that in some passages Reynolds suggests that the ideal of beauty is not seeable, as when he writes 'the beauty of which we are in quest is general and intellectual; it is an idea that subsists only in the mind; the sight never beheld it, nor has the hand expressed it' (Discourse IX (1780), Discourses, 171). But this is not as much an instance of the contradictions in the text as a revelation that what Reynolds intends to bring to light is the presence of sublimation in the mind of the artist of what he has already discovered. It is the physical world which is the source from which

all knowledge of beauty must ultimately derive—once its polluting particularities have been purified by visual discrimination.

48. Burke, Works, I, 165.
49. See Discourse IV (1771).
50. Discourse V (1772), Discourses, 78.
51. Ibid., 82. See also for similar remarks, Discourse IV (1771) and Discourse X (1780).
52. See Burke, Hogarth and Reynolds, 25.
53. John Galt, The Life, Studies and Works of Benjamin West, 2 vols, 1820, II, 49-50.
54. Hogarth, Analysis of Beauty, 66.
55. Johnson quoted in Paulson, Hogarth, II, 183.
56. John Clubbe, Physiognomy; being a Sketch only of a larger work upon the Same Plan, 1763, v.
57. See J. Isaacs, 'Hogarth's Idea of the Comic', The Listener, 4 May 1950, 778-80.
58. See J.H. Champfleury, Histoire de la caricature antique, Paris, 1867; idem, Histoire de la caricature au Moyen Age et sous la Renaissance, Paris, 1870; and idem, Histoire de la caricature moderne, Paris, 1885.
59. Francis Grose, Rules for Drawing Caricature: with an Essay on Comic Painting, 1791, 6.
60. Anne-Claude-Phillipe de Tubières (Comte de Caylus), Recueil d'estampes d'après les plus beaux tableaux et d'après les plus beaux dessins qui sont en France, Paris, 1729.

61. See H.M. Hake, 'Pond's and Knapton's Imitations of Drawings', Print Collector's Quarterly, IX, 1922, 324-29; H.R. Hicks, 'Caricatures by Pietro Leoni Ghezzi (1674-1755), engraved by A. Pond (1705-1755)', Apollo, 42, 246, 1945, 198-200 for details. Useful as background is Lippincott's Selling Art, chapter 7.
62. Fielding quoted in Ronald Paulson, The Art of Hogarth, 1975, 133.
63. Henry Fielding, Joseph Andrews and Shamela (1742 and 1741), ed. Douglas Brooks-Davies, Oxford, 1980, 3.
64. ibid., 3-4.
65. ibid., 4.
66. ibid., 5.
67. ibid., 5-6.
68. See Martin C. Battestin, 'Pictures of Fielding', Eighteenth-Century Studies, 17, 1, 1983, 1-13, 11-13.
69. Anthony Blunt, Art and Architecture in France 1500 to 1700, Harmondsworth, 1953, 226. On Le Brun, see also Blunt's 'The Early Work of Charles Le Brun', Burlington Magazine, LXXXV, 1944, 165-73, 186-94; H. Jouin, Charles Le Brun et les arts sous Louis XIV, Paris, 1889; P. Marçel, Charles Le Brun, Paris, 1909; and Jennifer Montagu, 'Le Brun animalier', Art de France, IV, 1964, 310-14.
70. See Rudolf Arnheim, Art and Visual Perception (Berkeley, 1966, chapter VII) on the importance of the distinction between line and colour.
71. Henri Testelin, Sentiments des plus habiles peintres sur la pratique de la peinture et sculpture mis en table de préceptes, Paris, 1680.

72. See, for example, André Félibien, Entretiens sur les vies et sur les ouvrages des plus excellens peintres anciens et modernes, 2 vols, Paris, 1685, preface.
73. See P. Jamot, Connaissance de Poussin, Paris, 1948.
74. See Marcel, Le Brun, 124; Paulson, Hogarth, I, 536n10.
75. See Jouin, Le Brun, 300.
76. See André Fontaine, Les doctrines d'art en France (Paris, 1909, chapter III); Alastair Smart, 'Dramatic Gesture and Expression in the Age of Hogarth and Reynolds' (Apollo, LXXXII, 1965, 90-97); Brewster Rogerson, 'The Art of Painting the Passions' (Journal of the History of Ideas, XIV, 1953, 68-94); Alan T. McKenzie, 'The Countenance you Show Me: Reading the Passions in the Eighteenth Century' (The Georgia Review, XXXII, 3, 1978, 758-73); J. Baltrusaitis, Aberrations (Paris, 1957, 8-46); and Stephanie Ross, 'Painting the Passions: Charles Le Brun's Conférence sur L'Expression' (Journal of the History of Ideas, XLV, 1, 1984, 25-47).
77. See Anthony Levi, French Moralists: The Theory of the Passions 1585-1649, Oxford, 1964.
78. See Charles Le Brun, A Method to Learn to Design the Passions, 1734, 21-22; René Descartes, Les passions de l'âme (1649), Paris, 1966, esp. 146-47.
79. Le Brun, Method, 36.
80. ibid., 43.
81. Roger de Piles, The Art of Painting, with the Lives and Characters of above 300 of the Most Eminent Painters, c. 1780, 29.

82. See John Pope-Hennessy, The Portrait in the Renaissance (1966); David Piper, The English Face (1957); and E.H. Gombrich, Art and Illusion: A Study of the Psychology of Pictorial Representation (1966, chapter IX).
83. See Le Brun, 'Conférence sur l'expression générale et particulière', Nouvelle revue de psychanalyse, 21, 1980, 95- 121.
84. See André Félibien, Entretiens sur les vies et sur les ouvrages des plus excellens peintres anciens et modernes, 2 vols, Paris, 1685, I, 291-316; II, 16-58, 595-600.
85. De Piles, Art of Painting, 341.
86. Norman Bryson, Word and Image: French Painting of the Ancien Régime, Cambridge, 1981.
87. See John Baptista Porta, Natural Magick... in twenty Books... wherein are set forth all the Riches and Delights of the Natural Sciences (1658), New York, 1958.
88. It is often assumed that since the work appeared in so many European editions, it must have been published in English. I have searched through the major British collections without discovering any trace of an English edition. On foreign editions, see Baltrusaitis, Aberrations, 16; and Lynn Thorndike, A History of Magic and Experimental Science, 8 vols, New York, 1923-58, VIII, 449.
89. See the editor's introduction to Porta, Natural Magick for details. Also Frances A. Yates, The Art of Memory, Harmondsworth, 1978, 202-03, 399.
90. J.P. Blanquet, A Series of Lithographic Drawings illustrative of the Relation between Human Physiognomy and that of Brute Creation from Designs by Charles

Le Brun, with Remarks on the System, 1827, 3. The sketches were first made public in L.J.M. Morel d'Arleux, Dissertation sur un traité de Charles Le Brun concernant les rapports de la physiognomie humaine avec celles des animaux, Paris, 1806.

91. Hogarth, Analysis of Beauty, 127-29.
92. Hogarth, The Analysis of Beauty (ed. Joseph Burke), Oxford, 1955, 183.
93. Hogarth, Analysis of Beauty, 1753, 123. The term 'art of seeing' derives from Richardson's Theory of Painting, as F. Antal shows (Hogarth and his Place in European Art, 1962, 142-43; see also that author's 'Hogarth and his Borrowings', The Art Bulletin, XXIX, 1946, 36-48).
94. Quoted in Antal, Hogarth, 104-05; see Analysis of Beauty, 1955, 210-12; Paulson, Hogarth, I, 262.
95. Andrew Wright, Henry Fielding, Mask and Feast, 1968, 122, 133. For Reynolds, see his Literary Works, II, 313, 305; and Discourse IV (1771), Discourses, 70-71. A useful discussion is Moore, 'Reynolds and the Art of Characterization', 345f.
96. Analysis of Beauty, 1753, 131.
97. ibid., 126.
98. See Mario Praz's excellent Studies in Seventeenth-Century Imagery, 2 vols, 1939-47. A useful overview with bibliography is Jan Bialostocki, 'Iconography', Dictionary of the History of Ideas, 5 vols, New York, 1973, II, 524-41.
99. Herbert M. Atherton, Political Prints in the Age of Hogarth, Oxford, 1974.

100. Paulson, Art of Hogarth, 21f; see also his Hogarth, passim.
101. McKenzie, 'Countenance', 765; Smart, 'Dramatic Gesture', 93.
102. See Hilles, Literary Career, 232n; Robert R. Wark, Ten British Pictures 1740-1840, San Marino, 1971, 49-52; Paulson, Emblem and Expression, 83, all of which find Le Brun's images of 'compassion' and 'fright' in Reynolds's Mrs Siddons as the Tragic Muse.
103. Hogarth, Analysis of Beauty, 1955, 185; 203.
104. Hogarth quoted in Isaacs, 'Hogarth', 778.
105. Tobias Smollett, Roderick Random (1748), ed. H.W.H., 1949, XLVII, 281; see also Peregrine Pickle (1751), ed. James L. Clifford, Oxford, 1969, XIV. Many of the scenes in Smollett's novels recall episodes in Hogarth's series; one of the most striking is the interruption of the bridal night by a cat in Humphry Clinker (1771; ed. H.M. Jones, 1943) which is surely derived from plate seven of the series Industry and Idleness where a cat falls down the chimney in the idle apprentice's garret as he lies in bed with a prostitute.
106. For examples, see Henry Fielding, Tom Jones (1749) ed. R.P.C. Mutter, Harmondsworth, 1980, I, xi; II, iii; and III, vi. Also for other references, Wilbur Cross, The History of Henry Fielding, 3 vols, New Haven, 1918, III, 390.
107. See Paulson, Hogarth, I, 230ff.
108. Here I follow Derek Jarrett (The Ingenious Mr Hogarth, 1976, 159) rather than Paulson's aesthetic reading of



Hogarth in Hogarth, II, 204f.

109. First published in 1743 (as year after Joseph Andrews). I have used Henry Knight Miller (ed), Miscellanies by Henry Fielding, Esq; Volume One, Oxford, 1972, in which the essay appears on pp. 153-78 ('An Essay on the Knowledge of the Characters of Men'). The editor's introduction gives details of the essay's publication on pp. xi-xvii.
110. Preface to Miscellanies, 4.
111. On Fielding's earlier political views, see B.L. Goldbar, Walpole and the Wits, 1976. On later developments, Martin C. Battestin provides a reliable summary in 'Fielding, Henry', in A.O.J. Cockshut (ed), The Novel to 1900, 1980, 103-05.
112. Fielding, The Life of Mr. Jonathan Wild the Great (1743), ed. Claude J. Rawson, 1973, II, v. See also W.R. Irwin, The Making of Jonathan Wild, New York, 1941, 48-49, which discusses Fielding's use of the theme of the trickster/hypocrite/politician.
113. Miscellanies, 175; see also 19-29.
114. ibid., 153.
115. See ibid., xxxv.
116. The Gentleman's Magazine, XXVI, 1756, 335; cf. Gentleman's Magazine, XXI, 1751, 79-80.
117. Miscellanies, 155 (my emphasis). See also Gentleman's Magazine, XVII, 1747, 229-31, for an 'Essay on Physiognomy' which finds the perpetual problem of falshood (sic) under the disguise of truth, and truth under the disguise of falshood' to prevent the formulation of any strict or effective physiognomical rules (p. 229); also Gentleman's Magazine, X, 1740, 117-18; and VII,

1737, 549-51, 553-55.

118. The Spectator, 8, 9 March 1711, I, 26-27; see also Steele's remarks in ibid., 14, 16 March 1711, 43-46.
119. Fielding, The Masquerade, 1728, 3; on the play, see L.P. Goggin, 'Fielding's "The Masquerade"', Philological Quarterly, XXXVI, 1957, 475-87.
120. See Atherton, Political Prints, 219, 223; Paulson, Hogarth, I, 116f.
121. See Atherton, Political Prints, 219-23.
122. E.P. Thompson, 'Plebian Society, Plebian Culture', Journal of Social History, 7, 1974, 382-405, 395; idem, 'Eighteenth-Century English Society: Class Struggle without Class?', Social History, 3, 1978, 133-65, esp. 143.
123. See Conor Cruise O'Brien, 'Politics as Drama as Politics' in Conor Cruise O'Brien and William Dean Vanech (eds), Power and Consciousness, 1969.
124. See Thompson, 'Plebian Society', 400; 'Eighteenth-Century Society', 158-59.
125. See E.P. Thompson, 'The Moral Economy of the English Crowd in the Eighteenth Century', Past and Present, 50, 1971, 76-136, esp. 135-36; idem, '"Rough Music": Le Charivari Anglais', Annales, 27, 1972, 285-312; John Brewer, Party Ideology and Popular Politics at the Accession of George III, Cambridge, 1976, 163-200; George Rudé, The Crowd in History, 1730-1848, 1964; idem, 'The London Mob of the Eighteenth Century', Historical Journal, XI, 1959, 1-18; J. Stevenson, Disturbances in England; 1700-1800, 1979; Robert J. Holton, 'The Crowd in History: Some Problems of Theory and Method', Social History, 3, 1978, 219-33.  
The weakness of the clergy, scriptures and moral theology

during this period is treated nicely in Lawrence Stone, The Family, Sex and Marriage in England, 1500-1800, New York 1977, Part V.

126. Paulson, Popular and Polite Art, 9-23; Emblem and Expression, 3.
127. Fielding, The History and Adventures of Joseph Andrews and of his Friend Mr Abraham Andrews (1742), ed. Martin C. Battestin, Oxford, 1967, I, iii; II, xvi. See also his The History of Tom Jones, A Foundling (1749), ed. Fredson Bowers and Martin C. Battestin, 2 vols, Oxford, 1974, VII, ix; and his Amelia (1752), ed. A.R. Humphreys, 1962, VIII, ix. I have used both the Penguin and the Wesleyan editions of Fielding's works in this study, and will indicate where necessary.
128. Tom Jones, 1974, VII, vi. Cf. Fielding's essay on human nature in The Champion, 11 December 1739, in Henry Knight Miller, Essays on Fielding's Miscellanies. A Commentary on Volume One, Princeton, 1961, 62; and Miscellanies, 119-52, esp. 126-27.
129. Miscellanies, 155. In his poem, 'To John Hayes, Esq.' (1742), Fielding writes: 'Men what they are not struggle to appear,/ And Nature strives to show them as they are;/ While Art, repugnant thus to Nature, fights,/ The Various Man appears in different Lights' (ibid., 51-53, 52).
130. Miscellanies, 156. We shall return to pseudo-Aristotle's work later.
131. Spectator, 144, 15 August 1711, I, 434.
132. See Diogenes Laertius, 'Aristotle', Lives of Eminent Philosophers (trans. R.D. Hicks), 2 vols, 1925, I, 461-63 (V, 18-20).

133. e.g. 'Auxilium non leve vultus habet', Ovid, Ex Ponto Libri (II, viii, 54) in Ovid, Tristium Libri Quinque (ed. S.G. Owen), Oxford, 1915.
134. e.g. Tom Jones, 1974, VIII, x; Amelia, 1962, IX, v.
135. Miscellanies, 158; cf. 30-35.
136. Hamlet, I, v, 103; in W. Shakespeare, The Dramatic and Poetical Works of William Shakespeare, 6 vols, 1936.
137. Miscellanies, 158, 160. 'Glavering' is not a misprint but a word Fielding relishes: it means deceitful, faltering.
138. ibid., 161.
139. 'On Lying', Gentleman's Magazine, XI, 1741, 193-94, 193.
140. Miscellanies, 161.
141. ibid., 162.
142. See Miller, Essays, 192-93.
143. See Arnold Kettle, 'Tom Jones', in Ronald Paulson ed., Fielding: a Collection of Critical Essays, Englewood Cliffs, 1962, 84-88, 85.
144. See A.R. Humphreys, 'Fielding's Irony: its Methods and Effects', Review of English Studies, XVIII, 1942, 183-96, 188. Also for useful studies on Fielding's comedy, A.E. Dyson, 'Satiric and Comic Theory in Relation to Fielding' (Modern Language Quarterly, XVIII, 1957, 225-37); W.R. Irwin, 'Comedy and Satire in the Works of Henry Fielding' (English Literary History, XIII, 1946, 168-88); Ethel M. Thornbury, Henry Fielding's Theory of the Comic Prose Epic (Madison, 1931).
145. Watt, Rise of the Novel, 320, 323.

146. See Frank Kermode, 'Richardson and Fielding', Cambridge Journal, IV, 1950, 106-14 for an attack on Fielding and defence of Richardson.
147. Amongst the many excellent studies of Fielding's moral and psychological views, and those of his fictional characters, see: William B. Coley, 'The Background of Fielding's Laughter' (English Literary History, XXVI, 1959, 229-52); George Sherburn, 'Fielding's Social Outlook' (Philological Quarterly, XXXV, 1956, 1-23); George R. Swann, 'Fielding and Empirical Realism' (in his Philosophical Parallelism in Six English Novelists: The Conception of Good, Evil and Human Nature, Philadelphia, 1929, 46-64); Martin C. Battestin, The Moral Basis of Fielding's Art: a Study of Joseph Andrews (Middleton, 1959); James A. Work, 'Henry Fielding, Christian Censor', in The Age of Johnson: Essays presented to Chauncey Brewster Tinker, New Haven, 1949, 139-48); and Morris Golden, Fielding's Moral Psychology (Amherst, 1964).
148. See Thomas A. Stumpf, 'Tom Jones from the Outside', in Howard M. Harper and Charles Edge (eds), The Classic British Novel, Athens, Georgia, 1972, 3-21; and Robert Alter, Fielding and the Nature of the Novel, Cambridge, Mass., 1968, 67. Other critics have suggested that Fielding's 'elaborate' descriptions of appearance are a substitute for his lack of psychological presentation, e.g. W.L. Cross, The Development of the English Novel, New York, 1899, 57; Robert M. Lovett and Helen S. Hughes, The History of the Novel in England, New York, 1932, 67- but these are antiquated views.
149. See Arthur L. Cooke, 'Henry Fielding and the Writers of Heroic Romance' (PMLA, LXII, 1947, 984-94).
150. See B. Boyce The Theophrastan Character in England

to 1642, Lincoln, 1955; idem, The Polemic Character, 1640-1661, Cambridge, Mass., 1947.

- 151.. See, for example, Joseph Andrews, 1967, III, 3.
152. See ibid., I, 14 for a typical example; for comments, R.E. Moore, Hogarth's Literary Relationships, Minneapolis, 1948, esp. 122-25, 127-30; and Richard M. Baum, 'Hogarth and Fielding as Social Critics', Art Bulletin, XVI, 1934, 30-42.
153. 'Flat' in the sense put into critical currency by E.M. Forster in Aspects of the Novel, 1927, 103-11; cf. Northrop Frye's comment in his Anatomy of Criticism, Princeton, 1957, 168-69.
154. Joseph Andrews, 1967, I, 8.
155. ibid., II, 12.
156. See, for examples, Mrs Slipshop (ibid., I, 6) and Mrs Tow-wouse (ibid., I, 14).
157. e.g. Betty the Chambermaid (ibid., I, 18); Lindamira (ibid., II, 6); and Parson Trulliber (ibid., II, 14).
158. e.g. Beau Didapper, ibid., IV, 9. Cf. Moore, Hogarth's Literary Relations, for the claim that this is Hogarthian caricature; also A.R. Humphreys, 'Fielding and Smollett', in Boris Ford (ed), The Pelican Guide to English Literature, 4, Harmondsworth, 1957, 218.
159. Useful is the debate started by Douglas Brooks ('Richardson's Pamela and Fielding's Tom Jones, Essays in Criticism, 17, 1967, 158-67) then followed by by A.M. Kearney ('Pamela and Joseph Andrews', Essays in Criticism, 18, 1968, 105-07), then Douglas Brooks's 'Rejoinder' (ibid., 348-49); A.M. Kearney, 'Pamela and Joseph Andrews' (ibid., 479-80); and finally Douglas

Brooks's 'Joseph Andrews and Pamela' (Essays in Criticism, 19, 1969, 348-51). For one iconographical study of a particular physical appendage, see Philip Stevick on 'The Augustan Nose', University of Toronto Quarterly, XXXIV, 2, 1965, 110-17.

160. See Joseph Andrews, 1967, I, 2; I, 6; II, 14 compared with II, 4. On bestial names (e.g. Trulliber=trullibub=trillibub=entrails of an animal) see Douglas Brooks, 'Abraham Adams and Parson Trulliber: the Meaning of Joseph Andrews, Book II, Chapter 14', Modern Language Review, 63, 1968, 794-801.
161. Joseph Andrews, 1967, II, 11.
162. For examples, see Tom Jones, 1974, XV, 11; XIV, 8; Joseph Andrews, 1967, I, 18; III, 7.
163. See Humphreys, 'Fielding's Irony', esp. 193-96 for excellent remarks on the use of speech in Fielding's work; also Glenn W. Hatfield, Henry Fielding and the Language of Irony, Chicago, 1968; Robert Alter, Fielding and the Nature of the Novel, Cambridge, Mass, 1968, esp. 27-60. On the relation of Fielding's language and the reading public, see Ian Watt, Restoration & Augustan Prose, Los Angeles, 1956, 22f; Wright, Henry Fielding, 23-24. For Fielding's subtle use of class-differentiated language, see Joseph Andrews, 1967, I, 8; IV, 3 (Lady Booby) and IV, 5 (Justice of the Peace); Tom Jones, 1974, VI, 6 (servant); VIII, 5 (academic); V, 2 (parson).
164. In Joseph Andrews, 1967, II, 2; III, 12; and IV, 5. Incomprehensible is the claim that clothing is 'the principal means of character revelation' in this work, which is advanced by William A. Friedman, 'Joseph Andrews: Clothing and Concretization of Character', Discourse, IV, 4, 1961, 304-10, 306.

165. Tom Jones, 1974, I, 4. On occasion Fielding describes hills (e.g. Amelia, 1962, I, 4; III, 3) but this is probably to make merry with the contemporary vogue for topographical poetry. On this, see R.A. Aubin, 'Materials for a Study of the Influence of Cooper's Hill', English Literary History, I, 1934, 197-204; M.A. Goldberg, 'The Language of Art and Reality: a Study of Eighteenth-Century Hill Poems', Boston University Studies, III, 1957, 65-76; also, more generally, W.R. Irwin, 'Satire and Comedy in the Works of Henry Fielding', English Literary History, XIII, 1946, 168-88.
166. Joseph Andrews, 1967, II, 15.
167. ibid., I, 3.
168. Johnson quoted in Wright, Fielding, 152.
169. See, for example, Joseph Andrews, 1967, II, 16.
170. ibid., II, 17.
171. ibid. See also I, 17.
172. Amelia, I, 6.
173. ibid., I, 4.
174. ibid., III, 6.
175. Miscellanies, 162; as Miller shows, this follows the line adopted in Fielding's earlier work (Essays, 193). This aspect of Fielding's approach is also treated in 'Of Action', Gentleman's Magazine, III, 1733, 6.
176. Locke, Philosophical Works, I, 161 (Human Understanding, I, iii, 7).



177. Samuel Clarke, Sermons... Containing Sermons on Several Subjects, 7th ed., 11 vols, 1749, III, 82.
178. Matthew, VII, 16-20.
179. On Fielding and Johnson, see R.E. Moore, 'Dr Johnson on Fielding and Richardson' (PMLA, 66, 2, 1951, 162-81); Samuel E. Longmire, 'The Critical Significance of Rambler 4' (The New Rambler, 3, 1971, 40-47); Russell A. Hunt, 'Johnson on Fielding and Richardson: a Problem in Literary Moralism' (Humanities Association Review, 27, 4, 1976, 412-20); and Bernard Harrison, Henry Fielding's Tom Jones: The Novelist as Moral Philosopher, 1975.
180. On the collaboration between Reynolds and Johnson during this period, see Thompson, 'The Discourses', 340-42; also 'Sir Joshua Reynolds on Johnson's Character' and 'Sir Joshua Reynolds on Johnson's Influence' in G.B. Hill (ed), Johnsonian Miscellanies, 2 vols, 1897, II, 219-28, 229-31.
181. Samuel Johnson, The History of Rasselas Prince of Abissinia (ed. Geoffrey Tillotson and Brian Jenkins), 1971, X, 28-29. For an excellent overview, see G. Tillotson, 'Imlac and the Business of a Poet', in H. Anderson and J.S. Shea (eds), Studies in Criticism and Aesthetics 1660-1800, Minneapolis, 1967, 296-314.
182. Samuel Johnson, Lives of the English Poets (ed. G.B. Hill), 3 vols, 1905, I, 20, 45 ('Cowley'). See also Idler 66, 21 July 1759, in Samuel Johnson, The Idler and Adventurer (eds. W.J. Bate, John M. Bullitt and L.F. Powell), 205. For comment, see Arieh Sachs, 'Generality and Particularity in Johnson's Thought', Studies in English Literature 1500-1900, V, 1965, 491-511, and William K. Wimsatt and Cleanth Brooks, Literary Criticism. A Short History, 1957, 314-36, both of which are superficial and stress the traditional aspects of Johnson's position.

183. Lives of the Poets, I, 46 ('Cowley'); I, 413 ('Dryden')- both passages link the poetic to the general. For the claim that useful truths are always general, universal truths, see The Rambler 36, 21 July 1750 and The Rambler 70, 17 September 1750 (in Samuel Johnson, The Rambler (eds. W.J. Bate and Albrecht B. Strauss, 3 vols, New Haven, 1969. Cited as vols. III, IV, and V of the Yale edition of the Works of Johnson) III, 197, and IV, 5 respectively. W.J. Bate found the notion of general, universal nature to be the key to Johnson's criticism (in his 'Johnson and Reynolds: the Premise of General Nature', From Classic to Romantic, Cambridge, Mass., 1946, 59-97), but has since softened his position; see W.J. Bate, The Achievement of Samuel Johnson, New York, 1955, 198-99. Still, like all other critics Bate does not doubt that the reliance on the category of the general remained a central tenet of mid eighteenth-century criticism.
184. Lives of the Poets, I, 55 ('Cowley'); see also the pertinent remarks in James Boswell, The Life of Samuel Johnson LL.D. (eds. G.B. Hill and L.F. Powell), 6 vols, Oxford, 1934-50, III, 317; I, 398 and n2; and I, 454-55.
185. Lives of the Poets, I, 173 ('Milton'). See also Hugh Blair, Lectures on Rhetoric and Belles Lettres, 2 vols, 1783, II, 472-73.
186. Idler 5, 13 May 1750, Idler and Adventurer, 17.
187. Adventurer 107, 13 November 1753, ibid., 441.
188. Adventurer 128, 26 January 1754, ibid., 479.
189. ibid., and see also Rambler 99, 26 February 1751, in Rambler, IV, 168.

190. Rambler 4, 31 March 1750, Rambler, III, 22; Rambler 5, 3 April 1750, ibid., 28; Rambler 37, 24 July 1750, ibid., 203-04; and for a discussion of the opposing 'microscopic' and 'telescopic' perceptions of character, Rambler 176, 23 November 1751, Rambler, V, 167-68. In Rasselas, Johnson notes that 'example is always more efficacious than precept' (Rasselas, XXX, 81).
191. See Rasselas, II; Arieh Sachs, 'Generality', 492.
192. See Lives of the Poets, III, 114 ('Pope').
193. Quoted in Jean H. Hagstrum, Samuel Johnson's Literary Criticism, Minneapolis, 1952, 14.
194. Rambler 36, 21 July 1750, Rambler, III, 195-200.
195. See Boswell, Life, III, 228-29, II, 434; Hester Lynch Piozzi, 'Anecdotes of the Late Samuel Johnson, LL.D.', in Johnsonian Miscellania (ed. Hill), I, 225, 241, 243, 347-48; and J.D. Fleeman, 'Johnson and Truth', in Magdi Wahba (ed), Johnsonian Studies, Cairo, 1962, 109-13.
196. See, for example, Johnson's comments in Boswell, Life, II, 90.
197. See Hagstrum, Samuel Johnson, 3-20. For Johnson on empiricism, see Richard B. Schwartz, Samuel Johnson and the New Science, Madison, 1971, 62-63 and passim.
198. Rasselas, X, 28.
199. See W.K. Wimsatt, The Prose Style of Samuel Johnson, 1941, 50-59; and Hagstrum, Samuel Johnson, 88ff.
200. See Adventurer 108, 17 November 1753, Idler and Adventurer, 446-47.

201. Adventurer 84, 25 August 1753, ibid., 406.
202. Rambler 60, 13 October 1750, Rambler III, 320.
203. Adventurer 99, 16 October 1753, Idler and Adventurer, 430.
204. See, for a useful treatment of this issue, Bertrand H. Bronson, 'Personification Reconsidered', in Frederick W. Hilles (ed), New Light on Johnson, n.p., 1967; and Earl R. Wasserman, 'The Inherent Values of Eighteenth-Century Personification', PMLA. LXV, 1950, 435-63.
205. For clear statements of Johnson's position on this question, see: Rambler 8, 14 April 1750 (Rambler III, 43); Rambler 43, 14 August 1750 (ibid., 235-37); and Rambler 85, 8 January 1751 (Rambler IV, 86). Occasionally, Johnson finds poetry to be 'the art of uniting pleasure with truth, by calling imagination to the help of reason' (Lives of the Poets, I, 170, 'Milton')- but I suspect with the support of secondary studies and other pronouncements in his works, that this is not generally the way the relation is expressed.
206. Adventurer 95, 2 October 1753, Idler and Adventurer, 425.
207. Rambler 28, 23 June 1750, Rambler, III, 152. For similar comments, see Gentleman's Magazine, XXXVIII, 1768, 165, 207, and 254.
208. Rambler 175, 19 November 1751, Rambler, V, 159-63.
209. Rambler 20, 26 May 1750, ibid., III, 110. See also Rambler 179, 3 December 1751, ibid., V, 178-79.
210. Adventurer 99, 16 October 1753, Idler and Adventurer, 429. See also R. Freeman, 'Know Thyself', Gentleman's Magazine, VIII, 1738, 354-55.

211. See Rambler 14, 5 May 1750 (Rambler, III, 75-80); Rambler 54, 22 September 1750 (ibid., 250); Rambler 76, 8 December 1750 (ibid., IV, 34ff.); and Rambler 77, 11 December 1750 (ibid., 40-44).
212. See Lives of the Poets, II, 380 ('Savage'). And on artistic judgements, Idler 45, 24 February 1759, Idler and Adventurer, 141.
213. See Roy M. Wiles, 'The Contemporary Distribution of Johnson's Rambler', Eighteenth-Century Studies, II, 1968, 155-71, and for Johnson's sales as a whole, James T. Boulton (ed), Johnson. The Critical Heritage, 1971, 10-15, 345-46, 384-85.
214. See Rambler 28, 23 June 1750, Rambler, III, 153-55; Rambler 76, 8 December 1750, ibid., IV, 34.
215. Rambler 172, 9 November 1751, ibid., V, 146-50.
216. Rambler 100, 2 March 1751, ibid., IV, 170f.
217. Johnson quoted in John Barrell, English Literature in History 1730-80. An Equal, Wide Survey, 1983, 42. Roy Porter kindly brought this work to my attention.
218. See Idler 27, 21 October 1758 (Idler and Adventurer, 85); Rambler 14, 5 May 1750 (Rambler, III, 77).

## CHAPTER TWO: CHARACTERS ON STAGE

### I. The Fall of Formalities

For the first four decades of the eighteenth century, the dominant and almost unchallenged assumption about the actor in the theatre, the character on stage, was that he or she should follow the techniques laid down in the (post-Restoration) past either by the playwrights who had fixed interpretations of character in their stage directions, or by the elders of the profession who had passed on accepted styles by demonstrative teaching.<sup>1</sup> How a part should be played was largely predetermined by the accumulated weight of tradition, to the extent that acting became in large measure a matter of carefully studying the legacy of a particular role and then reproducing it as accurately as possible on stage. Above all other considerations, the general style of the performance needed to be appropriate to the kind of play being performed. Tragedy, for example, was especially resistant to novel approaches, it being judged that it was a teacher of time-honoured morals rather than, as with comedy, a reflection on manners.

Theatrical criticism, perhaps surprisingly, had not yet come into being. A play either received first night applause and was kept on; or it was thrown into permanent obscurity with a torrent of hisses and hoots.<sup>2</sup> Even in mid-century,

Johnson could write that,

'The drama's laws, the drama's patrons give,  
For we that love to please, must please to live.'<sup>3</sup>

The last line may well have been intended to be taken literally, for audience participation of the most vocal and often violent kind spoke of the 'low and contemptible' status of actors which remained fairly stable through the 1700s.<sup>4</sup> Mob rule further ensured that when innovations were tentatively tried out, these were fiercely contested by the different groupings in the boxes, the gallery, and the pits.<sup>5</sup> (See plate 9: life in the auditorium rather than on stage. Note the spikes around the boards). Though efforts were made at reform, until the 1750s at least, and often till much later, people crowded onto the stage at will, catcalls and whistles refrained throughout the acts, 'bucks' took up their seats whenever they felt disposed to do so; and the public having paid and queued for admission demanded immediate encores at certain 'points' in the production, interrupting a scene if it failed to live up to expectation.<sup>6</sup>

Even the best-loved actors were not guaranteed a kindly reception. Charles Macklin was for some reason forced off stage at Covent Garden and chased out into the streets in November 1733. As a contemporary described the scene,

'On the curtain being drawn up, the cry was, No Macklin! and it increased so much, that, to prevent the house from being pulled to pieces, the managers complied with their desires, and publicly discharged him; after which,

there being no play ready, the money was returned, and the people dispersed.'<sup>7</sup>

Garrick fared no better at Drury Lane, and more than once fell onto his knees to apologize for programme changes. All of which did not prevent that theatre being wrecked by riots in 1743, 1750, 1755, 1763, 1770, and 1776.<sup>8</sup>

A kind of conservative anarchy bound spectator, playwright and actor and this bordered always on the precipice of hooliganism. In 1755, the author of the Reflections upon Theatrical Expression in Tragedy spoke casually yet fearfully of the 'interrupting Insolence we meet from the Galleries almost during the whole Performance.'<sup>9</sup> Twenty-one years later, at the third night of Henry Bate's less-than-popular The Blackammor Wash'd White, the insolence took a vicious turn once again. What is interesting is that the violence was instigated by 'gentlemen'.

'Several of the exceptionable passages were omitted but some gentlemen in the boxes shewed their disappointment in a very vociferous manner, which was so resented by the rest of the house, that a universal uproar ensued, and those who attacked the piece were saluted with volleys of oranges and apples, and even halfpence; members of the audience at length got up upon the stage; several persons were knocked down, and many turned out of the house. A man was thrown from the gallery, but saved himself from hurt by hanging on the chandelier; and a lady of high rank was struck in the face with an orange.'<sup>10</sup>

At the next performance, opponents of Bate's play assembled in



force and peace was only restored when it was publicly announced that he had taken possession of his lamentable script and fled the theatre.

To speak of the theatre as a privileged space away from the conflicts on the streets, to think even of it as neatly divided into stage and auditorium, is to commit a grave anachronism. The effect of the 1737 Licensing Act, which gave the two patent houses a monopoly of theatrical entertainment in the capital, was as conservative in hindering changes on stage as were these scenes of rioting.<sup>11</sup> Such entrenched opposition to the sanctity of the stage and the honour of actors and playwrights, coupled with the dearth of written criticism makes it a difficult task to evaluate the importance or the nature of the actors commonly remembered as leading representatives of the classical tradition before mid-century. A famous actor like Thomas Betterton, for example, was much lauded by Pepys, Dryden and Steele,<sup>12</sup> and was undoubtedly popular. However it is almost impossible to know whether that popularity derived from a particular style on stage or from an eccentricity and presence off it. In common with most other actors, Betterton was schooled in the old tradition, yet some fragments remaining from an essay on acting he wrote suggest that he gave considerable thought to the presentation of various passions on stage.

For actors to faithfully portray emotions and passions, Betterton wrote, they ought 'to be thoroughly acquainted with the whole Nature of the Affections, and Habits of the Mind, or else they will never be able to express them

justly in their Looks and Gestures, as well as in the Tone of their Voice, and Manner of Utterance.'<sup>13</sup> To learn the craft of acting, Betterton seems to have suggested that the performer should learn to use the sensitivity he or she was born with, that is, to examine inner feelings and sentiments and somehow translate these into the common language of movement and expression. Nonetheless, Betterton was known for his restraint and gravity on stage, and his own comments indicate that his repertoire of gestures was limited and artificial. 'When you speak of yourself, the *Right* not the *Left* hand must be apply'd to the Bosom... this Action, generally speaking, should only be apply'd or express'd by laying down the Hand gently on the Breast, and not by thumping it as some People do. The Gesture must pass from the *Left* to the *Right*...'<sup>14</sup> Apart from a small set of such circumscribed gestures and motions- a raised hand, dropping down on one knee, turning to the audience- Betterton seems to have counselled a rigid and declamatory style. His poses and movements about the stage were well-known, established by tradition and fully rehearsed; they served to amplify the delivery of lines and not to alter their emphasis or meaning.

The only innovation which might have raised such formality from a mannerism that was both proper and recognised- and perhaps by its very tediousness provocative- was short-lived. For about a decade, from 1700-1710, and perhaps in conjunction with the fashion for opera glasses a variety of facial gestures was employed to add 'realism' to

theatrical manners. But this slight relief does not appear to have been widespread.<sup>15</sup> Those actors and actresses who grinned and grimaced their way through plots and intrigues were commonly singled out, and often achieved fame, for their elastic abilities alone. A fortune hung on Elizabeth Barry's visage, but she seems never to have managed to co-ordinate its expression with the rest of her performance. She had, so it was said, 'a Face which somewhat preceded her Action, as did the latter her Words, her Face ever expressing the Passions.'<sup>16</sup> Thomas Doggett, a well-liked comic actor, was known simply as 'the best face-player' of his day.<sup>17</sup>

Aside from some tentative efforts to individualise performances, the conventions of tone, gesture and appearance held good until the 1740s. Looking back over this period Joseph Addison could find only performances which repressed the exhibition of all native passion and sentiment on stage, to release it all amongst the audience.<sup>18</sup> Dr Johnson declared the customary voices to be 'a kind of rant, with which the players run on, without regard either to the accent or the emphasis.'<sup>19</sup> The only lonely attempt to redirect acting at this time was that made by the poet and dramatist Aaron Hill, a critic who with good reason earned the wrath of Pope in The Dunciad (1728). In a dedication to The Fatal Vision (1716), Hill inveighed against the affected poses and rigid styles frozen by tradition.<sup>20</sup> But it took some two decades for this concern to meet a full-scale response.

Most immediately, a number of influential actors responded to the formalism and restraint which had for so long characterised performances on the English stage by introducing exaggerated gestures and expressions taken from the realm of comedy. Performers like Colley Cibber, his son Theophilus, and most memorably James Quin, have been judged by modern critics to have thrown a bridge between classicism and naturalism.<sup>21</sup> Quin, it is true, sought to inject a measure of emotion and verisimilitude into his actions and he assessed dialogue and scene according to the passions each was intended to convey rather than on the basis of moral content alone. The reaction of such actors, however, was just that—a reaction. It tended to degenerate in caricature and pastiche. First at Lincoln's Inn Fields (1718-1732) and then at Drury Lane (1734-1741), Quin's performances were greeted by some as highly novel and individualistic but by many others as slight and superficial. Looking back from the 1750s, a critic could say that during this period taste was prey to wild fluctuations, fads and fashions. Of the new acting styles introduced, the common response was simply—'Tis here, 'tis there, 'tis gone.<sup>22</sup> To Smollett, Quin's idiosyncracies, like those of the Cibbers were overblown and wild; 'nothing', he wrote of the reaction of the 1730s, 'can be more trivial, forced, unnatural, and antick, than this superfluous mummery.'<sup>23</sup>

Smollett's view, expressed in 1751— by, it is true, a man more than commonly prejudiced against the stage— reveals something important about the standards applied to acting

techniques at the time. The keywords had become 'natural' and 'unforced'. An important shift had occurred, and it appears to have been brought about by two performances in 1741 which set the tone for new styles. New criteria of truthfulness on stage and new approaches to the relationship of play, text and expression were set into motion. Even the links between theatre and public, stage and audience were rethought and substantially renewed. 'It was as if a whole century had been steeped over in the passage of a single scene', one critic later wrote, 'old things were done away with, and a new order at once brought forward, bright and luminous, and clearly destined to dispel the barbarians of a tasteless age, too long superstitiously devoted to the illusions of an imposing declamation.'<sup>24</sup> In the 1740s, the quack, herbalist, know-all, and author of an influential work on the theatre, 'Sir' John Hill wrote:

'There was a time... when that extravagance which has been recommended for farce, had its place in tragedy, both in action and delivery; the gestures were forced, and beyond all that ever was in nature, and the recitation was a kind of signing. We are at present getting more into nature in playing; and if the violence of gesture be not quite suppressed, we have nothing of the recitative of the old tragedy. It is to the honour of Mr. Macklin that he began this great improvement.'<sup>25</sup>

First indeed did come a performance by Macklin in London of The Merchant of Venice in which Shylock was portrayed 'naturally' and 'realistically', performed as Pope phrased

Reynolds's portrait of Garrick is appropriately entitled Garrick between Tragedy and Comedy.<sup>32</sup> Garrick also developed a common (and to some vulgar) manner of presentation, one described by William Cooke as 'changing an elevated tone of voice, a mechanical depression of its tones, and a formal measured step in traversing the stage, into a familiar manner of speaking and acting.'<sup>33</sup> The effect was frequently judged to be undignified; John Hill wrote of Garrick's King Lear that it 'looks as like a mad any thing else, as a mad king'.<sup>34</sup> Quin was more malicious and observed of Garrick's Othello that 'there was a little black boy, like Pompey, attending with a tea-kettle, fretting and fuming about the stage, but I saw no Othello.'<sup>35</sup>

Henry Fielding got across one of the major points about Garrick's acting style when he has Partridge, at the theatre with Tom Jones to see Garrick's Hamlet, greet with a 'contemptuous sneer' the suggestion that Garrick was 'the best actor who was ever on the stage'. "'Why'", says Partridge, "'I could act as well as he myself. I am sure if I had seen a ghost, I should have looked in the very same manner, and done just as he did. And then, to be sure, in that scene, as you called it, between him and his mother, where you told me he acted so fine, why, Lord help me, any man, that is, any good man, that had had such a mother, would have done exactly the same... Anybody may see he is an actor.'" <sup>36</sup> Partridge goes on to comment that "'he speaks all his words distinctly'", and Garrick did indeed intend to break speech up according to meaning, to tone, and to purpose. His speaking, like his acting, was

intended to be 'natural'. But we are used to seeing this term used and abused throughout the eighteenth century, when it often serves as little more than a crude and ill-thought rhetorical device.

To some Garrick's purported 'naturalism' came from his ability to observe and commit to memory pieces of dialogue and regional accents he picked up on his travels—an ability Hogarth was reputed to have with respect to visual images.<sup>37</sup> To act 'naturally' in this sense indicated the faithful reproduction of common patterns of speech and behaviour, a close imitation, one might say, of nature. Others found Garrick's method and success to be 'natural' in the Reynoldsian sense: his technique by this account elevated 'nature' to higher forms. To act naturally here meant to heighten expression and emotional output, 'so as to make (nature) seem real, just as statues are enlarged to make them appear life-like.'<sup>38</sup> To still others, Garrick's greatest service to 'naturalism' was to clear the stage of spectators and replace stage chandeliers with footlights after he took over the management of Drury Lane in 1745.

Clearly, different notions of what constituted 'natural' acting (if this is not a contradiction in terms) were in circulation. Some questioned the possibility of fixing rules governing how parts should be played, thinking it best to trust to the natural sensibilities of the players. Others felt that the demand to be natural on stage involved an

impossibility. The stage was not the world, the world not a stage.

To understand what was involved in these different conceptions of 'natural' acting and expression is manifestly central to our purpose. To do so, it is necessary to turn away from reports of actual acting which are unreliable and limited, towards more theoretical treatises on acting. The break between theory and practice is perhaps a worrying one, but it is hoped that by looking at the works of writers on the stage who were, or who continued to be, actors, we shall be able to breach this division. When we examine the competing theories of acting, we must do so inevitably with the knowledge that it was Garrick's rather than Quin's or the Cibbers's which ultimately proved successful. In the spring of 1745, two generations of actors, two kinds of acting vying for control of the stage, had their 'final' contest in rival versions of King John. Colley Cibber's version was produced at Covent Garden, with Quin as King John and Theophilus Cibber as the Dauphin; Pandulph was played by old Cibber, who had taught his son 'and all the rest of the persons in that play, the good old manner of signing and quavering out their tragic notes.'<sup>39</sup>

At Drury Lane Garrick played King John, Macklin Pandulph and Sussanah Cibber Constance. Quin sneered at Macklin for playing Pandulph as if the papal legate were a parish clerk, but the audience voted for once with its feet.<sup>40</sup>

They preferred the natural over the formal. Cibber's King John closed on 26 February after just ten performances.



## II. Nature and Art. A View from the Wings

Debates which surfaced for the first time in mid-century in the realm of acting may be related with little difficulty to those themes and ideas we have discussed in aesthetics, art, and criticism. Indeed, it was common to equate the arts as Reynolds did so forcefully in his thirteenth Discourse, and then to subsume them under universal, theoretical rules.<sup>41</sup> The old framework of *ut pictura poesis* remained strong throughout the eighteenth century.<sup>68</sup>

'The requisites to make either Painter, Poet, or Actor', wrote Theophilus Cibber, 'are in great Measure the same'.<sup>42</sup>

Thomas Wilkes in his General View of the Stage added that

'Acting is the most perfect of all imitative Arts, being made up of all that is beautiful in Poetry, Painting, Music.'<sup>43</sup>

William Cooke wrote that 'the studying of History-Painting would be very useful because the knowledge of the Figure and Lineaments of the Persons represented will teach the Actor to vary and change his Figure.'<sup>44</sup> In each realm of discourse the issues remained essentially the same. How could a representation be rendered authentically? How, and to what extent, are rules, genius, invention, nature, artifice, beauty, truth, content and form, manner and matter, related? We will not attempt here to provide a complete and full account of these issues; instead, it is hoped that we will be able to follow an important shift which occurred in acting theory and technique in the 1740s and 1750s. This shift was uneven and only partially realised; a break not a revolution. It involved a shift from the notion of

the natural as the imitation of nature to the idea of the natural as the expression of inner sensibility. Nature moved from a position of exteriority to one of interiority, from the world to Man; it became 'human nature'.

Aaron Hill, who as we have seen, had earlier denounced statuesque posing on stage, attempted to develop a new theory of acting in the pages of The Prompter which he edited and largely wrote from 1734 to 1736. This two-penny, twice-weekly, two-page sheet aimed 'to awaken old principles of taste in the Audience and establish new skills in Artists.'<sup>45</sup> As we might imagine, the problem of representing the passions adequately on stage was simplified by Hill's assumption that 'the PASSIONS of Men are the same, in all Difference of Place, Time, Custom, or Education.'<sup>46</sup> Further, each passion or 'emotion of the will' is rendered its 'peculiar, and appropriated LOOK; and Every LOOK, its adapted, and particular GESTURE.'<sup>47</sup> Thus far, little new. This is in fact nothing more than a rehearsal of the doctrine of mind and passions expressed in Le Brun, Richardson, Johnson and others. It is the view which underlies all the important works on acting produced in mid-century, texts such as Samuel Foote's anonymous Treatise on the Passions, so far as they Regard the STAGE (1747),<sup>48</sup> 'Sir' John Hill's The Actor (1750),<sup>34</sup> Roger Pickering's Reflections upon Theatrical Expression (1755),<sup>24</sup> and Aaron Hill's 1746 Essay on Acting reproduced in his Works of 1753.<sup>49</sup>

This, however, is almost the only belief these theorists

share in common; it is in a strong sense the precondition for any treatise on the relationship between morals and their representation, on the relations between thinking, feeling, being, and the other categories of natural existence on the one hand, and on the other, acting these categories out in public or in private. The actual number of passions was one issue which remained unsettled and fiercely contested throughout the century. Aaron Hill began with a short and manageable list of six dramatic passions,<sup>50</sup> but later extended the list to ten.<sup>51</sup> Surprisingly perhaps many other theorists remained within that highly constricting and narrow range. Still, there were those like Foote who judged from their own empirical observations that the nature and the number of the passions in man was- and would remain- 'a Secret which has eluded the Searches of so many Philosophers.'<sup>52</sup> And some reckless souls, like 'Sir' John Hill widened the list almost without limit, thinking it inappropriate as well as impossible to constrain the actor's 'style' and cramp his freedom.<sup>53</sup>

There was a puzzle here which went well beyond number alone. Was it feasible to recognize the diversity of the passions and also make suggestions, even lay down guidelines, about how this diversity could be (artificially, or at least by artistic techniques) reproduced? In Samuel Foote's Treatise, this tension- one between art and nature- is never resolved. The impulse to simplify the actor's actual task leads Foote to reduce the welter of different passions which he had previously thought it impossible to classify to...one.

For practical guidance, Foote maintains, the actor can think of pleasure, hatred, anger, despair, and other emotions as being reducible to Love alone- they are mere 'Rivulets from this Source.'<sup>54</sup> A charming notion, to be sure, but how is this practical? Its effect upon physiognomy is immediate; facial expressions are unnecessarily complicated and should, like passions, be for practical ends, reduced to one: immobility.<sup>55</sup>

Though he was well aware of the various theories of the passions,<sup>56</sup> Foote knew, as he said from his own observations in the field, that no codification could capture the complex ramifications with which real passions are articulated in speech, movement, expression. Whilst all might be reduced to a single passion for the purposes of the theatre, Love itself operated as the centre of a network so intricate that Foote declared it 'to be almost impossible' to trace the connections within the network in any detail.<sup>57</sup> So Love taken in isolation could be imitated with a certain bodyline, voice projection, and head movement, but it never expressed itself in a pure form, alone. Love, as Foote conceded, did not for all practical purposes exist.<sup>58</sup> It was prey to, and often taken over, by that figure already made familiar to us by Fielding, Hogarth and others- the hypocrite, the deceiver.<sup>59</sup> This rather difficult position to maintain leads its holder to his critical opinions: Garrick's performances are over-complex, disorganised, and too emotional- they are

natural but untrained, that is untheatrical.<sup>60</sup> Quin's style is found to be wooden and forced- that is over-theatrical.<sup>61</sup> And Macklin is too evil in appearance, even when relaxed or immobile; he could not possibly hope to portray the 'open, sincere, honest man'.<sup>62</sup>

The notion that certain physical criteria need to be met by actors became a common one in the literature, and came to rest mainly on the new requirements of verisimilitude.<sup>63</sup> But far more emphasis is placed on the need for an appropriate figure, voice, memory and physique in those texts that move decisively away from the emphasis on imitation and towards a novel attitude which has the actor fulfilling his role by a process of sympathetic imagination, what we might loosely term 'empathy'.<sup>64</sup> It is the attitude which insists that the imagination, by an effort of sympathetic intuition rather than physiognomical imitation, can actually identify and enter into the character of another. It has, of course, a recognisable Romantic air about it, and one can find it without difficulty in the work of Coleridge, Wordsworth, Shelley and Keats.<sup>65</sup> Equally evident is the closeness of this notion with the 'moral sense' philosophy of Shaftesbury and Hutcheson, Hume and Adam Smith.<sup>66</sup> In all these, the 'moral sense'- or simply 'sensibility'- is closely connected to an aesthetic faculty, and it is as a moral-aesthetic entity that the doctrine surfaces again in the writings of Reynolds and Johnson.<sup>67</sup>

In the case of the texts that concern us immediately, the

notion of sympathetic imagination appears as an alternative to the intractable difficulties lying in wait for those who accept the doctrine of the passions and seek to apply it by imitating natural appearances. It is true, however, that even works on acting which deemed the best approach to be the calculating, imitative one recognised also that actors had to some degree to 'feel' their parts. An Essay on the Theatres, written anonymously in the 1750s, wrote that for the performer,

'Art, rul'd by Nature, must direct the soul,  
And ev'ry gesture, look, and word controul,'

yet found no problem in later adding that once on stage,

'Their mind must lost in character be shown,  
Nor once betray a passion of their own.'<sup>69</sup>

William Cooke, aiming to be neither vague nor impractical in his treatise,<sup>70</sup> appeared at moments to be thoroughly sympathetic in his approach, finding that passions should be experienced so strongly by the actor that his own adopted sensibility should infuse his work.<sup>71</sup> This imaginative osmosis was thought to negate any search for physiognomical rules and other 'artificial mechanisms'.<sup>72</sup> Still, even here, one can discover a residual attachment to nature which crosscuts what might be taken as the more representative demands he makes. For example: when he writes confusingly that 'the actor must be wholly possessed of the spirit of his subject, gripped by enthusiasm which speaks to us directly, because he's committed and imitated nature.'<sup>73</sup> Pickering in similar vein finds no apparent

difficulty in calling for both the imitation of nature and for individualistic sympathy and feeling.<sup>74</sup>

The closest one may get to a rigorously sympathetic approach is in the work of Aaron Hill, and in the second edition of John Hill's The Actor. Aaron Hill's views were formulated first in The Prompter and in an anonymous poem of his published in the Gentleman's Magazine in 1735. In the poem, Hill turns to the process involved in acting:

'He, who wou'd Act, must think: for thought will find  
The art to form y<sup>e</sup> Body by the Mind...

Be what you Seem, Each pictur'd passion weigh ,75  
Fill first yo<sup>r</sup> Thoughts w<sup>th</sup> All yo<sup>r</sup> words must say.

In his Essay on Acting, Hill comes out strongly against mimicry, writing that 'To act a passion, well, the actor never must attempt its imitation, 'till his fancy has conceived so strong an image, or idea, of it, as to move the same impressive springs within his mind, which form that passion, when 'tis undesigned, and natural.'<sup>76</sup>

For each of the six (or ten) passions, Hill believes that this process of sympathy follows similar organic paths; and his views here loosely duplicate those of Descartes and Le Brun. Firstly, the imagination must conceive a powerful impression of the passion, so strongly indeed that this image will impress its form on the muscles of the face. Then this in turn will instantly communicate similar impressions to the muscles of the body. And lastly, the body by impeding

or assisting the flow of animal spirits will affect the voice and gesture.<sup>77</sup> The fact that there exists a limited number of passions, and moreover that each will affect the body in similar fashion if correctly sensed, would suggest that the actor's actual range of skills on stage is rigidly, because physiologically, circumscribed. And this does indeed become clear once Hill lists the kinds of voice, facial expression, and motions of the body which are appropriate to, and arise naturally from, each passion.<sup>78</sup> The list itself has a peculiar status. It is based on a sympathetic attitude only available to the most gifted actors, those who have a fully '*plastic Imagination*',<sup>79</sup> yet it is designed to be available for imitation by all.<sup>80</sup> So the process of automatic truth breaks down for the majority of actors, for they can never be Hamlets, Iagos or Cordelias. They are destined, consigned, only to act as if they were Hamlet, Iago, or Cordelia.

This tension is reduced once we recall that the passions which are to be imitated or imagined, either by art or by natural sympathy, are conceived as general passions. The nature which the works on acting refer to without exception is an 'exalted' one.<sup>81</sup> The actor must, as John Hill phrased it, 'adhere strictly to nature's rules, tho' in an enlarged scale.'<sup>82</sup> Likewise, those passions observed in nature, whether or not they can be listed, are such as can be perceived 'in the generality of mankind',<sup>83</sup> sentiments and emotions which are both 'common' and 'universal'.<sup>84</sup> Such a strategy is designed presumably to raise the status of



actors as much as the level of acting.

This raises in the way all the texts we have examined do the question of the relations between theoretical prescriptions of acting and the practice of the craft itself, particularly the techniques deployed by Garrick and Macklin. The central issue is the one we have seen to occur in the physiognomical discussions of Hogarth, Fielding and others; namely, whether or not the audience and the actor are capable of responding to rules governing the expression of passions through facial and bodily appearances. The problem remains the same whether the actor is to express passions by imitation or by sympathy. It may already be evident from our examination of the reception and appreciation of new techniques on stage in the 1740s that the revolution in the theatre took the form of a new verisimilitude in dress, in speech, and in physical action. The actual physical *expressions*, that is, as it were, the use of physiognomy, was on the contrary felt to be either ridiculous or impossible. We have seen the problems posed for the potential physiognomist in differentiating or in reproducing true sentiments and passions rather than false ones- this resolved itself into the question of whether the actor was honest or a hypocrite. In the case of Aaron Hill, for example, his formula for accomplishing the portrayal of any passion resulted in a distinct and definite tone of voice, disposition of gesture, *and* bodily and facial appearance. It was this last which presented most problems both for actor and audience.

In one way this will be clear from the almost absurdly narrow range of expressions Aaron Hill allows his actor to portray: pity, jealousy, anger and other passions have a multitude of appropriate *actions*, but as far as appropriate appearances are concerned, they are all to be expressed with a peculiar, and undefined, 'sad' or 'pensive' look in the eye.<sup>85</sup> It is because the difficulties of physiognomical portrayal were tacitly recognised by theorists of acting that so much stress was laid on natural physical appearance, why the lover had to be played by someone of 'appropriate' age, height, looks and graces.

Thus, of all Garrick's innovations, his attempts to use imaginative sympathy as the basis for changes in facial and bodily appearance on stage were thought absurd and were quickly abandoned in favour of changes in declamation and posture. The idea that Garrick could mimic the changes in the soul actually experienced by Richard III and so reproduce appropriate expressions was thought impossible by Johnson: 'if Garrick really believed himself to be that Monster', he wrote, 'he deserved to be hung every time he performed it.'<sup>86</sup> There is, moreover, evidence that Garrick himself felt the absurdity of physiognomical mimicry, since he appears to ridicule the attempt in a little-known pamphlet he wrote in 1744, An Essay on Acting in which will be considered the Mimical Behaviour of a Certain Fashionable Faulty Actor.<sup>87</sup>

Diderot wrote as follows after he had seen Garrick at work in 1764 and 1765:

'Garrick put his head between two doors and, in a brief interval of about 4 or 5 seconds, his face passed successively through the emotions of delirious joy and moderate pleasure, then from this to serenity, from serenity to surprise, from surprise to shock, from shock to sadness, from sadness to astonishment, from astonishment to fright, from fright to horror, from horror to despair, and then climbed back from this to the starting point. Was his soul able to experience all these sensations and to play this kind of scale in concert with his face? I will believe none of it, and neither do you.'<sup>88</sup>

Diderot uses this example to rebutt what he terms *sensibilité* on the stage. His Paradoxe sur le comédien was written in various versions in the 1770s as a development of earlier views presented in Grimm's Correspondance littéraire.<sup>89</sup> Many have judged the work to be either, internally inconsistent or to sit uncomfortably with other of Diderot's aesthetic writings.<sup>90</sup> But it has been a powerful enough work to give rise to numerous debates within the acting profession.<sup>91</sup> And this, notwithstanding its evident shortcomings, is understandable since the Paradoxe can rightly be viewed as breaking the links between audience and stage, between the rules appropriate to the acting profession and those at work in the common world of social intercourse.

Diderot responds most directly to John Hill's The Actor (or at least its French translation)<sup>92</sup> and finds it to be a turgid, obscure, confused and almost irrelevant treatise

since it so poorly matches the actual and the possible practice of acting.<sup>93</sup> The problem is not that 'Sir' John like others of the period seeks to provide general rules applicable to all the arts; Diderot finds this objective perfectly acceptable.<sup>94</sup> Nor is it that distinctions such as that between the general and the particular are imported from aesthetics and criticism into studies of the theatre, for these too Diderot employs.<sup>95</sup> At issue is the manner in which rules and conventions holding in the real world and in nature are deemed to be acceptable on stage. To Diderot, performed expression plays on an illusion. The actor, unlike the man in the street, responds not to the truth or the substance of a text but to elements within it which he artificially extracts. In a world of common discourse, where sympathy and natural feelings may be the (purported) aim of intercourse, emotions can and should be allowed to express themselves naturally through speech, action and appearance (Diderot here is, of course, being prescriptive; he also recognises the hypocrisy and affectation in the world). In the universe of the theatre, however, such emotions must be consistently and consciously stifled. The man of natural sensitivity and sensibility must strive to dominate his passions and weaken his soul to become an actor.<sup>96</sup> Performers are thoroughly alienated from their selves; the very best amongst them live a totally double life on and off the stage.<sup>97</sup>

Thus Diderot writes that 'sensibility makes mediocre actors; extreme sensibility, actors of limited range, and only

coolness and level-headedness can make sublime minds.'<sup>98</sup> The tears of the actor fall from the brain, those of the man of sensibility rise up from his heart,<sup>99</sup> or perhaps it would be more accurate to say that the man of sensibility has abandoned himself not to the heart but to the diaphragm—this being the physiological seat of humankind's most common and complex attribute.<sup>100</sup> So when Diderot exclaims, 'No sensibility!' he does so in large measure because it was impossible to conceive that such a term—particularly when it could so easily be feigned<sup>101</sup>—could meaningfully straddle the different worlds of stage and audience. At one level then, Diderot's paradox confronts experience and artfulness. At another, it asks what place is to be ascribed in acting to nature, feeling and inspiration on one hand, and observation and art on the other.

It is certainly a measure of the narrow terms in which the debate we have been following occurred, that having eschewed sensibility Diderot falls back, with some reluctance, on imitation. He does so because despite their different modes, the real and the 'theatrical' both accept that Nature is the only truth and so acknowledge that it must somehow be reproduced. The alternative to imitation is not artificiality but falsehood. In any event, Diderot makes a distinction between close and free imitation, and points out in the Encyclopédie that 'he who imitates nature rigorously is its historian. He who composes it, exaggerates it, weakens it, embellishes it... is its poet.'<sup>102</sup> There is a manifest link here to the familiar and by now well-worn notion

that art strives to the Ideal; for Diderot, the imitation of the actor reaches that general level not by a point-to-point correspondance but only by apparent imitation. The actor's task, one might say, is to blend the lie with the truth<sup>103</sup>, the terms having different meanings in and out of the theatre. Diderot describes the method as follows:

'Ponder for a moment on what is termed in the theatre *being true*. Does this involve showing things as they are in Nature? Certainly not. Truth in this sense would be common truth. So in what does the truth of the scene consist? It is the conformity of actions, discourse, shape, voice, movement, gesture with an ideal model imagined by the poet, and often exaggerated by the actor. The is the marvellous.'<sup>104</sup>

To illustrate the point, Diderot continues:

'An unhappy, really miserable woman, weeps and fails to affect you: for there is worse, it is that a minor disfigurement on her face makes you laugh instead; or perhaps her accent grates on your ear and irritates you; or perhaps one of her habitual movements puts her pain in an irritating light. In other words, passions are nearly always subject to various grimaces which the bad actor slavishly copies, but which the great actor avoids.'<sup>105</sup>

It will be noted from the description above that the actor's appearance is not mentioned. In fact, far from the actor needing to respond physiognomically to his part, Diderot claims that even in his general appearance, resemblance is a minor consideration. Because the techniques of the stage require time to be brought to perfection, even such characters

as Romeo and Juliet will need to be performed by mature actors and actresses. Young actors, in any case, are too emotional and sensitive. 'What Nature has marked out as an actor, only excels in his art once long experience has been gained, once the heat of passion has fallen, once the head is calm and the soul is in full control of itself.'<sup>106</sup>

It is with a partial return to imitative acting that Diderot inaugurates the split between the world of the theatre and the world in which actors are deemed to be hypocrites, cheats and poseurs. The world of the stage, in a sense, is defined in opposition to this world; its hitherto accepted distinctions as between comedy and tragedy are dissolved in Diderot's account.<sup>107</sup> To *play* a part or *act* a character now falls into the hands of professional performers, producers and playwrights. To perform can no longer suggest the fulfilment of a public function or the execution of a duty. A 'public performance' seems to be irredeemably unserious, amateurish and halfhearted. The term suggests the playful, the stagey, the theatrical-fine in front of an audience in Drury Lane, but intolerable in the Strand. Politics can no longer be associated with 'Pollitricks' simply because in both fields truth is concealed behind masks and vizors and hypocrisies. As far as physiognomy is concerned, what is possible in the theatre will not do outside it. The idea that passions, themselves hopelessly abstracted and simplified, can be expressed by the appearance of the face or body is an illusion. Moreover,

the illusion is widely acknowledged because the breach between the stage and the world has been effected.

If physiognomical expression can only exist and be accepted on stage (and even then to be contested); the same is not the case for the speech and actions of men. We have already see how in many discourses, the action of a man or woman was judged to substitute for his or her appearance. The look is lost in the depths of deceit, but behaviour may be the sign of character.

In Tom Jones, Fielding wrote a brief essay offering 'A Comparison Between the World and the Stage'. Here he wrote:

'The world hath often been compared to the theatre... this thought hath been carried so far, and become so general, that some words proper to the theatre, and which were, at first, metaphorically applied to the world, are now indiscriminately and literally spoken of both: thus stage and scene are by common use grown as familiar to us, when we speak of life in general, as when we confine ourselves to dramatic performances...' 108

We are now in a position to see in what ways the notion that the street and the theatre were intermixable thrived at the time. The question must now arise, if physiognomy could not function outside the theatre as a guide to character, what was the status and role of those features Fielding laid greater stress upon- action and speech? It is to the nature of gesture and 'plain' speaking, particularly theories of elocution, that the following chapter is devoted.



NOTES: PART ONE, CHAPTER TWO

1. See Allardyce Nicoll, The English Theatre: A Short History (1936); James Jeremiah Lynch, Box, Pit, and Gallery: Stage and Society in Johnson's London (Berkeley, 1953); and John Doran, 'Their Majesties' Servants' or Annals of the English Stage from Thomas Betterton to Edmund Kean (1897).
  
2. The first periodical to devote itself specifically to the theatre was The Theatre begun by Richard Steele on January 1720 with the aim of improving the stage and lifting morals in society (the two being presumably linked). It ran for thirty issues and had to contend with a rival throughout its life- The Anti-Theatre. Following this, there came a long gap until the appearance in 1734 of The Prompter and of Cote's Weekly Journal; or, The English Stage Player. The latter only lasted for 9 issues; The Prompter appeared from 12 November 1734 to 2 July 1736, altogether 173 issues appeared. By mid-century, the popularity of the stage brought about an increase in journals but these were often extremely short-lived: three such appeared in 1750, but of these two were only issued once, and the other appeared sporadically. By the 1760s and 1770s, a new batch came onto the market but these were once again episodic and unreliable (see Carl J. Stratman, British Theatrical Periodicals 1720-1967. A Bibliography, New York, 1973).

In mid-century the general periodicals turned their attentions to the stage and to plays and playwrights. The Gentleman's Magazine, for example, began in 1750 to issue lists of plays in the capital and gave occasional plot summaries to new plays. Before this time its coverage had been almost non-existent, and when notices did appear, they were satirical or hostile (see, e.g., Gentleman's Magazine, III, 1733, 67-68,

286-87; XV, 1745, 99; XVII, 1747, 124; IV, 1734, 593). The critic of the theatre was held in even lower esteem than the common actor, it seemed, as the remarks on the appearance of The Prompter suggest: Gentleman's Magazine, IV, 1734, 655-56.

3. Johnson quoted in Harry William Pedicord, The Theatrical Public in the Time of Garrick, New York, 1954, 134.
4. Richard Cumberland quoted in Robert Carruthers and Adolphus William Ward, 'Garrick, David', Encyclopaedia Britannica, 32 vols, 1926, XI, 475-77, 476.
5. See Phyllis Hartnoll, The Concise History of the Theatre, 1976; George W. Stone, Jr., The London Stage, 1747-1776, Carbondale, 1968; Leo Hughes, The Drama's Patrons. A Study of the Eighteenth-Century London Audience, Austin, 1971.
6. See Sennett, The Fall of Public Man, 75-79, 38-39, 191-93; Pedicord, Theatrical Public, 48-51, 46-47; Allardyce Nicoll, The Garrick Stage. Theatres and Audiences in the Eighteenth Century, Manchester, 1980, 78-101; and Laurence Kitchin, Mid-Century Drama, 1960.
7. Gentleman's Magazine, XLIII, 1773, 579; see also Gentleman's Magazine, XXIII, 1753, 31.
8. See Porter, English Society, 115.
9. Quoted in Cecil Price, Theatre in the Age of Garrick, 1967, 88.
10. Quoted, ibid., 99.
11. See Watson Nicholson, The Struggle for a Free Stage in London, Boston, 1906; P.J. Crean, 'The State Licensing Act of 1737', Modern Philology, XXXV, 1937-38, 239-55; Hughes, Drama's Patron, 57-58, 142-43.

12. See Samuel Pepys, Everybody's Pepys. The Diary of Samuel Pepys 1660-1669 (ed. O.F. Morshead), 1926, 94, 129, 133, 135 and passim; Doran, 'Their Majesties' Servants', 37-45; and James Agate (ed), The English Dramatic Critics. An Anthology 1660-1932, n.d. c. 1933, 4-5, for comments by Pepys, Dryden and Steele respectively.
13. Thomas Betterton, The History of the English Stage from the Restoration to the Present Time, 1741, 54. There exists some question over the authorship of this volume. It probably consists of fragments patched together by William Oldys, Edmund Curll (the publisher), and others. For details, see Alan S. Downer, 'Nature to Advantage Dressed: Eighteenth-Century Acting', PMLA, LVIII, 1943, 1002-37, 1007n22 for references to the literature.
14. Betterton, History, 100-01.
15. See Doran, 'Their Majesties' Servants', 192.
16. Quoted in Downer, 'Nature', 1006-07.
17. Quoted, ibid., 1006.
18. Spectator 40, 16 April 1711, Spectator, I, 120-22.
19. Boswell, Life, I, 168. Critical phrases of the time spoke of the delivery as 'affected', 'vicious', and a 'horrible theatric way of speaking'; see Joseph Knight, David Garrick, 1894, 25f.; Karl Mantzius, A History of Theatric Art, 8 vols, 1909, V, 383.
20. Aaron Hill, The Fatal Vision, 1716, vi.
21. See Lily B. Campbell, 'The Rise of a Theory of Stage Presentation in England during the Eighteenth Century', PMLA, XXXII, 1917, 163-200.

22. See Gentleman's Magazine, LIII, 1753, 758; and for similar remarks in other issues of the journal: VIII, 1738, 191-94; V, 1735, 662-63, 253; IX, 1739, 135-37; and 'Of Modern Taste and Novelty', Gentleman's Magazine, VI, 1736, 260-61.
23. Smollett, Peregrine Pickle, CII.
24. Roger Pickering, Reflections upon Theatrical Expression in Tragedy, with a proper Introduction, and an Appendix, 1755, 1.
25. John Hill quoted in William Cooke, Memoirs of Samuel Foote, 3 vols, 1805, I, 38-39. See also Lewis Riccoboni, An Historical and Critical Account of the Theatres in Europe, 1741, 176, which finds English acting to be the best in Europe because of its naturalness and truthfulness.
26. A phrase many times repeated: see F.E. Halliday, A Shakespeare Companion 1550-1950, 1952, 387; W. Clark Russell, Representative Actors, 1888, 67; Gentleman's Magazine, XL, 1770, 215.
27. See William Cooke, Memoirs of Charles Macklin, 1804, 91-94, 283-84; and the later account of the performance in the memoirs of the German writer Georg Christoph Lichtenberg, Lichtenberg's Visits to England as Described in his Letters and Diaries (eds. Margaret L. Lane and W.H. Quarrell) Oxford, 1938, 40.
28. The Dramatic Censor (1741), quoted in Edward Abbott Parry, Charles Macklin, 1891, 67.
29. Quoted in Price, Theatre, 33-34.
30. See Cooke, Memoirs of Macklin, 12-13.
31. See Lichtenberg, Visits England, 6-27; 'Biographical

- Anecdotes of the Late Mr. Garrick', Gentleman's Magazine, XLIX, 1779, 117-19, 171-73, 226-28, 280-82.
32. See on this, Cooke, Memoirs of Foote, III, 49.
33. Cooke, Memoirs of Macklin, 98-99; see also 'Character of Mr. GARRICK', Gentleman's Magazine, XII, 1749, 527.
34. John Hill, The Actor: A Treatise on the Art of Playing, 1750, 171-72. This work is a loose paraphrase of Le comédien, Paris, 1747, by Rémond de Sainte-Albine, but with many additions. New editions of Hill's work appeared in 1753 and 1754, but a much-altered version was printed in 1755 with the slightly different title: The Actor: or, a Treatise on the Art of Playing.
35. Cooke, Memoirs of Macklin, 114. The allusion is to the second scene of Hogarth's Harlot's Progress.
36. Fielding, Tom Jones, XVI, 6.
37. See Campbell, 'Stage Presentation', 187; Doran, 'Their Majesties' Servants', 256-57, 172-73, 175.
38. Riccoboni, Historical Account, 177.
39. See John Genest, Some Account of the English Stage, 10vols, 1832, IV, 162.
40. See Cooke, Memoirs of Macklin, 19.
41. Discourse XII (1786), Discourses. 231.
42. Quoted in Earl R. Wasserman, 'The Sympathetic Imagination in Eighteenth-Century Theories of Acting', Journal of English and Germanic Philology, XLVI, 1947, 264-72, 264.
43. Quoted, ibid. See also William Cooke, Elémens de critique

- dramatique, Paris, 1800, 1. The latter was originally published in 1775 as The Elements of Dramatic Criticism.
44. William Cooke, The Elements of Dramatic Criticism, 1775, 87-88.
45. Prompter 66, 27 June 1735. The bulk of this important issue of the journal appeared in the Gentleman's Magazine, V, 1735, 314-15.
46. Prompter 64, 20 June 1735.
47. Prompter 118, 26 December 1735.
48. Samuel Foote, A Treatise on the Passions, so far as they regard the STAGE; with a Critical Enquiry into the THEATRICAL MERIT of Mr. G-K, Mr. Q-N, and Mr. B-Y., 1747, 9-10.
49. An Essay on the Art of Acting (1746), in Aaron Hill, The Works of Aaron Hill, 4 vols, 1753, I, 355.
50. Prompter 66, 27 June 1735.
51. Art of Acting, Works, I, 368.
52. Foote, Treatise on the Passions, 10.
53. The Actor (1750) 162, 233, 20.
54. Foote, Treatise on the Passions, 11.
55. ibid., 35ff.
56. See Cooke, Memoirs of Foote, II, 120-21.
57. Treatise on the Passions, 13.
58. See Cooke, Memoirs of Foote, II, 19-20, 24-32.

59. Treatise on the Passions, 37-38.
60. Cooke, Memoirs of Foote, II, 38.
61. Treatise on the Passions, 40.
62. ibid., 38.
63. See Pickering, Reflections upon Theatrical Expression, 56-58, 59-61; Cooke, Elémens de critique, 239; John Hill, Actor (1750), 125-26, 132-47.
64. The term is, of course, anachronistic. It was first used in English in 1908 by E.B. Titchener, a pupil of Wilhelm Wundt (It appears in the latter's Logik, 1895, III, ii, 5). Wundt's use of the term (*Einflühlung*) derives in turn from Lotze. See on this: Charles Edward Gauss, 'Empathy', Dictionary of the History of Ideas, 5 vols, New York, 1973, III, 85-89; and Gordon W. Allport, Personality. A Psychological Interpretation, 1949, 530-33.
65. See W.J. Bate, Negative Capability: the Intuitive Approach in Keats, Cambridge, Mass., 1939, 25-78; and idem, 'The Sympathetic Imagination in Eighteenth-Century Criticism', English Literary History, 12, 1945, 144-64.
66. See William Frankena, 'Hutcheson's Moral Sense Theory' (Journal of the History of Ideas, 16, 1955, 356-75); William E. Alderman, 'Shaftesbury and the Doctrine of Moral Sense in the Eighteenth Century' (PMLA, XLVI, 1931, 1087-94); James Ward Smith, 'The British Moralists and the Fallacy of Psychologism' (Journal of the History of Ideas, 11, 1950, 159-78); R.S. Crane, 'Suggestions Toward a Genealogy of the "Man of Feeling"' (English Literary History, I, 1934, 304-33); and Ernest Tuveson, 'The Importance of Shaftesbury' (English Literary History, 20, 1953, 267-99).

67. Discourse XII (1786), Discourses, 233; Lives of the Poets, III, 216 ('Pope').
68. See, e.g., Gentleman's Magazine, IX, 1739, 261-62; Riccoboni, Historical and Critical Account, 24 (translator's note). The anonymous author of the mid-century poem, 'An Essay on the Theatres: or, the Art of Acting' similarly equates the art of poetry and the art of acting (in The Harleian Miscellany: a Collection of Scarce, Curious, and Entertaining Tracts, eds. William Oldys and Thomas Park, 10 vols, 1808-13, V, 580-84, 580). See also R.W. Lee, 'Ut Pictura Poesis: the Humanistic Theory of Painting' (Art Bulletin, XXII, 1940, 197-269); W.G. Howard, 'Ut Pictura Poesis' (PMLA, XXIV, 1909, 40-123); Norman Maclean, 'Personification but not Poetry' (English Literary History, XXIII, 1956, 163-70); Ralph Cohen, The Art of Discrimination (Berkeley, 1964, 188-247); Rachel Trickett, 'The Augustan Pantheon: Mythology and Personification in Eighteenth-Century Poetry' (Essays and Studies, n.s. VI, 1935, 71-86). See also references in note 22, of the Introduction to Part One of this thesis).
69. 'Essay on the Theatres', Harleian Miscellany, V, 581, 584.
70. Cooke, Elémens de critique, xi, 234.
71. See ibid., 75, 124-25.
72. ibid., 235.
73. ibid., 268.
74. Compare Reflections upon Theatrical Expressions, 3 and 18.
75. The poem appeared first in Prompter and then in Gentleman's Magazine (V, 1735, 730). It is reproduced as 'The Actor's Epitome' in Beryl Smalley's 'An Anonymous Poem of the



- Eighteenth Century', Review of English Studies, 19, 1943, 70, and I have used this text taken from the manuscript. See also for details, Leo Hughes, '"The Actor's Epitome"', Review of English Studies, 20, 1944, 306-07.
76. Aaron Hill, Works, I, 355. Hill may well have attempted to enact his theories as an actor on stage in the 1740s and 1750s (see Theatrical Review of 1763 in Agate, English Dramatic Critics, 47-50).
77. Prompter 66, 27 June 1735; also Hill, Works, I, 355f.
78. Hill, Works, I, 368-69, 403-04.
79. Gentleman's Magazine, V, 1735, 314; see also Wasserman, 'Sympathetic Imagination', 266-67 for other references.
80. Hill, Works, I, 341-42.
81. Prompter 66, 27 June 1735.
82. The Actor (1755), 231.
83. John Hill, The Actor (1750), 157.
84. ibid., 167-68, 237-38.
85. Hill, Works, I, 402.
86. Boswell, Life of Johnson, IV, 244.
87. On this see Downer, 'Nature to Advantage Dressed', 1016.
88. Denis Diderot, Paradoxe sur le comédien (first published in 1830), in Diderot, Oeuvres esthétiques (ed. Paul Vernière), Paris, 1959, 299-381, 328.
89. Diderot, 'Observations de M. Diderot' (15 October 1770)

and 'Suite et fin des observations de M. Diderot' (1 November 1770) in Correspondance littéraire, philosophique et critique par Grimm, Diderot, Raynal, Meister, Etc. (ed. Maurice Tourneaux), 16 vols, Paris, 1877-82, IX, 133-41, 149-58.

90. When first published (in 1830), the Paradoxe was judged to be so out of character that many disputed its authorship, (see A. Morize, Problems and Methods of Literary History, Boston, 1922, 158-69). Yvon Belaval, L'Esthétique sans paradoxe de Diderot (Paris, 1950, see esp. 266-307) has won support in his claims that the Paradoxe fits in well with Diderot's other writings on the theatre, art and aesthetics (see also Paul Vernière's comments in Oeuvres esthétiques, 295, and Alice Green Fredman, Diderot and Sterne, 1955, 34). This view has more recently come under question in Arthur M. Wilson's 'The Biographical Implications of Diderot's Paradoxe sur le Comédien' (Diderot Studies, III, 1961, 369-83).
91. William Archer, Masks or Faces? reported on the results of a questionnaire circulated by the author amongst a large number of notable actors quizzed on Diderot's book (1856, 211-24). Similar attempts have been made to gauge professional reactions to it in France, Germany and Italy (see Alan J. Freer, 'Talma and Diderot's Paradox on Acting', Diderot Studies, VIII, 1966, 23-76, esp. 72-75 for references). Peter Hall's Diaries, 1983, return time and again to the theme.
92. The work was translated into French by Antonio Fabio Sticoti as John Hill, Garrick, ou les acteurs Anglais, Paris, 1769; it was this book that Grimm gave Diderot to review for the Correspondance litteraire. After two brief reports (see note 89 above) Diderot returned to the book and the problems it raised in 1773, then again in the following year. On this, see Belaval, L'Esthétique, 165-73; Vernière in Oeuvres esthétiques, 292-94; and

the editor's introduction to Diderot, The Paradox of Acting (ed. Lee Strasberg), New York, 1957.

93. See 'Observations de Diderot', Correspondance littéraire, IX, 134; and Diderot to Grimm, 14 November 1769, in Diderot, Corr spondance (ed. Georges Roth), 16 vols, Paris, 1955-70, IX, 213.
94. See 'Observations de Diderot', Correspondance litt raire, IX, 137; Paradoxe, Oeuvres esth tiques, 309; also Grimm's note in Correspondance litt raire, IX, 156-57, and Belaval, L'Esth tique, 184.
95. See Lester G. Crocker, Two Diderot Studies. Ethics and Esthetics, Baltimore, 1952, 71-72; and Ernst Cassirer, The Philosophy of the Enlightenment, Princeton, 1951, 285-86.
96. Paradoxe, Oeuvres esth tiques, 362. See also Diderot, Le r ve de d'Alembert, in Diderot, Entretiens entre d'Alembert et Diderot. Le r ve de d'Alembert. Suite de l'entretien (ed. Jacques Roger), Paris, 1965, 149.
97. Paradoxe, Oeuvres esth tiques, 309, and text note for other references.
98. 'Observations de Diderot', Correspondance litt raire, 139. See also Diderot to Mlle. Jodin, c. 1765, in Diderot, Oeuvres compl tes de Diderot (eds. J. Assezat and Maurice Tourneux), 20 vols, Paris, 1875-77, XIX, 389 and f.
99. Paradoxe, Oeuvres esth tiques, 313.
100. ibid., 306.
101. See Belaval, L'Esth tique, 186.
102. In the article 'Imitation', in Oeuvres compl tes, XV,

- 168-69; see also Peter Gay, The Enlightenment: An Interpretation. Volume II: The Science of Freedom, 1969, 285.
103. Paradoxe, Oeuvres esthétiques, 338-39.
104. ibid., 317.
105. ibid. Sennett's discussion in The Fall of Public Man is excellent on this subject, 110-15.
106. Paradoxe, Oeuvres esthétiques, 321.
107. The term *comédien* which Diderot uses to mean both the comedian and the tragedian has the further implications in French that '*c'est un comédien*' is said of someone outside the theatre who is always play-acting. Likewise, '*manières comédiennes*' are affected, hypocritical manners.
108. Quoted in Sennett, Fall of Public Man, 109.

CHAPTER THREE: RAISING THE TONE...I. 'How Now Brown Cow'. The Rise of the  
Elocutionary Movement

In the mid-eighteenth century, church halls, assembly rooms and market places in large cities and small towns throughout the country would probably have received a visit from a wonderful Professor of Elocution. If the audience was good, he might have stayed, and when he stayed (or if he left) he would have deposited a tract, or volume of essays, on elocution in the local bookshop: 'The Academic Speaker', 'Practical Elocution', 'The Art of Speaking', 'Making a Speech', were best sellers. From 1750 to 1800 there grew in England what can only be termed an 'elocution movement'. This is not to say that the improvement in language in its oral aspects had been neglected in the previous hundred years. In 1665, John Evelyn transmitted 12 proposals to the chairman of a committee on the improvement of the English tongue appointed by the Royal Society a year earlier, amongst them the proposal to invent new accents and periods. But from the middle of the eighteenth century onwards, elocutionists began to organise themselves and their work, tying both to developments in the theatre, in acting, in art, and in criticism. Few missed the connections between these realms, and actors then as now often turned their talents

to public speaking, or like Henry Siddons, a member of the celebrated family of the stage, to writing works on the Practical Illustrations of Rhetorical Gesture and Action (1806). Before the rise of the elocutionary movement many works supposedly written about the theatre dealt instead with elocutionary topics. Charles Gildon's The Life of Mr. Thomas Betterton (1710) contains only 11 pages dealing with his subject's biography and precepts on acting; the next 163 pages are devoted, as the subtitle indicates, to 'The Action and Utterance of the Stage, Bar, and Pulpit' and these are treated in classical terms, especially those taken from Quintilian.<sup>1</sup> Much the same distribution of emphasis occurs in a work we have already dealt with, and one which owes much to Gildon's, Thomas Betterton's History of the London Stage (1741).

In what follows, I shall only refer occasionally to a number of such texts, and only deal scantily with treatises which cover elocutionary topics but in a classical manner. Though agreeing with the notion that elocution is the art of persuasion, these works do not divide manner and matter in oratory in the way the elocutionists of the 'new' movement did. Indeed, deriving their principles from Quintilian, Cicero, Aristotle and Longinus, they stressed instead the closeness of rhetoric and logic, seeing the former as an offshoot or application of the logician's art. In the case of description, for example, this plays a very minor role in classical texts. Though

Quintilian suggests that the passions can be stirred by images and that audiences can be aroused by similar means, he fails to provide a rationale for the importance and the power of the descriptive. Description is not elevated to the status of an organising principle, nor is it connected to an organising principle of rhetorical discourse.<sup>2</sup> Longinus dismisses visual description, his assumption being that attention to details prohibits the mind from seeing 'instantaneously' the size, magnitude and overwhelming quality of an entity; without this 'flash' effect, the sublime is lost.<sup>3</sup>

To the classically-inspired rhetoricians, the speaker must above all be good, wise and principled. Little care is assigned to the emotional aspects of a speech, to the role of the passions, or to *pronunciatio*.<sup>4</sup> Lastly, these classical texts do not separate speech and writing in the way the elocutionist movement sought to do.<sup>5</sup>

As is often the case with such movements, what allies its fundamental tenets and texts is a common initial reaction rather than the coherence that comes of a well-judged response. Nonetheless, it is important to elucidate some of the central themes which lay underneath the debates and differences within the movement, and to do this it is convenient to turn first to the actor Thomas Sheridan's hastily-written yet still impressive and influential study of elocution, delivery, public gesture and expression, his British Education (1756).<sup>6</sup> The subtitle of this weighty

treatise is well worth reproducing since it gives a perfectly accurate impression of the scope and aims of the elocutionary movement, from one who could lay claim to being its founder. It reads:

'An ESSAY towards proving that the Immorality, Ignorance, and false Taste, which so generally prevail, are the natural and necessary Consequences of the present defective SYSTEM OF EDUCATION, WITH an Attempt to shew, that a Revival of the ART of SPEAKING, and the STUDY of OUR OWN LANGUAGE might contribute, in a great measure, to the Cure of those EVILS.'

Before we turn to an examination of the differing approaches recommended to revive the art of speaking, and the bearing these have on notions of character and the body, it will be necessary to deal briefly with what were perceived to be the reasons for the decline of oratory.

The most obvious reason was the oft-remarked decline in public speaking- especially, as we shall see, in church. But other social gatherings were often drawn to an embarrassing halt by the inability of the party-giver, or headmaster, or head of house to deliver an address. A story by 'Percival' called The Bad Reader offers a contemporary satirical account of a reading episode in a semi-private social gathering. Julius, the tale relates, has won esteem and renown at Cambridge for oratory. Arriving home with his prize-winning composition in his pocket, he was anxious to read it to his family's friends.



'A party was therefore collected, and after dinner the manuscript was produced. Julius declined the office of reader, because he had contacted a hoarseness on his journey; and a conceited young man, with great forwardness offered his services. Whilst he was settling himself on his seat, licking his lips and adjusting his mouth, hawking, hemming and making other ridiculous preparations for the performance which he had undertaken, a profound silence reigned through the company, the united effect of attention and expectation. The reader at length began; but his tone of voice was so shrill and dissonant, his utterance so vehement, his pronunciation so affected, his emphasis so infelicitous, and his accents were so improperly placed, that good manners alone restrained the laughter of the audience. Julius was all this while upon the rack, and his arm was more than once extended to snatch his composition from the coxcomb who delivered it. But he proceeded with full confidence in his own elocution; uniformly over-stepping, as Shakespeare expresses it, the modesty of Nature.'<sup>8</sup>

Torture then up and down the land in home, hostel, and from pulpit and platform. Sheridan contended that the deplorable state of speaking, in public and private, could be traced back to the defects of an educational system which was hopelessly out of touch with contemporary needs- could Julius, fresh down from Cambridge, have done better than the conceited young replacement? Probably not. Lancelot Hogben has remarked that any education is made up of three kinds of knowledge: the once useful, the still useful, and the potentially useful.<sup>9</sup> If this is so, education well into the nineteenth century cannot reasonably be thought to have passed far beyond the first stage. The basis of the curriculum had remained basically unchanged for centuries; it was deeply

rooted in the study of Latin and Greek texts. Thomas Hughes's famous description of life at Rugby in the 1850s was accurate in as much as it placed at the centre of studies, 'the time-honoured institution of the Vulgus (commonly supposed to have been established by William of Wykeham at Winchester, and imported to Rugby by Arnold, more for the sake of the lines which were learnt by heart with it, than for its intrinsic value).'<sup>10</sup>

It is true that some changes had been introduced as a result of the great Humanist movement in the sixteenth century,<sup>11</sup> but the classics continued to be seen if not as an end in themselves, at least as the best form of mental training. *Amo, amas, amat* were the first of many hurdles in the educational system in which everyone was compelled to become a gymnast. The hegemony of the classics was a central feature of the educational system to which all elocutionists were opposed. But they were not breaking any new ground in their criticisms. Few of them, indeed, failed to lean heavily for support on those poets and philosophers who had rebelled before them. Milton was frequently invoked, since he had argued that 'we do amiss to spend seven or eight years in merely scraping together so much miserable Latin and Greek as might be learned otherwise easily and delightfully in one year.'<sup>12</sup> Locke too, whose opinions were not unnaturally held in great respect by the proselytizers of plain speaking, was a common source of reference in such matters. He had pointed out the uselessness of many aspects of the

classical curriculum:

'*Latin*, I look upon as absolutely necessary to a Gentleman; and indeed, Custom, which prevails over every thing, has made it so much a Part of Education, that even those Children are whipp'd to it, and made spend many Hours of their precious time uneasily in *Latin*, who, after they are once gone from School, are never to have more to do with it, as long as they live. It there any thing more ridiculous?'<sup>13</sup>

What Locke here hinted at, the elocutionists took up as further proof that the content of education was artificial and in urgent need of reform. That the classical master's principal teaching aid was the birch seemed to suggest that what was being taught came into direct conflict with the child's often natural instincts respecting what was necessary and good.<sup>14</sup> Harsh corporal punishment was wholly integrated into the educational system and frequently associated with the unattractiveness of its content. John Gay spoke of those 'Lash'd into *Latin* by the tingling rod',<sup>15</sup> Locke of the stick as 'the only Instrument of Government that Tutors generally know.'<sup>16</sup> In Thomas Fuller's clever phrase, 'Many a schoolmaster better answereth the name *paidotribes* than *paidagogos*, rather tearing the scholar's flesh with whipping than giving a good education.'<sup>17</sup> And so it persisted; the surprise is that so many thought it worthy of comment and censure long after the mundane brutalities had taken place.<sup>18</sup>

The seventeenth century had, it is true, witnessed some

attempts at educational reform in England, but it is illustrative of the keen grip old customs maintained that even the most 'radical' attacks remained guarded when it came to denouncing the teaching of dead languages. Charles Hoole, for instance, opens his important New Discovery of the Old Art of Teaching (1660) by stressing the need for children to be instructed in reading and spelling English at the earliest possible age, yet goes no further than pleading that such teaching should preface the serious study of Latin, once the real classes get underway. Henry Wotton, also commonly pictured as a great reformer, gets no further than insisting that the youth read vernacular daily, since he says, the 'more gracefully he read *English*, the more delightfully he read the other Languages.'<sup>19</sup>

Considering the reactionary views of these and other contemporary writers on education,<sup>20</sup> it comes as no surprise that Thomas Sheridan's British Education caused a stir on publication.<sup>21</sup> Given always to overstatement, Sheridan opens by describing the 'enormity of the times', when 'irreligion, immorality, and corruption are visibly increased, and daily gather new strength', when law, religion, and culture are powerless to check the progress of vice.<sup>22</sup> The strategy is clear once Sheridan counterposes this scene with the feeble resistances inculcated into the youth at school. In search of a solution, he turns back to 'true' classical precept and discovers conveniently that the basic principles of republican government in ancient times were supported by a practical education, by

a teaching designed in Hogben's terms to be 'still useful' and 'potentially useful'. Moreover, an essential part of training in Greece and Rome was made up of oratory and elocution; a point easily demonstrated since the relevant classical treatises on the subject were now being translated into English- William Smith's translation of Longinus appeared in 1739 and was reprinted numerous times in the next sixty years; William Guthrie translated Cicero's De oratore in 1742, George Barnes made another translation in 1762, and in 1776, a third was put out by Edward Jones; Quintilian, meanwhile was translated in 1756 by Guthrie and again in 1774 by John Patsall.<sup>23</sup>

The typical approach of the elocutionists was to contrast the role and importance of their subject in ancient times with its fall into neglect amongst British thinkers, the contrast serving also to point the way towards a solution.<sup>24</sup> The *political* implications of the contrast are made quite clear:

'Their end was liberty; liberty could not subsist without virtue, nor be maintained without wisdom and knowledge; and wisdom and knowledge, unless communicated with force and perspicuity, were useless to the state... Accordingly we find, that in the education of their youth, (the ancients) after having taken care to instil strongly the principle of virtue, their chief attention was to instruct them in the most accurate knowledge of their own language, and to train them from their childhood in the practice of oratory, as the sure means to preferment in the state.'<sup>25</sup>

Sheridan then reinforces his point by drawing the direct

parallel with modern times: 'We as well as they have councils, senates and assemblies of the people (by their representatives) where matters of as great moment are deliberated, debated on, and concluded... for this reason, *the study of oratory (is) necessary to us in every point where it was to the ancients.*'<sup>26</sup>

Others like Hume and Adam Smith had also called for a renaissance of the ancient art of oratory and made similar comparisons, but they were careful in seeking the causes of the gradual decline of eloquence and cautious of drawing false analogies.<sup>27</sup> Not so Sheridan. Though he admits that in the case of the eighteenth-century Bar, oratory's mode 'may be somewhat altered by the differences of our constitution, and it's (sic) powers confined in narrower limits',<sup>28</sup> other differences, such as those of the sizes of audience in ancient and modern times, are passed over in silence. The groups addressed by the orator in the middle 1700s was generally small- in the Court, the Commons, from the pulpit- but it was very rare for elocutionists to adjust the rules they proposed so as to take the nature and size of their audiences into full account. Delivery itself, it was recognised, was a means of influencing people; and this notion has, of course, a long history. But in the eighteenth century the Demosthenic dictum that delivery is important to the persuasion process was extended, so that oratory was assigned special powers in influencing mass audiences. 'What indeed', says Buffon in a discourse of 1753, 'is requisite to arouse

and draw on the crowd? What do we need if we would agitate and persuade even the most intelligent? A vehement and affecting tone, expressive and frequent gestures, rapid and ringing words.'<sup>29</sup>

By the time the elocution movement gathered steam, the mass crowd had emerged- the two events being far from unconnected.<sup>30</sup> Audiences in all spheres grew by leaps and bounds, fuelled by growing circulations of press and penny publications; by 1774, over 12 million newspaper stamps were sold per annum, there were 7 daily papers, and 10 other papers in London alone.<sup>31</sup> The public lecture came by about 1760 to be an institution; there were over 1000 circulating libraries by 1775; book clubs and societies were being formed all over the land. Lecky called the eighteenth century with much correctness 'the century of the diffusion of knowledge', adding that the result was that 'all important controversies became in their style and method more popular.'<sup>32</sup> The need for powerful public oratory, to stir or contain the masses, was widely recognised- and feared.<sup>33</sup> Of course, most of the elocutionist manuals were addressed to more traditional audiences: the Houses of Parliament and the Church.<sup>34</sup> Sheridan's work was dedicated to the Earl of Chesterfield, and the latter had called for improvements in public political speaking as a necessary means to safeguard the constitution.<sup>35</sup> Like Sheridan, Chesterfield had drawn explicit links between Greek and Roman oratorical techniques and the stability of their forms of government.<sup>36</sup>

But in many realms the government *was* the site of all that was political; political business took place in parliament. The question of political oratory, at least for those we have referred to above as 'people of substance and independent estate', took the form of a problem concerning the influence and persuasion of those at Westminster. Chesterfield's solution was to offer a direct imitation of classical techniques: 'Copy Demosthenes' he advised.<sup>37</sup> As he put it in letters to his son and godson, 'if you imagine that speaking plain and unadorned sense and reason will do your business (in the House of Commons) you will find yourself most grossly mistaken. As a speaker you will be ranked only by your eloquence.'<sup>38</sup> An exaggeration to be sure,<sup>39</sup> but the assumption that the manner and matter of oratory could be divorced came to play a strong part in the theories of some of the elocutionists very soon after Chesterfield had penned his advice. There was however one distinction between the classical and the modern situation which it was difficult to overlook,

It was, noted Sheridan, religion which was the 'one point in which the study of oratory is essentially necessary to us, but was not so at all to the ancients.'<sup>40</sup> Religion he claimed was the 'basis of our constitution, and pillar of our state; it is that which gives our's the greatest advantage over all other forms of government... it is in short that regulating principle... so essentially necessary to the preservation of our constitution.'<sup>41</sup>



As the elocutionist saw things, if oratory at the Bar and in Parliament had reached a low point, the situation in the Church had become desperate- particularly in contrast to the level of pulpit eloquence during the seventeenth century.<sup>42</sup> Steele and Addison had earlier bemoaned the lack of oratorical skills amongst the clergy, particularly the widespread incapacity to read the Common Prayer with any feeling or conviction.<sup>43</sup> Dean Swift, while he perhaps understandably laid some of the blame on his parishoners, grumbling of their gluttony and snores in his sermon 'Upon Sleeping in Church' in the 1720s,<sup>44</sup> still roundly condemned his colleagues in cloth for their convoluted addresses, inarticulate style, and indifference to the basic techniques of divine persuasion.<sup>45</sup> A satirical poem by Dr Byram, widely reproduced the same criticisms:

'For, what's a sermon, good or bad,  
 If a man reads it like a lad?  
 To hear some people, when they preach,  
 How they run o'er all parts of the speech,  
 And neither raise a word, nor sink;  
 Our learned bishops, one would think,  
 Had taken school-boys from the rod,  
 To make ambassadors of God.'<sup>46</sup>

An early eighteenth-century anecdote sheds light both on the oratory in Church, and on the connections between developments in acting techniques and oratory. The Bishop of London once plaintively asked the actor Betterton, 'How does it happen that you actors on the stage can move an assemblage by things that every one knows are not true as much as if they were true, while we in the church speak

of real and true things and yet they are no more believed than if they were fictions?'. 'My Lord', answered Betterton, 'there is nothing more natural than this. We actors speak of fictitious things as if they were true; but you speak from the pulpit of true things as if they were fictitious.'<sup>47</sup>

By neglecting the art of speaking and falling into a vulgar, cold, colourless, and absent-minded delivery, the clergy had in Sheridan's view all but deserted the cause of religion.<sup>48</sup> James Burgh, endeavouring to account for the disturbing success of the Roman Catholic priests in maintaining their congregations, assigned the cause to the priests's pleasing, striking and entertaining services.<sup>49</sup> Sheridan put the success of the Methodists in winning converts down to 'the power which words acquire, even the words of fools and madmen, when forcibly uttered by the living voice'<sup>50</sup> - John Wesley himself was quite conscious of the power of words and wrote a short work on the rules of elocution in 1793.<sup>51</sup> Oratory, said Sheridan, was the 'preacher's instrument' and without it, 'his knowledge and piety are of as little use to the world, as the skill of the painter would be without pencil or colours.'<sup>52</sup> The elocutionist message was directed squarely at the clergy and on the whole they received it with open arms.<sup>53</sup>

The most visible problem in the state of religious and political public speaking stemmed from the degeneration

of the language itself as this was expressed in wild fluctuations of meaning, spelling, and pronunciation. Elocutionists had before them - and as if to concentrate the mind- the earlier degradation of Latin from its former 'Golden Age'. There was a widespread feeling that from a high point, during the reign of Elizabeth perhaps, or that of Queen Anne, or maybe during the Restoration, English had begun a similar descent.<sup>54</sup> To reinstate it to its former glory, the first task was to purify it and to stabilize its meaning and spelling. The two tasks were linked: to stabilize meant to purify. The irregularities and deficiencies of language were viewed as being the result of its very different sources, as the author of Hermes explained, 'Our terms in *polite Literature* prove, that this came from *Greece*; our terms in *Music* and *Painting*, that these come from *Italy*; and phrases in *Cookery* and *War*, that we learnt these from the *French*; and our Phrases in *Navigation*, that we were taught by the *Flemings* and *Low Dutch*.'<sup>55</sup>

This double task fell to lexicographers, and had been commenced in the early seventeenth century in a primitive form when lists of 'hard words' had been issued to meet the needs of readers who were unfamiliar with the many Latin-derived terms introduced into English after the Renaissance. But it was not until well into the next century that dictionaries containing English words in general, with definitions and set spellings, began to be published. Previously- and then sporadically through the

the 1700s- there were voices raised in support of an English Academy which, like the *Academie française* would fix the language.<sup>56</sup> However Johnson, Sheridan and many others felt the scheme to be impractical; there simply did not exist enough potential members to constitute such a body.<sup>57</sup> This gave added weight to the already-bulky dictionaries when they did appear, works such as Samuel Johnson's 50,000 word Dictionary (1755) which aimed to be all the more authoritative as nothing equivalent existed in any other form.<sup>58</sup> In his Preface, Johnson described the situation of the language in mid-century: 'I found our speech copious without order, and energetick without rules: whenever I turned my view, there was perplexity to be disentangled, and confusion to be regulated.'<sup>59</sup> And, as the reviews made plain, the purpose if not the manner in which it had been fulfilled, was widely judged to be necessary and urgent.<sup>60</sup>

Though Sheridan agreed that Johnson's Dictionary had made the study of English much easier,<sup>61</sup> he felt a more pressing need was for a treatise fixing pronunciation rather than spelling; so six years later he drew up a plan for another dictionary to serve this purpose.<sup>62</sup> It was oratory rather than the written word which loomed most importantly as the means to reform Church, Parliament and education.<sup>63</sup> Earlier dictionaries like the huge Universal Etymological Dictionary of English by Nathan Bailey (2nd edition, 1731) had attempted to provide

accents to guide pronunciation, but these were incomplete, indicating only primary stress,<sup>64</sup> and though often used as a fundamental text (by, amongst others, Johnson himself)<sup>65</sup> they failed to establish anything approaching a consensus.<sup>66</sup> Sheridan's view was that once the general public had been taught words properly in schools and on the basis, naturally, of his own Dictionary (1780), to pronounce correctly, they would no longer tolerate any subsequent alterations in the language.<sup>67</sup> Whilst Sheridan lamented the poor state of English delivery, both in reading and in speaking, he thought this was not due to any basic inability in the population since they delivered sentences well in private conversations. The real problem could be seen if their conversations were written down and the speakers were later asked to read them aloud; they inevitably did so in dry, stilted, artificial tones, with great nervousness. This emphasis on speak-as-you-hear therefore called for a total overhaul in the privileging of the script over the speech; an early expression of Franklin's famous remark that 'those people who speak best, do not know how to spell.'<sup>68</sup>

The amount of people who could actually converse suitably, that is, clearly, concisely and to a pattern, was miniscule, thought Sheridan. He divided the English citizenry into four classes: the *Insipids* who hide in crowds, shamed into silence; the *Disputants* who discourse pedantically and interminably; the *Smarts* and *Wits* who ridicule all that

is serious and good and who look down on the insipids and make sport of the disputants; and lastly those who have so fallen into sensuality and profligacy (Sheridan does not name them) that speech has for them become, as it were, a kind of primitive body talk.<sup>69</sup> Good speakers are so rare that they do not even constitute a class in Sheridan's model. So, he laments, 'Happy the man, who can find such a one to be the chosen companion of his private hours!' - so much for the famous conversation society image we have of the eighteenth century.<sup>70</sup> Since, following Locke, good speakers are clear thinkers, good government which depends on the presentation of clear ideas must be carried on by trained orators.<sup>71</sup> Stable pronunciation would ensure clear pronunciation, and this in turn would ensure the most stable democracy. As Sheridan writes of the relations between language and ideas, words and thoughts, 'If the glass be not right, the images reflected by it will not be exact.'<sup>72</sup> Therefore, he goes on, 'if the pronunciation of our language were fixed by certain rules, and were uniformly and invariably observed... is it to be doubted that a general and good taste, and exactness of speech, would be diffused thro' the whole people?'<sup>73</sup>

Sheridan's question is, needless to say, rhetorical. And also in an obvious sense, dictatorial. He didn't count Johnson amongst that small class of 'good speakers', and Johnson, no doubt stung, and tinged by jealousy and by anti-Irish feeling as well one presumes, noted something

repressive about Sheridan's work.

'BOSWELL, "It may be of use, Sir, to have a Dictionary to ascertain the pronunciation." JOHNSON. "Why, Sir, my Dictionary shows you the accents of words, if you can but remember them." BOSWELL. "But, Sir, we want marks to ascertain the pronunciation of the vowels. Sheridan, I believe, has finished such a work"...  
JOHNSON. "Sir, what entitles Sheridan to fix the pronunciation of English?"<sup>74</sup>

This was to be an issue strongly contested by the members of the elocutionary movement as they offered rival notions of the roles of declamation, inflexion, grammar, harmony, persuasion, gesture and expression.<sup>75</sup> But what was seldom brought into question was the stress Sheridan had given to the spoken word over its written counterpart. The almost divine qualities he assigns to elocution derive from his view that whereas speech is a gift of God, writing is a mere cultural product.<sup>76</sup> This was, without doubt, an extreme manner of expressing the point and one not taken overseriously by his followers; nonetheless, the idea that delivery, voice, and gesture were the essential components of communication was absolutely fundamental to the elocutionary movement as a whole.<sup>77</sup> Just consider what a simple change in speech might make to the life and position of the metropolis:

'Would not London be the grand emporium of arts, as she is already of commerce? Would not persons flock hither from all parts of the world to see and admire her works? Does not her very situation, and the ease with which her stores are accessible to people from all corners of the earth, give England a natural right in this respect over all other countries?'<sup>78</sup>

Such stretched and overblown pronouncements made Sheridan an easy and obvious target for attack. A contributor to the Critical Review in 1762 praised the general aims of his British Education, yet noted with alarm that the author 'has studied the subject until he has grown warm in the pursuit, and kindles into a degree of enthusiasm, which sometimes hurries him to the borders of extravagance. One would imagine by reading these lectures, that he considers elocution as the consummation of all earthly perfection, and that even the virtues of the heart depend, in a great measure, on the utterance of the tongue, and the gesticulations of the body.'<sup>79</sup> Another, this time in the Monthly Review in the same year fell into satire:

'Happy, thrice happy Britain! What a glorious day begins to dawn on thee! All thy sons are to have their undertsandings enlightened, their tastes refined, their hurtful passions suppressed, and all the nobler principles of their nature invigorated, and carried into due exertion. The giant Corruption, with its hundred hands, is to be banished from this realm of freedom, the fetters of the tyrant CUSTOM to be broken, and the bonds of prejudice to be snapped asunder: thy Senators, happy country! thy Ministers of religion too, are all to become ORATORS!'<sup>80</sup>

This, as we have seen, was precisely what Sheridan expected to be the benefits which would come about through the rebirth of the art of oratory, the stabilization of pronunciation, and the establishment of proper voice projection, gesture, delivery and expression.



This brief introduction to the elocutionary movement will have served to emphasize the broad concerns of those that wrote, lectured and participated in its work. The desire to improve standards of speaking was certainly not new to the mid-1700s, as we have shown, but the elocutionists of this era had a new kind of audience in mind- the mass- and felt that something other than mere clarity, conciseness and precision was required in speaking. To be sure, the matter of an address had to be, as formerly, clear and direct, but an additional input had to be introduced, a particular manner of delivery which would appeal to the passions and emotions of the crowd. In addition, it was felt that the meaning of an address had to be communicated in such a way as to persuade, in a way which would sway an audience into almost unwitting acceptance of a message which it might otherwise repel. It is to this distinction between the manner and matter of a speech, and more especially to the manner in which appearance was placed in a central position in the speaker's technique, that we now turn.

## II. Manner and Matter

To bring about such changes in the realms of state, law, religion and social life, information had not only to be passed from mouth to ear concisely, accurately, and according to rule. Such information had in addition to be persuasive, to move the passions- to influence people. What John Mason in 1748 terms 'right Management' of the vocal apparatus is designed to rightly manage opinion.<sup>81</sup> When John Herries lays down rules to 'cultivate' speech, his intention is also to raise up and breed the moral and political life of the populus.<sup>82</sup> Persuasion, indeed, falls into the very definition of elocution. The art of speaking *is* the art of persuasion.<sup>83</sup> But once we leave the simplicities of original definition, a number of complex questions arise respecting the relations between the effectiveness of eloquent techniques in conveying information and that information itself; the relations, in other terms, of the manner and the matter of an address. Does one need to be personally convinced in order to convince others? Should the speaker make up his own mind before trying to make up those of others? Must what is packaged in a persuasive manner be persuasive of itself, unwrapped of its 'rhetoric'? Issues such as these stand very close to those at the heart of the disputes stemming from the theatre and representations on stage.<sup>84</sup> It therefore comes as no surprise that acting techniques and theories are frequently invoked by the elocutionists as they strive to match the great popularity of the

tragedians of the day, taking their metaphors and methods without a second moment's thought. The parallels are close enough, I believe, to permit us to detect broadly two schools in the elocutionist movement which match quite accurately the 'natural' and the 'imitative' within acting theories. The first sought to have the speaker abandon himself to those sentiments he would wish to impress on his audience; the second tried instead to resort to fixed rules and conventions to reach the same goals.

The actor John Walker's highly influential Elements of Elocution (1781), like James Burgh's Art of Speaking (1763), stressed the artistry of eloquence, presenting for the orator's convenience a set of regulations governing all aspects of persuasion, from general advice to the minutest details of pronunciation, voice manipulation, the use of pauses, and so forth.<sup>85</sup> In Walker's text, one can even read a direct equation between the use of the upward and downward 'turns' and the impact these would have on 'turning' the audience.<sup>86</sup> In the same way that grammar and pronunciation need to be learned and long practiced, speaking demands lengthy preparation in front of the mirror. And if this fails, the speaker is advised to seek second best: to manage a semblance of good oratory (in the way pedants feign knowledge, and hypocrites wisdom), even if this 'feels' unnatural and artificial.<sup>87</sup>

Clearly, such techniques institute a wide distance between the speaker's beliefs and those that he would impose

upon his audience, between his natural conversation and public declamation. This is necessary, in part, as John Lawson notices, because the best addresses are the most general, that is, those shared by the individuals in the audience, and those which address passions all men may be assumed to share in common.<sup>88</sup> The natural world, like the human individual, is imperfect and must be improved upon by artifice and artistry; such a technique will speak to the general, ideal sentiments which characterize and solidify the group. Such an approach is liable in some instances to lead to a pernicious and impracticable formalism; such a case is Joseph Priestley's 1777 Lectures on Oratory which, by applying the 'analytic method' developed earlier, tends towards equating what is good in speaking with what is right in grammar, the last being viewed as the highest abstraction in language.<sup>89</sup>

For the most part, however, the effective and accepted method to convey ideas persuasively is to bid appeal to the generality of mankind and renounce any particular idiosyncracies of address. Without much difficulty one may see in such a formulation clear echoes from Johnson's notions of the sameness of human nature and the need to raise it to an ideal.<sup>90</sup> Once such notions are accepted, uniform human motives and faculties can be identified and addressed in a clear, pre-defined and well-established manner, according to fixed procedures.<sup>91</sup> Not surprisingly, Johnson himself is a frequent and welcome visitor to many works of the 'artificial' elocutionist, as much

for the critical apparatus he provided as for the scorn with which he dealt with Garrick's acting techniques.<sup>92</sup>

All the elocutionists welcomed the theatrical 'revolution of the word' which had brought simple, common English onto stage. But there existed some disquiet about the way in which Macklin and Garrick had made the lines such slaves to passion, and the manner in which they had imposed their own pauses and stops at will on the text. This seemed to fly in the face of the efforts being made to regularize and 'fix' pronunciation, and to John Lawson such theatrical techniques were distastefully foreign. English was at root a solid and uniform language and it derived its strength from its stability. The language Lawson wrote (in a manner uncomfortably close to that he was striving to censure)<sup>93</sup>, 'hath not the Musick, the Softness, the liquid Lapse of the Italian... (nor) perhaps the Ease, the Clearness, the Pliableness of the French; but it abundantly compensates by superior Force, Energy, Conciseness.'<sup>94</sup> It was this inner power which the elocutionists of Lawson's tendency hoped might be geared up to win over the audience by a judicious mixture with grammatical artfulness and a variety of manufactured stress, pause, and emphasis.<sup>95</sup>

What is presented to the listener is not a lie, but neither is it designed to be the whole truth. As a contributor to the Monthly Review noted with great perspicuity, the business of such oratory,

'is rather to inflame the passions than inform the judgement; to persuade rather than to convince; the art of eloquence, however essential to the character of a polite and learned nation, will be made alternately the instrument of good and evil, according as its professors and adepts are actuated by good or evil purposes.'<sup>96</sup>

It would be hard to find a better expression of the doubts raised by the attempts made to rest eloquence so squarely on artistry. The result could, it was often implied, often be the unreasonable clamours of demagogy. To the 'natural' school, such efforts invariably denied the impress of nature itself. 'Nature', Sheridan stated, 'can do much without art, art but very little without nature.'<sup>97</sup> And in tipping the balance in this direction, the rival school takes shape. Or perhaps, it coalesces around a sustained defence of Garrick's techniques which are now judged, within certain limits, to be as applicable to the pulpit and within politics as they are for a piece of theatre.<sup>98</sup> Better still, the 'natural' school- the term, like that of the 'artificial' is Sheridan's- is established under the banner of total abandonment to the party or creed for whom it speaks. One thinks of the law court and of the manner in which the lawyer is asked to defend the accused- even though he may feel him guilty- to the best of his abilities as though he were innocent. Sheridan will not have this: he asks that the counsel take up position in the dock and witness proceedings from that vantage point. But in whatever situation, the general procedure is roughly the same. 'Deliver yourselves in the same manner you would were the matter

your own original sentiments uttered directly from the heart.'<sup>99</sup> In other words, speak and listen in public as you would in private.<sup>100</sup> Apply the same criteria of comprehension in oratory as in conversation.<sup>101</sup>

The rules of accentuation, pronunciation, and emphasis are a guide certainly, but they must always cede to the overwhelming pressure of what William Cockin labels 'the emphasis of sense'<sup>102</sup> an emphasis which prescribes that the orator should believe what he speaks.<sup>103</sup> Like the finest actor- the actor weary of being artificial and of being over-natural<sup>103</sup> - the good speaker must enter into 'the spirit of the Character'<sup>104</sup>, for he cannot hope to convey 'the true Force and Fulness (sic) of his Ideas to another till (he) feels them himself.'<sup>105</sup>

A difficult requirement to be sure; one destined perhaps to ensure that no one ever emerges to fill Sheridan's almost empty class of good speakers! To be 'natural' seems on occasion to approach obsessiveness, as when Sheridan discovers good artistry to be a poor second best to ugly natural idiosyncracies (lisps, mumblings, stutters and so forth):

'A man's own faults, sit easy on him; habit has given them the air of being natural; those of another, are not assumed without awkwardness, they are evidently artificial. When truth is concerned, the very faults of a speaker which seem natural, are more agreeable to the hearer, than such beauties as are apparently borrowed.'<sup>106</sup>

The obsessiveness in fact mirrors the persistent hostility to all forms of affectation, fashion and hypocrisy. The claims made by the poet, the painter and the critic for the deeply-rooted hold hypocrisy had on their society in the eighteenth century are reproduced and amplified by the elocutionists. Their demand is for essence over appearance. Their claim is that by tipping the balance from art and artificiality to nature enormous social reforms will result. Indeed, the ensuing changes might even be more devastating, since as Sheridan hoped, 'restoring a natural manner of delivery would be bringing about an entire revolution, in its most essential parts.'<sup>107</sup>

The real problems here are not the outlandish consequences purported to flow from the oratorical 'return to nature' movement, but rather the suspicion that beneath the fine-sounding phrases there lurks a programme quite impossible to enact. The defining characters of the school are its stress on sense and meaning along with the weight it places on natural delivery, but also a reluctance to establish general regulations which would enable good elocution to occur. To be sure, rules for pronunciation occupy a great space in the works of the 'natural' elocutionists, but their status is less than certain. Even Sheridan argues that such rules exist to be broken if the first reading of a text, or the initial impression a speaker-to-be has of a programme, conflicts with his natural inclinations as to how that text or programme



should be turned to speech.<sup>108</sup> John Rice, a more restrained member of Sheridan's school,<sup>109</sup> accepts this conflict and uses it to counsel his orators to *create the pretence* of following 'natural' pronunciation and emphases even when these are determinedly 'unnatural', that is, when they are felt to clash with inner sensibilities.<sup>110</sup> If one is to accept such advice, it seems difficult to see what is left of the naturalist foundation of the school itself. If on the other hand, one refuses to follow the path leading back to the artificial doctrine, then the call to nature must be to a large degree, as the Critical Review noted, admirable in its intentions but useless as a practice.<sup>111</sup>

Issues such as these have prompted some critics to question the extent to which it is viable to refer to large-scale divisions between the views of the 'artificial' elocutionists and the 'natural' elocutionists.<sup>112</sup> The issue is especially pertinent when we confront figures such as John Herries who seem to straddle both camps.<sup>113</sup> The problems of forming a clear view are compounded once we pay attention to the internal divisions and disputes within either school, disputes such as that between Cockin and Sheridan on the differences between public reading and speaking, between Priestley and Herries on harmony in oratory, and those problems that arose from Rice's separation of speaking from singing, and Lawson's view that religious oratory remained a special case where formal rules were inapplicable.<sup>114</sup> Such issues are

not central to our purpose and we shall only refer to them once they impact on the doctrines of the various elocutionists we shall now study concerning gesture, expression and physiognomy.

### III. Moving Speeches

Perhaps surprisingly, the elocutionists shared many views concerning the nature of the passions and their use in oratory. Less startling will be the discovery that they confronted many of the same problems actors and critics found in providing general guidelines on expression and gesture. It was widely accepted that the passions expressed themselves independently of words, in a kind of natural 'hand writing'.<sup>115</sup> For the reasons we have exposed in our treatment of literary, artistic, theatrical and critical discourses, it was felt in elocutionist works that monitoring, and hence putting into effective use, facial and bodily characteristics was so fraught with problems that such a writing could never become an important part of oratory. On the other hand, movements of bodily limbs were judged to be efficient and persuasive accompaniments to speaking; they were means, Priestley said, of amplifying the voice.<sup>116</sup> Indeed, gestures constituted what was termed a 'natural language', and one which was far less complex and confused than the various other discourses of expression.<sup>117</sup> However, as we might expect, this

recognition immediately raised a welter of problems for the 'naturalists' and 'artificialists' alike. Three in particular were thought to place severe limitations on the use to be made of gestures in oratory.

The first obstacle was simply that the English were thought to rely very little on gesture in speaking, unlike their ancient Greek and Roman, and indeed their continental contemporary, counterparts.<sup>118</sup> So weak was the reliance that some critics felt impelled to call for the resurrection or importation of this 'forgotten' language of nature which had been so effectively repressed.<sup>119</sup> This feature of English social communication accounted both for the strength of English as a language and its weakness as a tool for the orator; the language had so many more words naming things than any other that the need was never felt to point those things out with the finger, the hand or the arm.<sup>120</sup> As Noah Webster put it, 'men will not give themselves the pain of exerting their limbs and body to make themselves understood, when a bare opening of their lips will answer the purpose. This may be assigned as one principal cause of the decline of eloquence in modern ages, particularly among the English.'<sup>121</sup>

Some certainly did exercise their limbs but to the elocutionists the whole performance was offensive and reeked of fashion, folly and affectation. Their

motions were either adopted without regard to sense or context from the stage; or, they were but pale imitations of meaningful French and Italian gestures. Wild gesticulations and jabs into space did no more than expose those who, as Sheridan sneered, 'follow dancing masters whose principal enjoyment is to teach one poor unmanly French dance. It is an offence to such as have any just idea of grace, to look at them when they are performing.'<sup>122</sup> For, unlike the French, there was lacking amongst the English not only a past history of gesture but a repository of recognised motions which could be delved into for movements which would clearly and unambiguously signal the major emotions and passions.<sup>123</sup> To listen to these poseurs, it was suggested, was to be witness to a dialogue of the deaf with the blind. Neither knew what the other wished to mean, nor how to communicate to the other, nor finally to make sense even of his own gestures.<sup>124</sup>

This consideration of itself was enough to place a large question mark over attempts to introduce the language of gesture into manuals of rhetoric and elocution. Yet if gesture *was* a natural language, with its own grammar and vocabulary, there did seem good reason to suppose that it might either be brought under the rule of art or be allowed to speak sympathetically through the body. To the elocutionists of the 'artificial' school, the second major problem was that either the passions were so numerous as to resist any neat and practical class-

ification, or if they were amenable to reduction, then their usefulness was severely curtailed. Burgh and Walker both made bold attempts to list the passions—up to sixty were set down— and Walker himself went so far as to criticize Aaron Hill for allowing a mere six or ten passions into his treatises on acting.<sup>125</sup> Both however finally relinquished the massive task once it had become manifestly and impossibly unwieldy. The English language gave great scope to their efforts (and in some cases their discriminations, as of that between 'mirth' and 'joy' and 'pleasure' were perhaps overstretched),<sup>126</sup> but they recognised that there was no reason to suppose that the audience for whom such attempts were designed would be appreciative. Some therefore became despondant. Enfield wrote that it was 'beyond the reach of human ability, to write a Philosophical Grammar of the Passions.'<sup>127</sup> Others, like Lawson, simply took the whole list of passions and filtered off any he found unnecessary, ending up by viewing 'the Multitude of Names', of passions as 'no more than two original Emotions of the Mind... Desire and Aversion.'<sup>128</sup> Still others, declaring that the whole gamut of passions would by some unknown but natural means work itself through the body when the time came, refused to even look for mechanical means of reproducing these.<sup>129</sup> In each case, the problem was that the natural language of gestures and passions refused to be moulded to the requirements of the mechanical, artificial, art of oratory. 'To the generality

of readers and speakers', wrote Walker, 'it may be proposed to make use of no more action than they can help.'<sup>130</sup> Orators should to all extents and purposes stand perfectly motionless.<sup>131</sup>

The question of gestural performance received a similar response from the 'natural' elocutionists once they turned to consider the manner of reading (rather than speaking) aloud. To feel emotion or to express sensibility was deemed impossible and quashed in the process of repetition. Put another way: the path from passion to expression was broken by the intervention of the various customs associated with writing, printing, grammar and orthography.<sup>132</sup> So, in reading, it was judged inappropriate and unnatural to insinuate gestures; the reader, wrote Cockin, 'should present himself so far from being affected in all passionate subjects, to be able to keep a temperate control over the various affections of the voice, &c.'<sup>133</sup> There existed in fact a scale matching the degree of gesture permissible to the kind of material being read; a scale which moved from poetry down through the novel to factual reports.<sup>134</sup> Nothing was more reprehensible than the theatricals imposed on the members of a family or a club by the reader- fresh, no doubt, from a visit to the Mediterranean- to whom 'the common occurrences of a news-paper, &c. cannot be properly delivered without a good deal of elbow-room.'<sup>135</sup>

Yet, the problems posed by the peculiar matter

of reading also existed in public speaking. Unless the orator spoke without reference to the written text- indeed, unless he thought without reference to a script- the same textual constraints would loom large.<sup>136</sup> Unless a very sharp and rigorously policed frontier can be made to distinguish the terrains of pure speech and the oratory which bases itself at some remove upon the written word, gestures will come to seem alien and unnecessary; hence John Rice is quite adamant that he will not treat the 'theatrical' component of elocution.<sup>137</sup>

In the case of public speaking, which might be judged to be 'purified' of all scriptual supports, the 'natural' school argued, as we have seen, for a variant of sympathetic imagination to govern oratory. But there was little by way of guidelines or rules which the elocutionists could advance to help sensibility express itself in a natural and unaffected manner. Not only does the call to 'follow nature' militate against such rules, but even to write these down would provide the script which would then interfere with the purity of speech.<sup>138</sup> Yet in a striking, but by now understandable and not unfamiliar, U-turn, Sheridan not only forwards strict rules for the deployment of gesture of all kinds in oratory, but seems to have taken these almost verbatim from Walker!

In the case of 'modesty' for example, both authors advise the use of similar gestures and postures as part of

the orator's repertoire. Thus Walker writes:

'Modesty bends the body forward, has a placid, downcast countenance, levels the eyes to the breast, if not to the feet, of the superior character; the voice is low, the tone submissive, the words few.'

And Sheridan offers almost identical advice:

'Modesty, or submission, bends the body forward, levels the eyes to the breast, if not to the feet, of the superior character. The voice low, the tone submissive; and the words few.'<sup>139</sup>

On a practical level then, there exists remarkably little difference in the advice given out by the two schools within the elocutionist movement. To the extent to which rules are given, it makes little sense to speak of delivery, posture, and expression being 'natural'. Nonetheless, each and every one of the elocutionists refers again and again to the 'natural manner', as do even the neo-classical works which do not form a true part of the elocutionist movement.<sup>140</sup> What perhaps divides the two schools is the fact that for the 'natural' the rules are to function less to be applied than to be referred to as a standard to correct faults and to weed out affectation.<sup>141</sup> So great is this vice that it is judged by Sheridan to have wormed its way into the very core of man's being. The orator, he claims, will experience real difficulties in knowing how to be natural, in knowing what is natural. 'The heart collides



with the brain and different messages will be received by the body, so tension and confusion arise.'<sup>142</sup> This being so, the rules he proposes are designed to allow the language of nature to express itself without the hindrance of the language of ideas. To legislate on the question of gesture is to dam up the brain and let the heart flow freely.<sup>143</sup>

This negative conclusion illustrates and reinforces the central elements of eighteenth-century discourses on art and aesthetics, on acting, and here on speaking which we have examined to this point. Having shown how the elocutionary movement was constituted, and having traced in some detail and with frequent references to our discussions in chapter two the separation within this movement of the matter and manner of an address, we have been able to distinguish two different approaches to delivery which we have termed the 'natural' and the 'artificial'. The major features of each have been described in the second section of this chapter, but it is worth stressing that as was the case with acting, the problem of representing passions and emotions assumes a major importance within elocution. Moreover it also takes on added weight since the meaning of a speech is seen as something which must be conveyed by influencing the passions and that meaning is central to the act of persuasion. Once again meaning is treated in a number of ways, or put another way, the problem of representing ideas at a level at which they will impassion a crowd

is debated as a problem which can be resolved at a verbal, or a behavioural, or a visual level. Both the natural and the artificial currents within the elocutionary movement agree that the third option is the only option, yet both equally agree that no language or rules exist which link up passions and appearance. This being so, it is not surprising that towards the end of the 1780s, moves are afoot to alter the basis of the elocutionary movement. These moves reflect similar motivations and discontents as those we have seen to be in operation within the domain of acting. In acting, in art and aesthetics, and in elocution, there did not exist any well-defined, agreed-upon rules governing the expression of passions and emotions, even though in all areas, the need for such rules was felt to be a pressing one. This need was to await some 50 years before being fulfilled—and then in a wholly new context. Before we move on to lay the basis for an understanding of those rules and that context, it will be helpful to recapitulate briefly the ground we have covered in the first part of this thesis.

NOTES: PART ONE, CHAPTER THREE

1. See Charles Gildon, The Life of Mr. Thomas Betterton, 1710, ix. On the links between elocution and other spheres in this period, see Vincent M. Bevilacqua, 'Rhetoric and the Circle of Moral Studies: An Historiographic View', Quarterly Journal of Speech, LV, 1969, 343-57. Such links as between elocution and moral philosophy became especially clear in the elocutionary remarks of such figures as Adam Smith, Hume, and Thomas Reid, the latter especially (see Eric William Skopic, 'Thomas Reid's Fundamental Rules of Eloquence', Quarterly Journal of Speech, 64, 1978, 400-08).
2. Quintilian, Institutes of Oratory (trans. H.E. Butler), Cambridge, Mass., 1966, VIII, iii, 64-65.
3. Longinus, Longinus on the Sublime (trans. W. Rhys Roberts), Cambridge, 1954, chapter 43.
4. On the absence of *pronunciatio* in the classical treatises on rhetoric, see D.L. Clark, Rhetoric and Poetry in the Renaissance, New York, 1922, 30ff., and William Phillips Sandford, English Theories of Public Address, 1530-1828, unpublished PhD, Ohio State University, Columbus, 1929, 7-23, 25n, 119-43.
5. The texts I have in mind are: Hugh Blair, Lectures on Rhetoric and Belles Lettres, 2 vols, 1783 (but written in the 1750s); John Ward, System of Oratory, 2 vols, 1759; George Campbell, Philosophy of Rhetoric, 1776; and half a century later (a period during which no important elocutionary or rhetorical works in the classical mode appeared), Richard Whateley, Elements of Rhetoric, 1826, and idem, Elements of Logic, 1828. All but the last author were theologians, whereas the two major figures of the elocutionary movement were actors. Considerable scholarship and commentary has

accumulated around these figures and their work, far less around those that we shall be concerned with. A sample: Douglas Ehninger, 'John Ward and his Rhetoric' (Speech Monographs, XVIII, 1951, 1-16); idem, 'Dominant Trends in English Rhetorical Thought' (Southern Speech Journal, XVIII, 1953, 3-12); Clarence W. Edney, 'Campbell's Lectures on Pulpit Eloquence' (Speech Monographs, XIX, 1952, 1-10); idem, 'Campbell's Theory of Logical Truth' (Speech Monographs, XV, 1948, 19-32); idem, 'English Sources of Rhetorical Theory in Nineteenth-Century America' (in Karl A. Wallace (ed), History of Speech Education in America, New York, 1954, 80-104); Douglas Ehninger, 'Campbell, Blair, Whateley: Old Friends in a New Light', which claims, in my opinion without success that Campbell's rhetoric was substantially different to the classical (Western Speech, XIX, 1955, 263-69); idem, 'On Systems of Rhetoric' (Philosophy and Rhetoric, I, 1968, 131-44); Douglas McDermott, 'George Campbell and the Classical Tradition' (Quarterly Journal of Speech, XLIX, 1963, 403-09); J. Hall, An Account of the Life and Writings of Hugh Blair (1807); W.M. Parrish, 'Whateley and his Rhetoric' (Quarterly Journal of Speech, XV, 1929, 58-79); Orville L. Pence, 'The Concept and Function of Logical Proof in the Rhetorical System of Richard Whateley' (Speech Monographs, XX, 1953, 23-28). This is perhaps the place to thank Professor R.C. Alston for his bibliographic help and general advice on workers in the field.

6. Thomas Sheridan, British Education: Or, the Sources of the Disorders of Great Britain, 1756. On the relationship of Sheridan's theatrical career and his elocutionary work, see Esther K. Sheldon, Thomas Sheridan of Smock-Alley, Princeton, 1967, esp. 216-17; also useful is Wallace A. Bacon, 'The Elocutionary Career of Thomas Sheridan', Speech Monographs, XXXI, 1964, 1-53.
7. Sheridan, British Education, titlepage.

8. 'Percival' quoted in William Scott, Lessons on Elocution, 1779, 247. Was the author of the tale perhaps the physician and moralist Thomas Percival (1740-1804)?
9. Lancelot Hogben, Dangerous Thoughts, 1939, 142.
10. Thomas Hughes, Tom Brown's Schooldays, 1975, 232 (Part II, 3). In all ways closer to home, the Lord Chancellor ruled in 1805 that the governing body of Leeds Grammar School was incompetent to introduce arithmetic, writing and modern languages into the classroom. The school was founded as a grammar school and it was, he said, illegal for it to embark on a teaching programme which involved anything other than the classical languages and literature. The judgement was not upset until the passing of the Grammar Schools Act in 1840. See A.C. Price, A History of Leeds Grammar School, Leeds, 1919, 137-45, 180-82. There may of course have been unpublished deviations from the legal norm (see p. 161, for examples), but generally speaking the Lord Chancellor had his way (see H.C. Barnard, A History of English Education from 1760, 1966, 16f.)
11. Most importantly resulting from the labours of Erasmus and More, but Roger Ascham and R. Mulcaster also issued treatises on education. See Paul Monroe, A Brief Course in the History of Education, New York, 1963, 190f., and S.J. Curtis and M.E.A. Boulwood, A Short History of Educational Ideas, 1975, 112-47.
12. John Milton, Of Education (1644) in Milton, Milton's Prose Writings (ed. K.M. Burton), 1974, 321, see also 319-30.
13. John Locke, Some Thoughts Concerning Education (1693) in Locke, The Educational Writings of John Locke (ed. James L. Axtell), Cambridge, 1968, 268; also 279-88, 352.

14. See, for examples, Phillipe Ariès, Centuries of Childhood, Harmondsworth, 1979, 247f., and James Walvin, A Child's World, Harmondsworth, 1982, 47-52, 54-60.
15. 'The Birth of the Squire' (1720) in John Gay, Prose and Poetry (eds. Vinton A. Bearing and Charles E. Beckwith), 2 vols, Oxford, 1974, I, 232.
16. Locke, Educational Writings, 148; see also 148-50, 172-73; 182-86, and Essay Concerning Human Understanding, in Philosophical Works, I, 538 (II, xxxiii, 15). See also John Dryden's youth 'whipt at school' (in 'The Satires of Aulus Persius Flaccus' (1693), in The Works of John Dryden (ed. H.T. Swedenberg, Jr.,) 1974- , IV, 267 ('Satyr I', line 132).
17. Fuller quoted in Ernest Rhys (ed), A Century of English Essays, 1954, 26.
18. See, for examples, Richard Steele, Spectator 157, 30 August 1711, Spectator, I, 473-74; Leigh Hunt, Autobiography (ed. J.E. Morpurgo), 1949, 83; Charles Lamb, 'Christ's Hospital Five and Thirty Years Ago' (1820), in Lamb, The Essays of Elia (ed. Malcolm Elwin), 1952, 22-38. Interesting evidence is to be found in Ivy Pinchbeck and Margaret Hewitt, Children in English Society, 2 vols, 1972, I, 14-15. Johnson (possibly for effect) remarked that 'There is now less flogging in our great schools than formerly, but then less is learned there; so that what the boys get at one end they lose at the other.' (Boswell, Life, II, 407). I say for effect since the sentiment seems almost meaningless: better, or at least clearer, is view expressed in ibid., V, 99.
19. See Charles Hoole, A New Discovery of the Old Art of Teaching Schoole, 1660, 23; Henry Wotton, An Essay on the Education of Children (1672), 1753, 50.

20. William Boyd suggests that by this time the English curriculum was beginning to cause grave concern; if so, Sheridan certainly tuned into a powerful current of opposition and chose his medium for the propagation of elocutionary ideas well (see Boyd, The History of Western Education, 1921, 239-40).
21. See the retrospective comments in the Monthly Review, LXIII, 1780, 241-42; also Sheldon, Sheridan, 217.
22. British Education, 1.
23. See for details, R.C. Alston, A Bibliography of the English Language from the Invention of Printing to 1800, Bradford and Leeds, 1965-, VI, 15-35; also Sandford, Public Address, 112-14.
24. See for examples: John Lawson, Lectures Concerning Oratory, Dublin, 1758, 15ff.; William Enfield, The Speaker, or Miscellaneous Pieces, 1775, 296-97; John Herries, The Elements of Speech (1773), Menston, 1968, 3-4, 192; Thomas Sheridan, A Course of Lectures on Elocution, 1762, 137-54.
25. Sheridan, British Education, 47-48.
26. ibid., 51, 48.
27. See David Hume, 'Of Eloquence' in his Essays and Treatises on Several Subjects, 2 vols, Edinburgh, 1825, I, 91-103; Adam Smith, Lectures on Rhetoric and Belles Lettres (ed. J.C.Bryce), Oxford, 1983, 196-200. See also Noah Webster, Dissertations on the English Language, Boston, 1789, 70, 160ff. The collection of dialogues which make up Jonathan Swift's Polite Conversation (1738) demonstrates the growing attention to good speech, delivery and pronunciation at this time (see Jonathan Swift, The Prose Works, ed. Herbert David, 14 vols, Oxford, 1939-59, IV, 99-201, and the Introduction by Swift, 99-124). William Sandford has strongly argued

that the growing emphasis on grace and correct delivery was the most important impetus to the elocutionary movement (Public Address, 139ff).

28. British Education, 52 (emphasis removed).
29. Buffon quoted in Lane Cooper, Theories of Style, New York, 1907, 171.
30. The link has however to my knowledge never been fully or systematically studied, and certainly deserves to be. The references in note 125, Part I, Chapter I above are helpful and suggestive, as is Elias Canetti, Crowds and Power, Harmondsworth, 1973.
31. See Preserved Smith, A History of Modern Culture, 2 vols, New York, 1964, II, 285.
32. W.E.H. Lecky, A History of England in the Eighteenth-Century, 8 vols, 1883, VI, 164, 166.
33. See Blair, Lectures on Rhetoric, II, 42f. Despite its title, there is much useful information in Mary Margaret Robb, Oral Interpretations of Literature in American Colleges and Universities (New York, 1941, 21, 29-31, for example); likewise in Karl R. Wallace (ed), History of Speech Education in America (New York, 1954, esp. chapters 1, 3, 4, and 5)- both works smuggling elocutionary issues in through the back cover in true early 'eighteenth-century style.
34. See for example: Blair, Lectures on Rhetoric, II, 42-62, which equates the eloquence of parliament and the popular assembly. James Burgh's The Art of Speaking, Dublin, 1763, is unusual in speaking of the need for competent orators in parliament, at the Bar, in the pulpit, and also 'in meetings of merchants in committees for managing public affairs' (p. 154).



35. See, for example, Chesterfield's letter to his son, 5 December 1749 in Chesterfield, The Letters of Philip Dormer Stanhope 4th Earl of Chesterfield (ed. Bonamy Dobrée), 6 vols, 1932, IV, 1454 (vols are consecutively paginated). Donald C. Bryant's article, 'The Earl of Chesterfield's Advice on Speaking' (Quarterly Journal of Speech, XXXI, 1945, 411-17) is one of the very few articles on the subject, poorly referenced but worth reading.
36. e.g. Chesterfield to his son, 11 October 1738, in Letters, II, 333-34.
37. Chesterfield to his son, 11 October 1738, ibid., 247.
38. Chesterfield to his son, 18 March 1751, ibid., IV, 1700; Chesterfield to his godson, 1773, ibid., VI, 2943.
39. See remarks in Lecky, History of England, I, 361-62. I have unfortunately not the space to consider the full political background to the debates about language and the analogy between proper language and proper government. Barrell considers some themes very acutely in his English Literature, 110-75. Jacques Derrida also treats the degradation of language in relation to social and political decay in eighteenth-century France in his Of Grammatology, Baltimore, 1977, 169ff.
40. British Education, 52 (emphasis removed).
41. ibid., 52-53.
42. See, for a splendid example, Oliver Goldsmith's 1760 'On the English Clergy and Popular Preachers', in his Miscellaneous Works (ed. David Masson), 1923, 293-95.
43. See Spectator 147, 18 August 1711, Spectator, I, 443-45; also Gentleman's Magazine, XXIX, 1759, 575-76; Tatler 66, 10 September 1709, and Tatler 70, 20 September 1709,

- both in A. Chalmers (ed), The British Essayists, 38 vols, 1823, II, 161-70, 193-99. For other remarks, see Laurence Sterne, The Life and Opinions of Tristram Shandy (1760-67), ed. Ian Campbell Ross, Oxford, 1983, II, xvii, which deals with the importance of movement and expression (referring to Garrick); cf. Wilbur L. Cross, The Life and Times of Tristram Shandy, New York, 1929, 247-48, and Lansing van der Heyden Hammond, Laurence Sterne's Sermons of Mr. Yorrick, New Haven, 1948, 98-99. Sterne also spoke of the need to proceed in oratory 'more from the heart than from the head' (Tristram Shandy, IV, xxvi; and his preface to The Sermons of Mr Yorrick (1760-69), ed. Marjorie David, Cheadle, 1973, 30-31).
44. Jonathan Swift, The Prose Works (ed. Herbert David), 14 vols, Oxford, 1939-59, IX, 210-18.
45. See A Letter to a Young Clergyman (1721) in Prose Works, IX, 63-81. Swift does however find comfort in the fact that 'I have lived to see Greek and Latin almost entirely driven out of the Pulpit.' (ibid., 75)
46. Quoted in Burgh, Art of Speaking, 216. The poem apparently derives from James Fordyce, The Art of Preaching (1755); on this see Frederick W. Haberman, 'English Sources of American Elocution', in Wallace (ed), History of Speech Education, 105-26, 123.
47. In Lorenz Kjerbuhl-Petersen, The Psychology of Acting, Boston, 1935, 117f.
48. British Education, 525.
49. Art of Speaking, 218.
50. A Course of Lectures on Elocution, xiii. For similar sentiments, see John Lettice, Suggestions on Clerical Elocution, 1822, 7-15.

51. John Wesley, Directions Concerning Pronunciation and Gesture, 1793.
52. British Education, 105. See also 'The Art of Reading', Critical Review, XXXIX, 1775, 231-35, 290-96, and Critical Review, XL, 1775, 37-45. Also Blair, Lectures on Rhetoric, II, 6, 43-44, 101-05, and 121-24.
53. This is not a theme I shall be following up, though it is without doubt an important one in itself; apart from Wesley's tract, other works included Anselm Bayly, The Alliance of Musick, Poetry, and Oratory, 1789, and J.W. Anderson's The Common Prayer, as read by the Late Mr. Garrick, 1797- both interesting as attempts to bridge the gaps between acting and speaking.
54. See Swift's Proposal for Correcting, Improving, and Ascertaining the English Language (1712) in Prose Works, IV, 9-10; Boswell, Life, III, 194; Lawson, Lectures concerning Oratory, 79; and Thomas Sheridan's preface to A General Dictionary of the English Language, 2 vols, 1780, for various views of the 'Golden Age' of English. The debate has persisted, witness Cyril Connolly, Enemies of Promise, Harmondsworth, 1979, 23, and the rival claim of Havelock Ellis, The Dance of Life, 1916, 136ff.
55. James Harris, Hermes: or, a Philosophical Inquiry concerning Language and Universal Grammar, 1751, 408; see also Gentleman's Magazine, XXIV, 1754, 551-55. Hermes was published anonymously.
56. A certain 'H.D.' seems to have been the first to have mooted the proposal, in 1660 (see Edward Freeman, 'A Proposal for an English Language Academy', Modern Language Review, XIX, 1924, 291-300). Dryden made a similar suggestion in his dedication to The Rival Ladies (1664), in Works, VIII, 98. Some thirty years later, Daniel Defoe raised the subject again in his anonymous An

Essay Upon Projects, 1697, 227ff. The most effective demand came from Swift's Proposal (see Prose Works, IV, 3-21) and contemporaneously in Spectator 135, 4 August 1711, Spectator, I, 407-09. Swift's pamphlet was severely attacked by John Oldmixon who judged the idea of an Academy to be authoritarian and probably a plot by the Tory Dean (see his Reflections on Dr. Swift's Letter to the Earl of Oxford, about the English Tongue (1712), Los Angeles, 1948). For early background to debates about an Academy, see Albert C. Baugh, A History of the English Language, 1959, 317-26; and a recent study by Peter Rickard which suggests that the stereotypical image of the French Academy's role bears no relationship to what was French idiom and usage (The Embarrassments of Irregularity: the French Language in the Eighteenth Century, Cambridge, 1981).

57. See British Education, 368 where Johnson's views are quoted.
58. See Samuel Johnson, The Plan of a Dictionary of the English Language (1747), Menston, 1970, esp. 4 and 11. Of language, Johnson declares 'All change is of itself an evil' (ibid., 10). The claim to authoritativeness was quickly challenged by Walker, Sheridan and others, but never more fiercely than by Herbert Croft who planned to supplant Johnson's with his own massive 4-volume dictionary (which never saw the light of day). See the violent attack in Croft's, An Unfinished Letter to the Right Honourable William Pitt, 1788, esp. 9, and 17. Two useful studies are James Sledd and Gwin J. Kolb, Dr Johnson's Dictionary: Essays in the Biography of a Book, Chicago, 1955; and Scott Elledge, 'The Naked Science of Language, 1747-1786', in Anderson and Shea (eds), Studies in Criticism, 266-95.
59. Quoted in Johnson, Johnson's Dictionary: a Modern Selection (eds. E.L. McAdam, Jr., and George Milne),

1963, 4. Johnson retained this passage in the much-altered preface to the 4th edition of his Dictionary (on this, see James T. Boulton (ed), Johnson. The Critical Heritage, 1971, 105).

60. See for examples: 'Some Account of a Dictionary of the English Language', Gentleman's Magazine, XXV, 1755, 147-51; and comments in Monthly Review, XII, 1755, 292-324, and the Edinburgh Review, I, 1755, 61-73, all of which contain long extracts from the preface. The Westminster Magazine ran a long diatribe against the profusion of dictionaries in X, 1782, 324-35, a profusion which was taken to indicate that language could never be fixed (on this see also Gentleman's Magazine, LVII, 1787, 482-83). A useful selection of criticism is Stanley Rypins, 'Johnson's Dictionary received by his Contemporaries', Philological Quarterly, IV, 1925, 281-86.
61. British Education, 376.
62. Thomas Sheridan, A Dissertation on the Causes of the Difficulties, which occur, in Learning the English Tongue, 1761, esp. 29-30. Also reviews in Critical Review, XIII, 1762, 160-1; Monthly Review, XXVII, 1762, 69-70; and remarks on correct pronunciation in Gentleman's Magazine, LVII, 1787, 210-11,
63. For good secondary studies, see: Warren Guthrie, 'The Development of Rhetorical Theory in America' (Speech Monographs, XVIII, 1951, 21-43); Charles A. Fritz, 'From Sheridan to Rush: the Beginnings of English Elocution' (Quarterly Journal of Speech, XVI, 1930, 75-88); and Frederick Haberman, 'English Sources', 105-26. If this claim is correct, it would appear that John Mason with his An Essay on Elocution, or, Pronunciation (1748) which lays such great stress on the spoken word as the tool of reform gave birth to the elocutionary movement. Wilbur Samuel Howell in many

publications has argued that we need to look elsewhere for the movement's roots, particularly to the complex development in Ciceronian, Neo-Ciceronian and Ramist rhetoric in the sixteenth and seventeenth centuries (see his 'Sources of the Elocutionary Movement in England 1700-1748', Quarterly Journal of Speech, XLV, 1959, 1-18; 'English Backgrounds of Rhetoric' in Wallace (ed), History of Speech Education, 1-47; and Logic and Rhetoric in England, 1500-1700, Princeton, 1956). But Howell's thesis seems to have only a marginal bearing on the constitution of a movement based predominantly, if not solely, on the spoken word, on a movement which placed great weight on the distinction between reading and speaking. Looking back for the earliest work solely devoted to pronunciation, one can probably go no further than Robert Robinson's The Art of Pronunciation (1617), Menston, 1969, and Sandford (English Theories, 113, 170, 195, and 209) and Guthrie ('Development of Rhetorical Theory', 18) do indeed make large claims for this text. The problem then is that Robinson's work has nothing to do with oratory, or with the elocutionary movement to be. It is a work of phonetics not pronunciation: the search for precursors in this case, as in so many others, rides roughshod over important conceptual distinctions. A more adequate account of Robinson's place may be had from H.G. Fielder, A Contemporary of Shakespeare on Phonetics, 1963. G.A. Padley, Grammatical Theory in Western Europe 1500-1700, Cambridge, 1976, chapter 3, is also suggestive. See also the comments of Howell in his 'Sources', p. 2.

Excellent on fixing language is Murray Cohen's recent study, Sensible Words: Linguistic Practice in England 1640-1785, Baltimore, 1977 (for its data), but Sterling Leonard's interpretations remain for the most part valid (The Doctrine of Correctness in English Usage, 1700-1800, Madison, 1929). Lastly, Reading S. Sugg, Jr., 'The Mood of Eighteenth-Century English Grammar' (Philological Quarterly, XLIII, 1964, 239-52) is useful.

64. That is, merely an accent over the stressed part of a word, without indicating the pronunciation of consonants, the quality of vowels, and without providing the phonetic re-spelling of words.
65. Others who relied on Bailey's primitive system were James Barclay in his Complete Universal English Dictionary (1774), John Ash in his New and Complete Dictionary of the English Language (1795 edition), and John Entick in his New Speaking Dictionary of the English Language (1783 edition). I thank Professor Alston for his guidance on this point.
66. The Monthly Review in a review of James Buchanan's An Essay towards establishing a Standard for an Elegant and Uniform Pronunciation of the English Language (1762: it failed), still bemoaned the absence of any agreed mode of facilitating pronunciation by spelling signs (XXXII, 1762, 492-93). It had earlier attacked John Yeoman's efforts to reform the alphabet in his The Abecedarian, or Philosophic Comment upon the English Language (1759) (ibid., XXI, 1759, 177-79). For a good technical overview of the debates on theories of accentuation and pronunciation see Esther K. Sheldon, 'Pronunciation Systems in Eighteenth-Century Dictionaries' (Language, XXII, 1946, 27-41). Also useful are the remarks in W. Benzie, The Dublin Orator, Leeds, 1972, 97-113.
67. See British Education, 370-71; Dissertation, 36; and Sheridan's remarks in the preface of his Elements of English (1786), Menston, 1968; and Course of Lectures, 124. Sheridan's programme was no more successful than Johnson's. Thomas Walker published A Critical Pronouncing Dictionary in 1791 and this, though acknowledging Sheridan's labours, judged his work as a whole to be frequently defective (see, e.g., iv). The anonymous A Vocabulary of Such Words in the English Language as are of Dubious or Unsettled Pronunciation, 1797, though

preferring Sheridan to Walker, also disagreed with the former (see, e.g. p. iii). James Adams's The Pronunciation of the English Language (1799), Menston, 1968, is sometimes ambivalent (pp. 3-5), but suggests that Sheridan's Dictionary is not particularly noteworthy (see, for example, 163-64).

68. Quoted in Webster, Dissertations, 397; see Monthly Review, XXIII, 1797, 356, and Critical Review, XXI, 1797, 175-77.
69. Course of Lectures, 185-86.
70. ibid., 186.
71. ibid., viiiiff. On the importance of Locke, see Howell, 'Sources', 3; Edney, 'English Sources', 82, 88, 95; Benzie, Dublin Orator, 9-10.
72. British Education, 229. See Blair, Lectures on Rhetoric, I, 103.
73. British Education, 247.
74. Conversation of 1772, in Boswell, Life, II, 161.
75. One can make a fairly good guess at what Sheridan's answer to Johnson would have been. He would have said that he received instruction from his father Dr Thomas Sheridan who had been trained in the old school in the reign of Queen Anne at a time when language had been at its peak of elegance and uniformity. His father had retained a great reputation as a formidable educator (see, for example, Swift's Character of Doctor Sheridan (1738), Prose Works, V, 216-18) and Sheridan could further boast that he had often read to, and been taught by, Jonathan Swift himself; he often claimed his right to speak with authority about elocution and language because of this (see,



for example, Thomas Sheridan, The Life of the Reverend Jonathan Swift, 1784, 386).

76. British Education, 85; Dissertation, 3.
77. See, for examples, Sayer Rudd, ΠΡΟΔΡΟΜΟΣ; or Observations on the English Language (reviewed in Monthly Review, XIII, 1755, 302-03). Books printed in phonetic or semi-phonetic spelling appeared quite frequently, from William Bullokar's Æsop's fablz tru orthography with Grammar no'ts (1585) to Thomas Spence's delightful A s'upl'im'īnt too thī hīstīre ōv Rōbīnsīn Kruzo, 1782 (printed in Nuk'as'īl-Newcastle). On this see the references in note 63 above, and Barrell, English Literature, 170-71.
78. British Education, 445-46.
79. Review of Sheridan's A Course of Lectures, Critical Review, XIV, 1762, 161-70, 161. Hume also complained to Boswell that 'Mr. Sheridan's Lectures are vastly too enthusiastic. He is to do everything by Oratory.' (in Ernest Campbell Mossner, The Life of David Hume, 1954, 373).
80. Review of Sheridan's A Course of Lectures, Monthly Review, XXVII, 1762, 201-08, 281-92, 206. See also Monthly Review, XXI, 1759, 167; Gentleman's Review, XXXIX, 1769, 306; Monthly Review, LII, 1775, 399-406, esp. 400; Critical Review, XL, 1775, 37-45; Monthly Review, XXVII, 1762, 69-70, in which other texts by Sheridan are reviewed and in which his extravagant claims are protested. Occasionally, other elocutionists were lambasted for similar exaggerations. John Herries's Elements of Speech was ridiculed by the Monthly Review for thinking a hero could be made from a mere man simply by improving his oratory; see XLIX, 1773, 273-80, also Critical Review, XXXVIII, 1773, 453-60, 454 for similar comments.

81. John Mason, Essay on Elocution, 5f.
82. Herries, Elements of Speech, 155, 252.
83. See Herries, Elements, 154; Lawson, Lectures concerning Oratory, 165; Sheridan, Course of Lectures, 5, 121.
84. These are also issues considered in Book One of Aristotle's Rhetoric, where they are treated in terms of the particular roles of the speaker, the person spoken to, and the subject spoken about. Aristotle's work, however, I was surprised to find little discussed or even referred to in writings by members of the new elocutionary movement. There is a treatment in Lawson's Lectures, but this remains at a very general level; the only specific discussion I could find was in amongst James Burnet (Lord Monboddo), Of the Origin and Progress of Language, 6 vols, 1773-92 (see VI, 73-88), where the treatment is historical. On this see Howell, Logic and Rhetoric, 318ff.
85. J. Walker, Elements of Elocution, 2 vols, 1781. On its popularity, see Robb, Oral Interpretations, 87 and passim; and James A. Winans, 'Whateley on Elocution', Quarterly Journal of Speech, XXXI, 1945, 1-8, 3. Walker's Academic Speaker (1789) greatly contributed to his reputation, particularly in schools.
86. Elements of Elocution, II, 264f. See also Burgh, Art of Speaking, 1-21, and Walker's last elocutionist work, The Melody of Speaking (1787), Menston, 1970, which advances the notion of the circumflex, a form of inflexion he claims to have discovered (1-vi).
87. Elements of Elocution, II, 267.
88. Lawson, Lectures, 114; see also 'The Art of Speaking', Critical Review, XIII, 1762, 169-70, 170. This approach stands in marked contrast to that deriving from Aristotle's

division of the audience into men in general and men in particular which is supported in, amongst other works, Campbell's Philosophy of Rhetoric, 100-24.

89. Joseph Priestley, A Course of Lectures on Oratory and Criticism, 1777, 55-59. Priestley's analytic approach to language and elocution had been laid out earlier in his The Rudiments of English Grammar (1761), and A Course of Lectures on the Theory of Language, and Universal Grammar (1762). The Course of Lectures on Oratory was composed in the years following Priestley's appointment as a lecturer in languages and belles lettres at Warrington Academy in 1761; they had little impact when published. I have spoken of a 'tendency' in Priestley's work because I recognize that it is far more complex than I acknowledge. It is based on the theory of the association of ideas and his four aids to rhetoric (method, style, elocution, remembrance) are fashioned along associational lines. Furthermore, the generality of grammar is somewhat counterbalanced by the description necessary for an associationist psychology: association begins with concrete facts, so does description. The best treatment I have come across of Priestley's work in this field is unpublished; Gerard Alan Hauser, Description in Eighteenth Century Rhetorical and Aesthetic Theories, PhD, University of Wisconsin, 1970, esp. 180-219. Lastly, some commentators have I think assumed that since Priestley was a 'radical' and taught in a dissenting academy, he must have defended the 'authority' of custom in language- this assumption probably had its origin in H. McLachlan, English Education under the Test Acts, Manchester, 1931; it owes nothing to a reading of the relevant texts.

90. Rambler 60, 13 October 1750, Rambler, III, 320. It might be suggested that a strong emphasis on vocal discrimination which the elocutionists figure will exist in any general audience will not be matched by

any similar powers of visual discrimination. The elocutionists go to great lengths to study voices, tones, and different modifications of sound- Burnet in his work differentiates talking, speaking, prating, prattling, ranting and other forms of 'speaking' (Origin and Progress of Language , VI, 228ff.)- but seldom refer to similar differentiations of the eye. They are, in short, very close to Hogarth and Fielding on this point.

91. These will be grammatically-based, for grammar stands to language as the general does to the particular, the unity to the diverse, order to modifications. On this, see Harris, Hermes, 250. Harris's work has received considerable (and possibly disproportionate) attention, being seen particularly as a 'reply' to Locke's dictum that innate ideas form the basis of language (see Locke, Essay, in Philosophical Works, II, 21-30, i.e. Bk. III, chap. iv). For debate as to the place of this work, see René Wellek, The Rise of English Literary History, Chapel Hill, 1941, 85-86; Otto Finke, Englische Sprachphilosophie in späteren 18. Jahrhundert, Bern, 1934, 8-18; Bredvold, 'Tendency Towards Platonism', 107; Gordon McKenzie, Critical Responsiveness: A Study of the Psychological Current in Late Eighteenth-Century Criticism, Berkeley, 1949, 56. Johnson, incidentally, found Harris a 'sound sullen scholar' (Boswell, Life, III, 245); George Saintsbury's view was that 'no one shows that curious eighteenth-century confusion of mind... better than Harris.' (A History of English Criticism, Edinburgh, 1930, 209).
92. See especially Walker's Elements of Elocution which is dedicated to Johnson.
93. Critics of the elocutionist movement made merry in attacking the champions of plain speaking and clear writing who manifestly could do neither in practice.

A volume by J. Jones (which I have not examined) was found to have grammatical errors in the first paragraph and was savagely excoriated for this reason (see reviews of Remarks on the English Language, with Rules for Speech and Action, Birmingham, 1775, in Monthly Review, LII, 1775, 74; and Critical Review, XXXIX, 1775, 168). The same author also bequeathed to posterity another gem which I have never seen, found reviewed, or commented upon (did it ever exist?)- Practical Phonography: or, the New Art of Rightly Speling and Writing Words (sic), 1701!

94. Lectures Concerning Oratory, 82. The author argues against teaching Latin and Greek in schools saying this would tend to sap the steely strength of English (ibid., 106-07).
95. ibid., 114.
96. Monthly Review, XXI, 1759, 167. A similar point is made in Burnet, Origin and Progress of Language, VI, 10-11, and also by Blair, Lectures on Rhetoric, II, 4-5 (Blair tackles the problem in classical terms).
97. A Course of Lectures, 121.
98. See Sheridan, Course of Lectures, 116; William Cockin's anonymous The Art of delivering Written Language; or, an Essay on Reading, 1775, vi; Thomas Hodson, The Accomplished Tutor; or, Complete System of Liberal Education, 2 vols, 1800, I, 63; John Rice, An Introduction to the Art of Reading with Energy and Propriety, 1765, 200-01. Sheridan had originally hoped to open a school for training young actors, hoping that 'the Theatre would become an admirable Assistant to the School of Oratory, by furnishing the young Students constant good Morals and Examples in all different Species of

Eloquence', but he quickly relinquished the idea for reasons which are unclear (see on this Thomas Sheridan, An Oration pronounced before a numerous Body of the Nobility and Gentry... on the Subject of a New Scheme of Education, Dublin, 1757, 23-24; Sheldon, Thomas Sheridan, 215f.)

99. Cockin, Art of Delivering, 8. See also Sheridan, British Education, 440-45, Blair is unusual in providing specific instructions for eloquence at the Bar where the business is not to persuade but to demonstrate the just and the true (see Lectures on Rhetoric, II, 74-100, 174).
100. See Sheridan, Course of Lectures, xf.
101. See Harris, Hermes, 398; Burnet, On the Origin and Progress of Language, VI, 18.
102. Cockin, Art of Delivering, 42 and passim.
103. See ibid., 117; and Sheridan, Course of Lectures, 54.
104. Rice, Introduction to Art of Reading, 7-8, also 290-305.
105. Mason, Essay on Elocution, 28; see also 32, and Sheridan, Course of Lectures, 5.
106. Sheridan, Course of Lectures, 124. See Winans, 'Whately on Elocution', 5; W.M. Parrish, 'The Concept of "Naturalness"', Quarterly Journal of Speech, XXXVII, 1951, 448-54, esp. 448.
107. Course of Lectures, 123.
108. ibid., 58.
109. See on this Monthly Review, XXXII, 1765, 445-56, 445.

110. See Rice, Introduction to Art of Reading, 9.
111. Critical Review, XIX, 1765, 256-61.
112. See Winans, 'Whately on Elocution', 2-3; Benzie, Dublin Orator, 44; Frederick W. Haberman, The Elocutionary Movement in England, 1750-1850, PhD, Cornell Univ., 1947, 50f.
113. Herries's position seems to be that rules should be used to curb natural expression and direct this through proper channels, that natural sentiments should be used as the alphabet of the language of elocution. 'The WHIRLWIND of passion', he writes, 'must still be allowed to rage, but Judgement, all serene and watchful, should sit at the helm, conduct the blast, and prevent it from rising to an excess' (Elements of Speech, 154; also 167). The Monthly Review noted that for Herries, 'nature must be the leading agent', yet art have the final say (XLIX, 1773, 273-80, 280).
114. See Cockin, Art of Delivering, 1-5, 112; Herries, Elements of Speech, 168-203; Priestley, Course of Lectures on Oratory, 313; Rice, Introduction to Art of Reading; Lawson, Lectures Concerning Oratory, 173f.
115. Sheridan, Course of Lectures, x, 113.
116. Priestley, Course of Lectures on Oratory and Criticism, 77.
117. See Enfield, The Speaker, and Walker, Elements of Elocution, II, 260f., two of the most 'artificial' of elocutionary texts which nevertheless accept the naturalness of gestural language.
118. Walker, Elements of Elocution, II, 260; Sheridan, Course of Lectures, 123; Burnet, Of the Origin and Progress of Language, VI, 206, 240-41; IV, 280.

119. See Monthly Review, LII, 1775, 296-300, esp. 297; Idler 90, 5 January 1760, Idler and Adventurer, 278-79; Hume, 'Of Eloquence', Essays and Treatises, I, 91-103.
120. This was a well-known fact at a time of frequent travel abroad, though it seems to have been demonstrated only in the nineteenth century by Max Müller, e.g. in his Lectures on the Science of Language, 1861, 52, 278; and idem, Chips from a German Workshop, 4 vols, 1867-80, IV, 70. See comments in Frank Harris's autobiography, My Life and Loves, 1967, 294f.
121. Webster, Dissertations, 67.
122. Course of Lectures, 166. See also Idler 90, 5 January 1760, Idler and Adventurer, 280; Burnet, Origin and Progress of Language, VI, 245n.
123. Course of Lectures, 118.
124. See Walker, Elements of Elocution, II, 263.
125. ibid., II, 281-82; see 292-413 for the list of passions.
126. See remarks in Critical Review, XIII, 1762, 169-76 for criticisms of Burgh's efforts at naming the passions.
127. The Speaker, 67. See also the Monthly Review, LII, 1775, 198.
128. Lectures Concerning Oratory, 156.
129. e.g. Walker, Elements of Elocution, II, 278-79.
130. ibid., II, 269-70, 263.
131. See Campbell, Philosophy of Rhetoric, 198; Whately, Elements of Rhetoric, 253.



132. See Cockin, Art of Delivering, 10-11, 93.
133. ibid., 92. (the printed text reads 'himself as far', but has been corrected in the author's hand to 'so'). See also ibid., 97, 141, and Critical Review, XXXIX, 1775, 469-70.
134. See Cockin, Art of Delivering, 145-46; also Blair, Lectures on Rhetoric, II, 42 where forms of poetry are further subdivided.
135. Cockin, Art of Delivering, 95, see 115-17.
136. See ibid., 125.
137. Rice, Introduction to Art of Reading, 253 (mispaginated to read '353'); also Whately, Elements of Rhetoric, 254.
138. See Sheridan, Course of Lectures, 10, 114.
139. Quoted in Winans, 'Whately on Elöcution', 3. This is generally the extent of the actions recommended by both authors. In the case of Walker, although he advises the least possible movement, he relents (as in the case here cited) when the 'words are few'.
140. See, for examples, Blair, Lectures on Rhetoric, II, 222f.; Whately, Elements of Rhetoric, 229-31; Ward, System of Oratory, I, 314-16, 364; and Campbell, Philosophy of Rhetoric, 144f.
141. See Sheridan, Course of Lectures, 129-30, 119, also see 182; also Blair, Lectures on Rhetoric, II, 221-22, 224.
142. Sheridan, Course of Lectures, 120.
143. See Monthly Review, LII, 1755, 296-300.

PART ONE: A BRIEF RETROSPECT

The three chapters that make up the first part of this thesis have not been intended as a general, even a partial general, reconstruction of attitudes to the body and character in the eighteenth century. For one thing, of course, our chronological focus has been narrower. More importantly though, each of the chapters has set out with a roughly similar 'problem', namely whether one may judge the external features of the body to reveal aspects of the mind within, and has then tried to rephrase that problem in the terms set by the considered discourse itself. However, it should be said that even to phrase my concern in this manner would seem to assume that the mind and body somehow or other pre-exist conceptualisation by various discourses and, moreover, that they do so in such a way as to offer themselves to these discourses in a form which is roughly similar at the outset. The drawbacks of this kind of approach will be considered fully in chapter eight, but I would like to stress that my objective has been to examine the manners in which the 'body' and the 'mind' were actually constructed by the discourses (and their attendant practices) I have ranged under the headings of art and aesthetics, criticism and the novel, acting and the theatre, and elocution and public speaking.

One further brief note on method. If one may accept what has just been said, then it would seem to follow that each of the chapters should be conceived as a case-study or case-history. This admitted, the question of evidence is no longer governed, as it would be in a general history, by the search for exhaustiveness. In other words,

had I been seeking to paint a broad and general picture, it would have been appropriate to ask whether there exist other sources of evidence which would force me to change my narrative, modify my claims, or ditch my conclusions. I would suggest that with a case-history such questions carry little force; my selection, presentation, and use of evidence has been governed by the criterion of intelligibility rather than that of exhaustiveness.

A case-history may never adequately instantiate a general proposition and may always fail to recover a segment of the past. Still, it is well-suited to reconstituting in some detail the conditions of existence and the conditions of emergence of a discourse or series of problems. That the discourses which I have focussed on share many approaches to the problem of physiognomy and pathognomy derives in some measure from their chronological overlap during the period from roughly 1750 to 1780 (though a careful attention to shifts through time has shown that by the mid-1770s various theoretical assumptions shared by each of the discourses was abandoned or substantially modified).

In chapter one, I showed that from the 1730s to the 1770s, the problem of physiognomy and pathognomy was governed in large part by the rule of generality. Having established this to their own satisfaction, critics and artists argued that the human body had to be depicted in the most uniform, common, general, and rule-governed ways. Either the individualistic aspects of man's character were denied a place on the canvas or in the critical essay or, if the painter or critic was unable to elevate nature from the specific to the general, only the simple passions and emotions could be described. A very powerful form of perceptual re-adjustment which I

have referred to as visual discrimination began by moulding what the artist-critic depicted but gradually shaped what the artist-critic actually saw (though in some cases, Johnson for example, uniformitarianism was guaranteed less on a perceptual plane and more on the basis of man's essentially undifferentiated and unchanging reason).

Some critics have dated opposition to this visual discrimination from 1771, from the wide success of West's Death of Wolfe. Reynolds had previously sought to train the novice painter and critic to select from the variety of appearance of his subject a unique and general form; after 1771, so the story goes, Reynolds retracted. The evidence for this is scanty and hardly accounts for the fact that Reynolds's Discourses were given from 1769 to 1790. Rather than follow this path, I have looked carefully, seriously, and I believe for the first time, at the views of Hogarth (as artist and critic) and Fielding (as novelist and critic) on physiognomy and pathognomy. This has allowed me to test the importance of the rule of generality and to delve more deeply into the nature of perceptual discrimination.

The assumption one might naturally have held would be that just as the uniformitarianism of Reynolds, of Burke, and of Richardson enforced a rejection of physiognomy and pathognomy- or at least, made both subjects deeply problematic- so too, a particularism would suggest the possibilities, the potential, and even the basis for physiognomy and pathognomy. I have shown however that although Hogarth and Fielding carefully and deliberately considered both these subjects they concluded by rejecting each as ill-founded, as incoherent, and as unusable. A number of the reasons which Hogarth

and Fielding give for their rejection are considered in greater depth in chapters two (mainly) and three. I show that though Hogarth and Fielding attempt to portray passions, emotions and complex characters in their work they do so by means other than physiognomy and pathognomy. The fact that Fielding uses behaviour and speech as means to portray his characters compels me to examine these two forms of communication and representation more carefully, and this I have done by looking at theories of acting and theories of speaking from the 1740s onwards. My claims in chapter three are clear enough not to need more than a short summary which I shall give presently. For the moment, I should stress the role of the figure of the actor-hypocrite in the rejection by Fielding and Hogarth of physiognomy and pathognomy.

It is this figure which prevents the possibility of reading the body accurately and consistently for clues as to the character within. It is the preponderance of this figure throughout society which ensures the unusability of physiognomy and pathognomy. But it is the development of a means of visual perception which will, Hogarth and Fielding maintain, finally see through the affectations and deceits of the actor-hypocrite. This figure is too powerful, too prevalent and too cunning; the need to be able to undercut him is pressing, but in mid-century there are no means available to so do. If Reynolds's was a perceptual guarantee for the actor-hypocrite, Hogarth and Fielding suggested that a new kind of visual discrimination would write-off that guarantee. This new type of seeing would pick out difference rather than transcend it- this would make physiognomy and pathognomy possible. Moreover, this new type of seeing would not require the lengthy period of apprenticeship demanded by Reynolds- this would make physiognomy and pathognomy practical.

The hypocrite-actor is a figure which assumes its importance in part because of the other forces upholding the theatrum mundi imagery during the period. In a whole number of ways, as I have shown, this imagery conjoins street and stage, and does so to such a degree that even protest against it often took on theatrical forms.

I end my discussion of the actor, styles of acting, and developments in the 1770s, when the modern distinction between stage and street was first articulated clearly by Diderot. That distinction allowed the theatre to develop its own independent means of representation, to become, if I might use a word now full of connotations, 'theatrical'. It would be wrong however to think that the theatrum mundi imagery entailed that the world as theatre was a 'theatrical' world in this sense. Rather it was theatrical in the mid-eighteenth century sense. What this means precisely and what understanding there existed of the actor's role and techniques are issues tackled in chapter two before I move on to examine whether or not actors themselves had any clear, consistent and coherent means of portraying character and reading bodies on stage. If they had, then it would be necessary to follow the actor further in his role as street or parlour hypocrite (or indeed as pollitricker) and see whether he retained his stage presence and techniques there. But in fact, I show that almost without exception there did not exist any well-defined, agreed-upon rules for acting or rules governing the expression of passions and character by the body. Debates about such rules there were in plenty and I have looked at these briefly but, I believe, in more depth than has been done before. Such rules only develop once the stage has been severed from the street, once, that is, the processes we

have examined such as the increased 'naturalism' on stage, the separation of actor and spectator, and the development of theories of sympathetic imagination on stage, reach fruition. Until this occurs, the perceptual confusion outside the theatres reigns also within them. Passions can either be portrayed completely idiosyncratically or not at all, or merely a small number of passions can be exhibited by corporal gestures and expressions. As in Fielding's novels, so on the stage, it is finally the word- as substitute action and as an alternative to appearance- which triumphs as a means of representation.

Finally, let me explain briefly the role of chapter three. Most obviously it is a study of the nature of the 'word' referred to above as central to representation. Just as my use of the notion of acting required that I study theories of acting, so too my references to speech have required me to look at the variety of theories of speaking. Having established that the price paid for articulating a coherent theory of acting was a restricted notion of the actor's place, in chapter three I examine the consequences of the attempted developments of a coherent theory of speaking. Put simply: the price paid for this is a separation between the content of a discourse and its form, between the matter and the manner of speaking. This separation founds the elocutionary movement in the 1760s, but the movement exists as a movement only because it has a common objective. The means to improve public speaking are the subject of fierce and partisan debate, such that what we have said of the huge rise of a concern with acting may be applied to the enormously energetic movement of elocutionists: it did not produce a coherent, systematic, practical, and reliable body of doctrines which one might term

physiognomy or pathognomy.

\* \* \* \* \*

Having reached this negative conclusion and showed an absence of any coherent solutions to an ever-present problem, we are faced with a difficulty which was mentioned in the introduction to this thesis. How is one to draw links between the period under consideration (1740-1780) and the period during which I shall show in part three of this thesis there was developed just such a series of coherent solutions? In my introduction I suggested that physiognomy and pathognomy spread in Britain from the late 1820s and particularly through the 1830s. This is something I shall demonstrate in part three. This suggests a period of some 40 or 50 years during which it would seem that the rejection of physiognomy and pathognomy was accepted, or at least little questioned. Why was it then that these subjects which had been so widely treated in the eighteenth century were returned to again? The most obvious answer- and a true, if partial one- is that figures like Lavater rekindled the debates and proposed a new basis for physiognomy and pathognomy. A more complete answer may be seen to fall into three parts:

1. Lavater produced a new system for physiognomy and pathognomy. This was new in many senses but more importantly perhaps in bypassing or subverting the basis upon which physiognomy and pathognomy had been considered previously. This made physiognomy possible as a theory and coherent as a system. Chapter eight attempts to discover where this coherence lay and how Lavater responded to the negative conclusions of those who rejected his subject in the mid-eighteenth century.

2. Coupled to this possibility there developed from the late 1820s a widespread practice of physiognomy, or rather, as I show in chapters



nine and ten, a widespread practice of phrenological physiognomy.

3. It has to be said that I still need to account for the fact that the character of the discourses treated in part three enabled them to claim success where physiognomy and pathognomy had previously been able to admit only failure. This account is by no means simple and this is why I return to it repeatedly in part three. Nevertheless, my general claim is that physiognomy and phrenology succeeded because they were developed as Baconian sciences at a time when Baconianism provided an enormously powerful and popular model for discourses of their kinds.

Hogarth and Fielding had prophesized a 'new art of seeing' which would enable men to see through deceit and affectation and by seeing through these masks establish the basis for physiognomy and pathognomy. But in fact when the basis for these discourses was provided it came not as an art but as a science. Physiognomy and phrenology were developed in Britain and there achieved great popularity and power as sciences. And as sciences they shared, relied upon, and in turn contributed to the image of sciences in the period from the 1820s to 1840. This means that the old issues of the general versus the particular, of natural versus artificial acting, of rules for speaking rather than sympathetic performance, were dislodged and replaced. The conditions of emergence and possibility of physiognomy and pathognomy changed decisively, and never more so than in the fact that they shifted from the terrain of art and aesthetics, acting and the theatre, and elocution and audience, to the terrain of science, scientists and scientific culture.

This said, it would be comparatively easy to launch immediately into a treatment of physiognomy and phrenology as sciences rather than arts.

But to do so would be to ignore the fact 'science' was no more a single and unified category or method in the early 1800s than was 'art' (or 'criticism' or 'aesthetics') in the mid to late 1700s. Having treated debates within 'art' so carefully and conscientiously, it would be absurd not to do likewise for debates within 'science'. This indeed is the purpose of part two of this thesis. It represents, one might say, a recognition that just as 'art' set the general standards of debate about physiognomy and pathognomy in the eighteenth century, so too 'science' performed a similar function in the 1800s. What governed the acceptance or rejection, and indeed the character itself, of say physiognomy was not whether it fulfilled the ruling aesthetic requirements but whether it abided by the methods of science. Similarly physiognomy no longer turned to the stage, the novel, or the podium for possible solutions to the problems posed by those aesthetic requirements but turned now to the audience and the public which upheld those methods of science.

With this in mind we may turn to our study of scientific culture in the early nineteenth century. A brief conclusion to part two will set out the results of this study and argue once again for the necessity of this portion of the thesis.

PART TWO: SCIENCE- COMMUNITY AND CULTURE

The following section of this work is designed to examine with a wide focus and in some detail the development of scientific culture in England in the first three or four decades of the nineteenth century. I begin by charting the rise and influence of the British Association for the Advancement of Science, an organization which seemed to epitomize the optimism, dynamism and consensus which is often associated with the 'era of reforms'. It attempted to harness two different and perhaps conflicting traditions: the wealth, enthusiasm and dissent of the provinces, and the prestige, expertise and Anglican moderation of the metropolis and ancient universities. The background which I shall seek to offer in accounting for the growth of the British Association (BAAS) is a complex one, but it may be sketchily presented as being made up of three elements.

Firstly and perhaps most powerfully, one needs to remember that the BAAS was born and spread in the decade of reforms. What this meant, and how this affected the aims of its founders and membership are issues we shall tackle shortly. Secondly, the BAAS developed in response to what was perceived to be a general state of decline in English science. Typical of this state of affairs was the degeneration of the Royal Society from its pre-eminence in the era of Newton and Boyle. Thirdly (and relatedly), this decline was perceived by red-blooded Englishmen in the early nineteenth century to be all the more disastrous

as continental science, particularly French science, was witnessing a period of massive success. The distinctions between 'French science' and 'English science' are not easy to draw in a way which carries conviction and which accounts for the diversity within each. Nonetheless, during the period under examination the differences were more marked than ever before and ever since. What impact this had on the role of the 'scientist' in both countries is an issue we shall attempt to address in this part of our work since we shall need to account for it once we examine the history of phrenology later.

Recent work on the BAAS has probed the conflicts within the organization between the provinces and the metropolis, between amateur and professional, between dissenter and Anglican. I shall pursue a different, but I hope complementary path. As explained in the general introduction, one key to accounting for disputes about access to power is to understand these as related to those about access to knowledge. Power/knowledge, indeed, forms a couple: who knows what is never disassociated from what is known, and this in turn is never isolated from the issue of how knowledge is produced. I hope to show that pre-given categories, such as those of 'professional' and 'amateur' are ill-suited to dealing with the range of issues and conflicts we shall meet. Epistemological demarcations in fact go far in constituting audiences for 'science' and 'pseudo-science'. What I shall be concerned with is not 'method' as narrowly conceived by philosophers of

science as a technical problem but instead all the factors that go into making up an explanation. The distinction may not at first be clear, so I shall briefly turn to account for my general approach in a little more detail.

In the not-too-distant past the history of science was universally and militantly defended as a progressive one. Even once scholars turned to accounting for the philosophical, religious and mystical side-steps of our ancestors, these have often been viewed as the result of inconsistencies within otherwise accredited scientific theories. The aim has, it would seem, been to excuse these by the 'spirit' or backwardness of the age, by referring to 'non-scientific' interference or by invoking the idea of man's innate hostility to innovation. Science is the heartless pursuit of objective knowledge which can be relied upon to furnish a principal criterion for the classification of the subjective and circular disciplines we range under the heading of 'arts'. Science provides a stable framework for the study of the growth of reason. The history of science is consequently different from other forms of intellectual history since it alone can chart the accumulation of knowledge which leads to a measurable increase in our control over nature- other histories, valuable as they may be, reveal no such progress. Furthermore, because of the twin nature of the scientific enterprise- its neutral and internally coherent character and its practical impact upon the environment- those who study its development have

tended to 'restrict' themselves to demonstrating its internal growth by examining biographies and primary texts or to laying more stress on the external stimuli to its increased power. Though strong cases have been made for some kind of progress in art (e.g. by Ernst Gombrich) and literature (by Sartre), and serious attention has been given to the constitutive rather than contextual role of economic, political and social forces in science, the immanent difference between philosophy and science has yet to be over-ruled. Francis Bacon's (presumably philosophical) pronouncement still stands: 'the mechanical arts grow towards perfection every day, as if endowed with the spirit of life, Philosophy is like a statue. It draws crowds of admirers, but it cannot move.'<sup>1</sup>

Rather than examine in detail this 'growth towards perfection', many historians of science have preferred to measure its rate, to discover whether it is continuous or discontinuous, whether there are periods of incubation before new sciences are born, whether progress follows a steady curve or a jagged, zigzag line. Ultimately, I suppose, the question has been whether or not we may rightly construct a genealogical tree relating key figures over the past two thousand years.

This kind of problem is restrictive; for one thing, it does not lead to any notable refinement in the notion of progress itself. On the contrary, it tends to mask the many levels involved in scientific development. Even when

biological metaphors have been adopted to enrich the science historian's repertoire, the language of maturation, growth, incubation and evolution has been denied any metaphorical effect by being deployed in the framework of simple contradictions such as those between continuism and discontinuism, externalism and internalism. My account attempts to take a wide step away from these kinds of debate, especially by addressing as carefully as I can given the material the question of what counts (or rather has counted) as an explanation. I assume that changes in what amounts to an 'explanation' alter through history and in different discourses- and this has been shown to be the case in physics from Aristotle to Galileo.<sup>2</sup>

How are we to chart such changes? One useful way is to think of those things that impose constraints on the kinds of entities appealed to in providing evidence, on what counts as admissible evidence both in forming new concepts and in the assessment of the adequacy of an explanation, and lastly on the types of proof and argument that can legitimately be employed in explanations. My aim, generally speaking, is to try to understand why 'scientists' in the period under study framed questions they way they did, answered them the way they did, and had confidence in certain kinds of evidence and not in others.

This general approach will be familiar to anyone who has read and appreciated the work of such historians as Clavelin, Koyré, Bachelard and Canguilhem. But I am

anxious not to restrict myself to problems about explanation which are purely epistemological. I also wish to avoid a collapse into a 'logic of explanation' of the kind which sets out to provide rules circumscribing the necessary and sufficient conditions to be met by an explanation if it is to be deemed 'scientific'. Indeed, one of the persistent themes we shall be dealing with in the following chapters on scientific culture and in those on physiognomy, organology and phrenology is precisely the question of what constituted 'science', 'explanation', 'theory' and 'fact'. One cannot say in advance what content will be injected into such terms, anymore than one can describe what procedures and rules will be laid down to set up discursive boundaries.

Conversely, what one can say in advance is that there is no reason to suppose that such boundaries will be established along 'natural' lines. We flatter ourselves that this modern view ejects pseudo-sciences as by necessity, that 'physics' having dealt with the 'physical' part of nature, and 'psychology' with the 'psychological', such discourses as physiognomy, phrenology and pathognomy will need to artificially create a space for themselves to survive. For a moment's reflection warns us that the 'physical' does not announce itself in such a way. Parts of the universe do not carry such readily-legible tags; on the contrary, it is us who write the tags, and we write them differently according to a wide variety of considerations.



Having examined in some detail the origins of the BAAS, I turn in chapter five to a study of two major explanatory structures, each of which possesses different entities which it uses to provide explanations, different domains of evidence (that is, sets of phenomena serving to specify what could count as the relevant information in terms of which explanations could be assessed), and different structures of proof. The labels I use to describe these two kinds of explanation are 'Baconian' and 'Whewellian', and I take John Herschel as representative of the first, William Whewell of the second.

My treatment of Baconianism in the early nineteenth century is, I think, a novel one, at the very least in the seriousness with which I approach the subject. It demands something of that 'leap in imagination' I spoke of in the general introduction, for despised as the figure of Bacon is today, it is more than a little difficult to conceive that his work could ever have prompted, still less have directed, the search for scientific knowledge. From the early 1800s until around 1840, however, this work was widely examined and vigorously championed by whole layers of the public coming for the first time into contact with 'science' in the BAAS, in the Mechanics' Institutes, in the Society for the Diffusion of Useful Knowledge (SDUK). Moreover, the leading scientist of his day- perhaps the last scientist to have received adulation from all quarters (Darwin and Einstein were, of course, controversial scientific heroes)- John Herschel gave his stamp of approval to Baconian ideas and

sought to assign observation a central place in the acquisition of knowledge and in the demonstration of explanation. In an age when the Royal Society needed reviving and new scientific organizations needed leadership who better to turn to than the inspirer of natural philosophy in the days of Newton and Boyle? In an age of reforms who was best suited to provide a model than the greatest reformer of all?

Baconianism, we shall see, involved a number of important elements and carried with it a set of images of the natural philosopher, the work of the natural philosopher and his or her audience. Crudely speaking, one might say that the scientific culture which developed on the basis of Baconian (or Herschelian) prescriptions saw scientific work as requiring three attributes: perception, patience, and precision. In addition it renounced the breakdown of the province of natural knowledge into 'abstract' and 'natural' sciences and pictured the method of induction as a great leveller— of discourses, of methods, of men. Moreover, phenomena needed to be studied in relation one to the other: to explain a phenomenon was in large part to show how it fitted into the whole. This required either a vast encyclopedic knowledge or, more practically, the harnessing together of a multitude of different knowledges produced perhaps independently but assembled together, perhaps in great annual meetings or in local institutes. Scientific research, it was claimed, needed to be a collaborative enterprise. Precision, perception, and patience, it should

be noted are all entities which can be accumulated, added one to the other. Three sightings of a star from three different elevations produce greater precision; the more perspectives on an object, the greater depth, definition and detail that object will acquire.

Not only is a Baconian model collaborative; it is also susceptible to regulation. I mean that rules and procedures can be provided to guide, encourage and harness the search for natural knowledge. Herschel, like many others, devoted much of his time to writing such rule-books, and never more successfully than in his Preliminary Discourse on the Study of Natural Philosophy (1831). Roughly half chapter five will be devoted to a fresh reading of this work, one which refuses to accept that, as one critic has put it, the text is a 'modern' hypothetico-deductivist treatise with 'the blessing of Bacon' thrown in.<sup>3</sup>

For some years I believe it is true to say that this model of science was hegemonic in England, probably from about 1825 to 1835, and in some quarters for a decade longer. In opposition to it there gradually developed another vision of science, of what made up an adequate explanation, and of who should 'do' science. Though not reducible to him, I have chosen to explore this new explanatory structure through the writings of Whewell, a figure almost as neglected, given his importance, as Herschel. Whilst no modern historians or philosophers accept that Herschel was in any serious sense a 'Baconian' or an 'inductivist', few would deny that Whewell

was a Kantian. Well, perhaps he was- after all, we are only speaking here of labels. But at the time a very small minority only in Britain judged Whewell in these terms, so there seems little historical profit in us doing so. Instead, I trace his work evolving first alongside Herschel's and in complete agreement with it, then diverging slightly on the issue of the nature of mathematics, and then establishing a set of (apparently) new positions in the late 1830s and in 1840. I shall not try to summarize my findings here, except to stress that Whewell's work was not an 'innocent' intervention into a debate about the philosophy of science. We have unfortunately forgotten how much Whewell's history and philosophy was written to defend ideological positions, e.g. the wave-theory of light and the use of analytical mathematics.<sup>4</sup> And having done so, it seems slightly perverse to suggest that his great historico-philosophical treatises may have been written to re-direct scientific culture as a whole. I shall argue that Whewell's method forms a part with his moves to re-shape the nature and constitution of the BAAS, to re-form the image of science, and to re-define (or rather define for the first time) the 'scientist'. In part Whewell's discourse is formed against the figure of Bacon (as we might expect it would be if my argument about the importance of Baconianism is correct), in part it evolves in response to continental forms of analysis and French developments in the organization and classification of the sciences. How science was done, who was to do it, and to what end- such issues as these were at stake in Whewell's 'turn to Kant'.

Under Whewell the art of discovery is impossible and no rules can be laid down to guide or assist the potential researcher. At each stage in the progress of even the most 'Inductive' sciences what are needed are qualities almost the converse of perception, patience and precision. These are genius, foresight and inventiveness; to Whewell the selection of a governing 'Idea'- a crucial step in scientific work- depends mainly on 'inventive sagacity'. The scientist needs a certain undefinable, perhaps even illogical, *je ne sais quoi*. Newton had it, Galileo had it, and yes, Whewell had it. Bacon, naturally, did not. Science becomes in Whewellian discourse the property of all cultivated men, of an elite who will decide what is to be known and by whom. The history of science is not cumulative but made up of fabulous periods and heroic ages. Science itself is not collaborative but advanced by... heroes. The democracy of facts cedes to the aristocracy of ideas.

In chapter six I turn to a more detailed discussion of the classification of science- how it came about, why, and with what effects. I take a number of examples. 'Physics', I show, did not exist as a discourse with well-defined boundaries, with accepted methods, and with a community of practitioners in England until the late 1830s at the earliest (the community of physicists developed somewhat later, as we would expect). In France things were as ever different, and much of the history of the constitution of 'physics' in England is a history of the transmission of (mainly Laplacian) physics across the channel. The impact of French physics

was very great and it was more than the effect of a few formulae or physical experiments. What was imported with the Laplacian programme and with analytical mathematics was an image of science: complicated, state-funded, autocratic, disciplined, brilliantly organized. How the change took place and with what effects will be one of my major concerns in chapter six.

Next, I look at analogous developments in physical astronomy. Another shameful episode in which the French were light years ahead of us in almost all quarters; embarrassing too since it was Newton, any Englishman could have told you, who invented the 'method of fluxions'. I trace the adoption of French analytics in Cambridge and how the late arrival of the method produced a strange amalgam of theoretical positions, a kind of rational-empiricism one might say. The 'real' revolution only occurred in the 1840s; only then were advanced forms of mathematics applied in the treatment of physical problems. By then popular scientific organizations had either expired or were on the wane. The fact that 'physics' and 'physical astronomy' were established after populist scientific discourses had been displaced is no accident. By the end of my thesis I hope some of the connections between the two events will have become clear.

If neither physics nor analytical mathematics was established in the period before the 1840s, did shall we say 'elitist', 'Whewellian' science have any other model to turn to? We are speaking here of the period from about 1837 to the mid-

1840s. The obvious candidate is physical astronomy. In any hierarchy, she was 'Queen of the Sciences'. And what a revealing image this presents. Political of course, as in so much 'scientific' discourse of the period, but in a sense which ties in very neatly with other Whewellian ideas. The Queen leads her aristocracy of genius, sitting above the cultivators of science, ruling over the populus and determining their fate (how useful it would be to have a thorough study of scientific-political imagery and iconography during this period!)

The star-gazers up and down the country- the 'scientists' who needed nothing more than a pair of eyes to do their work- had no part to play in physical astronomy thus conceived. Maybe that was why physical astronomy *was* thus conceived. The early Reports of the BAAS carried frequent accounts 'from the field' of star sightings, of the aurora borealis and of other celestial phenomena sent in by the membership. By the mid-1830s these were being squeezed into a section of the published annual volumes at the rear; they soon became compressed and died of suffocation. From astronomy being the subject of popular versification, the work of the country's favourite scientist, it had become a weighty and threatening mass of facts and figures, equations and diagrams. Of course, one must not be too crude in presenting this interlude in scientific history. I do not speak of plots and capitalist take-overs. There were lines of division which make such easy identification of two camps deeply problematic. Herschel, for example, accepted that physical

astronomy was 'Queen of the Sciences' but did not see that it should be setting standards for other natural philosophical pursuits- a kind of constitutional monarchy, one might say. Some tried valiantly to popularize physical astronomy and analytical mathematics, but they did so in vain.

Somerville's Mechanism of the Heavens was one such attempt, but Herschel felt that it gave too strong a boost to the study of abstract science. Mary Somerville introduced the work with a lengthy dissertation which was intended to be accessible to what the Athenaeum termed the 'hands of the unwashed.' This preliminary dissertation was later issued separately, once it had been re-worked, as On the Connexion of the Physical Sciences (1834) and this gave a fillip to popular science since by stressing the unity of nature and of scientific work, Somerville suggested the collaborative nature of the scientific enterprise. One of the defining features of populist science, I would say, is that it refuses to accept any limitations to what it may investigate for it finds no boundaries in the natural world. The readers of the SDUK's publications would have been constantly reminded of this, as we shall see, and it is a feature of phrenology and physiognomy. From today's perspective it seems that a 'science' which steps into the fields of 'ethics', 'physics' 'psychology' and 'politics' (especially politics!) without showing its passport credentials, suitably stamped, is a fraud. An illegal immigrant we label 'pseudo-science'. Not so, however, in the 1820s and 1830s- and this is one reason



why it is necessary to examine developments in the classification of knowledge in this period to understand the status of phrenology and physiognomy.

In chapter seven of this part I shall show that the lack of any agreed-upon standards and classifications resulted in what might be termed 'extra-discursive' procedures to define the nature of the 'scientific' enterprise. Science in the BAAS, for example, came to be characterized as much by what went into it as by what was left out, as much by how it was produced as by who produced it. To add some further dimensions to that 'who', I turn briefly to the general efflorescence of cheap and popular learning during the 1820s and 1830s, the rise of the SDUK and the Mechanics' Institutes. The SDUK has, almost by the attention the BAAS has received, been demoted in the history of the period; it has tended to occupy a second-class status. As I recall, however, it is difficult to think of any criterion by which the SDUK would be thus depreciated; its members and contributors were hardly less eminent, and it was without doubt more popular. Yet the SDUK has received from historians no full-length published study; my work is correspondingly more exploratory, original and, I hope, more exciting. I end with some remarks on the exclusion of physiology, statistics and women from BAAS, on why, how and to what degree this exclusion was practiced. In this way, I hope that my remarks about the use of non-scientific criteria to shape science and scientific organization will be given concrete dimension and particular relevance to the succeeding part.

NOTES: PART TWO, INTRODUCTION

1. Quoted in B. Farrington, Francis Bacon. Philosopher of Industrial Science, 1973, 69.
2. See Stephen Gaukroger, Explanatory Structures. A Study of Concepts of Explanation in Early Physics and Philosophy, Hassocks, 1978; Beverley Brown, 'The Universe of Discourse', Oxford Literary Review, 4, 1, 1979, 87-93; Michael Shortland, 'Explanations Explanatory of Things Explained', History of European Ideas, I, 4, 1981, 367-81.
3. See chapter five, following.
4. For a recent reminder, see Paul Wood, 'Philosophy of Science in relation to History of Science', in Pietro Corsi and Paul Weindling (eds) Information Sources in the History of Science and Medicine, 1983, 116-33, esp. 117.

## CHAPTER FOUR: THE DECLINE AND RISE OF 'SCIENCE'

### I. The BAAS and the Decline of Science

The British Association for the Advancement of Science (BAAS) has long been accepted by historians as a representative site for the development and articulation of early nineteenth-century scientific culture. Its annual meetings can serve as an indicator of the changing character, role and interests of science from the 1830s onwards. In this century its importance has no doubt diminished, but one is likely to associate its work in the 1800s with many of the key debates and discoveries of science: Agassiz's announcement of the theory of continental glaciation at Glasgow in 1840, Joule's discussion of the mechanical equivalent of heat at Oxford in 1847, the famous encounter of Huxley and Wilberforce in the same town thirteen years later, Tyndall's materialist address at Belfast in 1874, and Crookes's demonstration of cathode rays in Sheffield in 1879. The BAAS can lay claim to being perhaps the first organization to harness together the wealth, enthusiasm and dissent of the provinces with the prestige, expertise and Anglican moderation of the metropolis and the ancient universities. It appears also to have been a product of the reforming zeal within the English scientific

establishment, and to have played a major role in the professionalization of science. Perhaps the image of scientific culture, of science, and of the scientist were all products of the BAAS and its work during the first twenty years of its existence. Perhaps, too, its sections, its make-up, and the tones and tendencies within it reflected popular views of science at the time. These are two issues we shall be seeking to probe in the following chapter.

To do so requires us to begin by looking at the perceived state of science in the decades leading up to the formation of the organization. The most noticeable impulse to the BAAS came from the anxieties and agitations of adherents of the so-called 'decline of science' movement spearheaded by the Professor of Mathematics at Cambridge, Charles Babbage and by David Brewster, then a leading figure in British optics and renowned as the editor of scientific journals such as the Edinburgh Journal of Science. 1830 was a year of intense self-examination in the English scientific community, though in the previous decades, natural philosophers had also made known their dissatisfaction with the insularity, retardation and uneven development of English science, particularly in comparison with the situation on the continent.<sup>1</sup> 1830 also witnessed one of the bitterest confrontations in the Royal Society between those insistent on reforms and those determined to maintain traditional ways. It marked a paradoxical point in the history of the Royal Society when the reformers

were defeated and the reforms they advocated slowly began to be instituted. All the events took place against the background of change and alarm in the civil sphere that had a profound effect on scientific development.

The two most important occurrences in this respect were the appearance in May 1830 of Babbage's Reflections on the Decline of Science in England and the defeat of the astronomer John Herschel, who had been forwarded for the Presidency of the Royal Society, in the following November. Particularly galling to Babbage and many other scientific Fellows of the Society was the steady increase in the number of non-scientific Fellows entering that body. Indiscriminate admission had by 1827 swelled the ranks of the Society to almost 700, the vast majority of whom took no part whatsoever in the scientific business of the organization. Early in that year the Council, on the urging of James South, appointed a committee to consider how best to limit membership of the Royal Society and to make recommendations for its future welfare and development.<sup>2</sup> Seven of the eight members of the committee were reformers, and the eighth, Davies Gilbert, a traditionalist. The committee report, which Gilbert signed with unvoiced reservations, recommended that membership should be fixed at 400, that the names of candidates should be circulated in advance to all Fellows, that Presidential power of nomination be curbed, and that a standing committee on Society finances be established. Since the report came late in the spring,

its consideration by the Council was postponed until autumn. When meetings resumed, however, the Council and the Society were caught up in choosing a successor to Humphry Davy. Chiefly at issue was the prerogative of the retiring President to name his successor, but there were also reminders of the 1820 debate over the selection of a practising scientist or an influential friend of science as a head. In the end Gilbert Davies was the choice of convenience, for Davy's candidate, Robert Peel, withdrew and the reformers failed to find a replacement. In the transition, action on the 1827 reform report was postponed.

Charles Babbage was abroad from late 1827 to 1828 and he returned to find that the Royal Society had not acted on any of the recommendations he (along with Wollaston, Kater, Herschel, Young, South, Francis Beaufort and Gilbert himself) had proposed. In the autumn of 1829 he therefore began a private investigation of the management and functions of the Society over the past decade. The result was his Reflections. In this work he gave expression to what he purported to be the widely-held view that English science had collapsed disastrously from the pre-eminent position it had occupied in the era of Newton and Boyle.<sup>3</sup> Quoting Herschel in support of his criticisms,<sup>4</sup> and claiming in addition that Davy had begun a book with the same title and intention as his own,<sup>5</sup> Babbage proceeded to lay the blame for the degeneration of English science at the door of the Royal

Society. Its policies and management he bitterly attacked as inept, partisan and wasteful of native talent. England's former jewel in the crown had 'for many years been managed by a *party*, or *coterie*, or by whatever other name may be most fit to designate a combination of persons, united by no expressed compact or written regulations, but who act together from a community of principles... The great object of this, as of all other parties, has been to maintain itself in power.'<sup>6</sup> To halt and then to reverse the tide, Babbage suggested a number of general and particular measures, including a call for more rigorous academic standards and a reformed university curriculum,<sup>7</sup> greater competitiveness and stricter criteria of admission into the Royal Society,<sup>8</sup> and a degree of recognition for natural philosophers equal to that in France, where the 'situation of its savans is highly respectable, as well as profitable.'<sup>9</sup> The period from December 1828 to June 1829 was a devastating one for British science since within six months Wollaston, Young and Davy had died. To Brewster, the loss had no parallel in the history of science,<sup>10</sup> and to make matters even worse, these giants had been left 'to moulder in their tombs without any monumental tribute from a grateful country.'<sup>11</sup> A new era, it seemed, was being born. It promised nothing but depression unless drastic measures were taken.

Babbage's conclusion was clearly that scientific work had to be better organized, more highly esteemed and remunerated

and far more specialized. What, he asked with a fine metaphorical flourish and with a reference to the man who had a year earlier helped Peel to reorganize the Metropolitan Police, would have happened to the country if Wellington had been forced to spend his life drilling recruits instead of planning campaigns?<sup>12</sup>

The book had immediate effect, and after many articles on the subject, the Times wrote that 'The interests of science require an instant reform of such degrading transactions as those which are disclosed (here)'.<sup>13</sup> The unplanned, unpoliced, and unrecognised state of science and scientists stood in marked contrast to the current situation on the continent. In France the governments between 1794 and 1808 had refurbished scientific institutions on a grand scale. The period from Napoleon's assumption of power as First Consul in 1799 until his final overthrow in 1815 is generally recognized to have been one of the most glorious in the history of French science, and Babbage and Brewster both admired Napoleonic science.<sup>14</sup> In Germany, science was gradually becoming professionalized through the reformed university system. As an indication of what was immediately feasible, with little funds and effort, Babbage ended his book with a brief account of the 1828 meeting of the *Gesellschaft Deutscher Naturforscher und Artze*. This body of natural philosophers had first met in Leipzig in 1822 under the direction of Lorenz Oken, the founder of an influential journal which specialized in popular yet rigorous scientific articles and in which the notion for the society



had first been proposed. The aim of the society was to organize itinerant annual conventions at which philosophers and physicians would be able to meet to exchange, develop and advance scientific ideas. From modest beginnings, the society had succeeded in 1827 in gaining royal patronage, and in the following year it was lavishly financed by the Prussian government. The 1828 Berlin meeting, with its fêtes, excursions and concerts was reported by Babbage (the only Englishman to attend) in the pages of the Edinburgh Journal of Science,<sup>15</sup> and it was from this that he drew the brief notice in the Decline.<sup>16</sup> As he reminisced later, 'I soon perceived that this meeting of philosophers on a very large scale, supported by the King and by all the science of Germany, might itself have a very powerful influence upon the future progress of human knowledge.'<sup>17</sup>

Reviewing the Decline in his journal, Brewster proposed an 'association of our nobility, clergy, gentry and philosophers' which would remedy the situation in England.<sup>18</sup> The Edinburgh Journal of Science had in fact been at the forefront of the 'decline of science' movement, and had been vocal in its support of a society modelled along the lines of the *Deutscher Naturforscher*.<sup>19</sup> In February 1831, Brewster wrote to Babbage that since the 'Royal Society of London seems to be gone.- So is that of Edin(burgh) and the R. Irish Academy', the time had come for 'a general effort.'<sup>20</sup> He therefore took it upon himself to propose to John Phillips, then an official of the

successful Yorkshire Philosophical Society, the establishment of a British Association.<sup>21</sup> Having been informed in reply that York and its philosophers would host and support an initial meeting, Brewster announced the forthcoming event in his journal.<sup>22</sup> What Brewster had termed 'the most heartbreaking subject that I know' was now being tackled in earnest.<sup>23</sup>

The BAAS was formally established in York on 27 September 1831. The Rev. William Vernon Harcourt, son of the Archbishop of York and a leading figure of the Yorkshire Philosophical Society,<sup>24</sup> proposed to a meeting of some three hundred assembled in the theatre of the elegant Yorkshire Museum the foundation of a:

'BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, having for its objects, to give a stronger impulse and more systematic direction to scientific inquiry, to obtain a greater degree of national attention to the objects of science, and a removal of those disadvantages which impede its progress, and to promote the intercourse of the cultivators of science with one another, and with foreign philosophers.'<sup>25</sup>

The BAAS would meet for one week each year, at a provincial centre in Britain, under an annually elected president. Harcourt's proposal was enthusiastically seconded by Brewster, given support by the then president of the Geological Society of London Roderick Murchison, and then by the 'deliberate and cordial concurrence of the meeting', unanimously passed.<sup>26</sup>

How are we to assess the impact of the BAAS? In terms of attendance figures alone, it would seem clear that the organisation enjoyed a rapid and spectacular growth. In 1831 there were 353 at the meeting, and from then the participants increased year by year: around 600 came to the Oxford meeting in 1832; 852 to Cambridge (1833); 1298 to Edinburgh (1834); 1333 to Dublin (1835); 1350 to Bristol (1836); 1840 to Liverpool (1837); and 2403 to Newcastle in 1838. After this meeting, attendances declined equally rapidly so much so that by the 1841 meeting at Plymouth there were only 630 in attendance.<sup>27</sup> But such figures alone are not especially revealing. It is clear from the many reports in the Athenaeum in the 1840s, that other scientific societies witnessed a decline in membership during the whole decade. Equally, the rise of the BAAS occurred at the same time as a similar spread of scientific societies in the provinces: these doubled in number from 1820 to 1840, and the number of medical societies increased from 6 to 12 during the same period.<sup>28</sup> With an eye no doubt on the growth of these provincial groups, as well as the Mechanics' Institutes which blossomed from the 1820s and on Henry Brougham's Society for the Diffusion of Useful Knowledge (founded in 1827), Harcourt felt justified in announcing that the BAAS could rank amongst the march of science, that 'Scientific knowledge has of late been more largely infused into the education of every class of society'.<sup>29</sup>

But this admission clearly poses a question mark over the claims of the 'decline of science' movement. Though the 'official historian' of the BAAS has endorsed the view that the society owed its origins to this movement and the agitation of Brewster, Babbage and others<sup>30</sup> - a view which, Brewster, not unnaturally, repeated<sup>31</sup> - there are serious problems in accepting these as the major forces shaping the BAAS. Equally problematic is the idea that the BAAS grew as a professional response to the amateurism of the Royal Society.<sup>32</sup> More recent scholarship has stressed the provincial origins of the organization, and found that the true originator was neither Brewster nor Babbage, but Harcourt and other influential members of the Yorkshire Philosophical Society.<sup>33</sup> The term 'professional' is liable to confuse in such debates, for it possesses social as well as economic content - it is a term which can mean - and often did mean - seriousness of purpose rather than financial remuneration for work. So it has been persuasively argued by Cannon that whilst the origins of the BAAS were provincial, its serious but economically 'amateur' members often sought to follow the lead of the scientists in the metropolis and ancient universities, deriving from the 'Cambridge Network' in particular their definitions of scientific work and images of science.<sup>34</sup> If this was so, the debates about the 'decline of science' were only of marginal importance, as were the problems of the Royal Society.

To come to a decision about the contrasting accounts of the origins and development of the BAAS clearly requires some understanding of the aims it set for itself and whether these were achieved, the notions advanced by the membership and the leadership of the BAAS, and indeed who constituted both these groups. It is to these questions that we now turn, and having briefly sketched some of the factors which should be borne in mind, we shall turn to a discussion of the methodologies of science which were advanced by different elements within the organization. By looking closely at these methodological debates, which ranged far and wide and spread beyond the borders of BAAS, we shall show that they involved important social and political issues. Our aim then is not to begin with the categories of 'amateur' and 'professional' nor with those of 'provincial' and 'metropolitan' and then to seek to fit practices and images into these categories. Instead by looking at debates about method - that is, about what constitutes the scientific, the rigorous, and the supportable - we shall attempt to solder together an image of the scientist as a prescriptive and proscriptive term during the period 1830 - 1850.

## II. The BAAS: Some Discriminations

Two factors tend to suggest that the declinist movement played less importance in the early BAAS than has been

proposed. The first is quite simply that two of the movement's leaders were not present at the foundation of the BAAS in York. Harcourt who was there strove consciously and forcefully to disassociate the movement from any connection with reforms in the Royal Society, and indeed with the wider claims of such men as Brewster. In his review of Babbage's Decline, Brewster had added to the former's critique his own attack on the role and work of the universities in England.<sup>35</sup> And as with other aspects of the declinist's arguments, a contrast was drawn to the vigorous and relevant educational policies being pursued on the continent.<sup>36</sup> The result of this attack, along no doubt with traditional scepticism on the part of metropolitan figures towards the provinces, was that very few established natural philosophers attended the York meeting. Most of the visitors came instead from provincial towns with dynamic 'scientific' institutions of their own.<sup>37</sup> Certainly, the number of scientific chairs was small (there were only 47 established by 1850 in English universities),<sup>38</sup> but the strength they commanded was far from negligible. In 1830, no universities awarded qualifications solely in scientific subjects, yet they housed formidable intellectual figures, well-known to the educated and literate public. The geologist William Buckland and the chemist Charles Daubeny were at Oxford in 1830; the 'London University' had the mathematician Augustus de Morgan and the chemist Edward Turner; and Cambridge housed such formidable figures as the mathematicians Airy and

Peacock, the mathematician and philosopher William Whewell, and Charles Babbage himself.

Of these only Daubeny managed, or could be bothered, to come to the founding meeting of the BAAS (though some later offered feeble excuses for their absence).<sup>39</sup> Though he acknowledged deficiencies in the Royal Society, Harcourt fully realised the need to gather in these figures and therefore underplayed and openly rejected the criticisms of the universities which by 1831 had come to form part of the declinist rhetoric.<sup>40</sup> Brewster also acknowledged that the declinist thesis was divisive and too radical, and having realised that scientists in the universities had, as Murchison put it, 'for the most part pooh-poohed' the BAAS,<sup>41</sup> conceded that Cambridge and other establishments would only send representatives 'provided that the decline of science was not to be the watchword, nor its direct national encouragement among the objects of the association'.<sup>42</sup>

Whilst the turn-out from the metropolis and the ancient universities was small, the actual attendance was far above what had initially been forecast. Brewster had originally planned, and made known in the Edinburgh Journal of Science, that about one hundred would attend the York meeting. The gathering would be of 'scientific

individuals', and the new association would, like its German counterpart, restrict membership to those who had published memoirs on scientific subjects.<sup>43</sup> But Harcourt and Philips in the provinces had already sent out dozens of notices to regional societies inviting all 'persons interested in scientific pursuits'.<sup>44</sup> Such persons, rather than Brewster's 'scientific individuals' swelled the ranks gathered in the Yorkshire Museum. Moreover, they not unnaturally voted to keep open membership to the BAAS (though a requirement for election to the General Committee was scientific authorship).<sup>45</sup> As Harcourt said, 'A public testimonial of reputable character and zeal for science is the only passport into our camp which we would require.'<sup>46</sup> And the visa was also to be made easily available: subscriptions were fixed at £1 yearly.

This system did not last long however. As Morrell and Thackray have shown in their detailed study of the early years of the BAAS, the association rapidly changed from an open, provincial organisation to one 'run by an oligarchy, presiding over a severely limited democracy'.<sup>47</sup> That oligarchy, they show, can be described as predominantly Anglican, centrist and piece-meal reformist, and united despite its differences in moderation; numbering such men as Whewell, Sedgwick, Brewster and Murchison amongst its leading forces. Murchison, indeed, is a good example of the changes which the BAAS underwent. Present at the founding meeting, Murchison later recalled quite accurately that it 'was there and then resolved that we



were to be *Provincials*. Old Dalton insisted on this - saying that we should lose all the object of diffusing knowledge if we ever met in the Metropolis'.<sup>48</sup> Yet thirteen years later, Murchison was seeking to exert pressure on Whewell to be granted permission to bring the BAAS to Cambridge. 'We repudiate the idea', he now wrote, 'that the chief aim of our existence is to stir up a few embers of latent scientific warmth *in the provinces*'.<sup>49</sup>

This is certainly a stark turn-about. But it is worth recalling that Harcourt remained General Secretary of the BAAS from 1831 to 1837, and Phillips Secretary from 1831 to 1862. Though the character of the BAAS undoubtedly changed, it did not do so without oppositional voices being raised. And the nature of the conflicts which simmered throughout this period was a complex and many-faceted one. Babbage, for instance, believed like Harcourt that membership of the BAAS should be kept relaxed.<sup>50</sup>

Whewell on the other hand argued that there was no '*popular Road*' to science, and that it was impossible to apportion scientific tasks to any but those already trained and skilled in the cultivation of science.<sup>51</sup> Such a disagreement crosscuts any simplistic view we might wish to have of the 'professional' reformers of the BAAS and the 'amateurs' in the Royal Society.<sup>52</sup>

Paralleling the changes in the structure and membership requirements there occurred a shift in the kind of audiences the BAAS aimed to attract. As its doors closed to

all but the certified cultivators of science, the association consciously staked out a terrain of its own, one quite different for example, to that of the Mechanics' Institutes. These last had blossomed at the same time as the BAAS but aimed to provide a forum for the promulgation of science and technology (and also to a lesser degree for its discussion) to artisans and the working-classes.<sup>53</sup>

It has also been suggested that after 1830, the Mechanics' Institutes sought in addition to elevate the moral standards of those groupings as well as to exert social control over them.<sup>54</sup> Babbage perhaps gave an early indication of the attitude of the reformers towards the Mechanics' Institutes in his Decline: he made no mention of them at all. By the mid-thirties however, silence had turned to hostility as the membership of the BAAS was 'to be likened, both symbolically and actually, to the £10 householders'.<sup>55</sup>

The reference is of course to those at the forefront of the reformist movement. The BAAS spoke the language of reformism in a decade of reforms, and at a time when extra-parliamentary agitation was perhaps fiercer and more widespread than ever before.<sup>56</sup> It grew up and cut its teeth at a time when general legislative changes were affecting almost all spheres of middle-class life: Parliament, Church, the universities, and other medical and scientific societies.<sup>57</sup> 'Reform! Reform! ....Nothing else is talked of or dreamt of', Gideon Mantell noted in his journal early in March 1831.<sup>58</sup> 'Parliament of Science' was a phrase applied to the BAAS at first tentatively in

the mid-1830s, but it was soon taken up by the press, and proudly inscribed on the banner of the BAAS by its leadership.<sup>59</sup> The association had moved from the provinces to parliament, from being an open to a closed society.

In common with other changes, this development was neither simple nor uncontested. There were major disagreements within the BAAS about the relationship the organization should have to the state. As we have noticed, one of the demands made by the 'declinists' was for more government recognition of and remuneration for scientific work. Babbage's Decline had been partly motivated by the despair he felt in 1820 over the Duke of Wellington's procrastination in giving him financial support for the construction of his calculating machine.<sup>60</sup> Similar grievances had also been expressed in the same year over the funding and organization of the Nautical Almanac and the Royal Observatory at Greenwich.<sup>61</sup> Babbage, his most vociferous supporter Brewster, Daubeny and others made known their feelings over the state's seeming refusal to grant titles, pensions, or on-going aid to distinguished scientists.<sup>62</sup> For a brief period in 1830, it had seemed that Sir Robert Peel would rectify the situation, but he soon left office, not to return as Prime Minister till 1841. The Whigs' accession to power in 1831 however, also seemed promising to the declinists, particularly with Brougham established as Lord Chancellor. At York then, there must have existed among the audience - and certainly in the minds of Brewster and Daubeny - a feeling of optimism.

At the meeting however, the Whig MP Lord Milton who presided over the conference, declared that any approach to the government of the day with cap in hand would be 'un-English' and calculated to 'make men of science the servile pensioners of the Ministry.'<sup>63</sup> To this Harcourt's response was, as ever, a conciliatory one. In private he made his objections to Milton plain; in public he pressed to have the BAAS include in its stated aims and objectives merely the phrase, 'removal of those disadvantages which impede (science's) progress.'<sup>64</sup>

As in the debate over declinism, Harcourt was anxious not to alienate the university sector, but Brewster and Johnston writing in the Edinburgh Journal of Science had no such qualms. Brewster later suggested, quite wrongly, that the issue of state patronage had been hotly debated at York<sup>65</sup> and Johnston claimed that Milton's view had been against the common stream of opinion expressed there.<sup>66</sup> Both gave voice to frustration and optimism rather than to any real state of affairs. Brewster nonetheless maintained that the general mood of the participants was to 'cherish the hope that they might find some retreat in the El Dorado of the State.'<sup>67</sup> He continued to press for the gold rush to commence,<sup>68</sup> and seldom missed an opportunity to raise the issue.<sup>69</sup>

However partial, it remains difficult to judge the success of the BAAS in lobbying the government on particular issues, or in assessing how much the developing relations

of state and science owed to the association's work. Two misconceptions need immediately to be cleared away. The first is that the state had been unwilling to provide for scientific and technological work before the early decades of the nineteenth century: it had, on the contrary, been perfectly prepared to sponsor such work in the interests of national or overseas development.<sup>70</sup> Equally misleading is the view that the ideology of laissez-faire entailed opposition to all government intervention. On the contrary, it would be difficult indeed to discover a political economist who subscribed to such a view.<sup>71</sup> Governments, of course, intervene quite consciously, consistently, and with due disregard for the niceties of political purity as a matter of course. But the pervasiveness of the notions of voluntarism, individualism, and self-help in the early nineteenth century remains striking. These were notions which formed the arms of government, notwithstanding its heart, head or political body. Such notions, and the ideology that they solder are as strikingly *apolitical* as they are recognisably political. One must face the fact that the generation of scientists after Babbage, Priestley and Davy was less political than before (perhaps the same might be said for the generation after von Humboldt in Germany, and that which followed Arago in France).

So it was possible for a whole generation of scientists to accept honours, titles, pensions, and funding with one hand, whilst waving in the other their copies of The Wealth

of Nations and On Liberty.<sup>72</sup> In the first two decades of its existence, the BAAS saw eleven of its members honoured with knighthoods,<sup>73</sup> sixteen given state pensions,<sup>74</sup> and seven promoted to positions of high office.<sup>75</sup> As Brewster, or rather *Sir* David Brewster, caustically stated in 1850, 'it is not unworthy of remark, that we find in these lists the names of individuals who refused to give their aid to the very cause with which their own individual interests are now so closely connected.'<sup>76</sup> And with Airy promoted to the position of Astronomer Royal, Whewell installed as Master of Trinity College, Cambridge, Peacock appointed Dean of Ely, and Murchison knighted, perhaps he had a point.

The successive administrations of Melbourne (till 1841) and Peel (till 1846) also assisted scientific progress with direct grants for geological and botanical research, with the establishment of physical observatories, with the organization of various boards and governmental departments, and not least by sponsoring scientific expeditions, most notably those of The Beagle and Captain Ross. Moreover, the BAAS made provision for its own programme of researches with grants financed from annual subscriptions; beginning in a modest way by funding Humboldtian fact-gathering in the fields of tidalogy and meteorology but then increasingly diverting its resources into astronomy and the physical sciences.<sup>77</sup>

Brewster's point thus becomes a valid, but also a para-

doxical one. How was it - and why was it - that increasing professionalization occurred in the face of an apparently determined renunciation of state funding on the part of the 'gentlemen of science' at the helm of the BAAS? We might answer by labelling those gentlemen as hypocrites or dupes, or better, agree with the remark of a recent scholar of the BAAS who voiced 'the suspicion....that up to 1851, the professionalization of science - in any sense which the twentieth century would employ the term - was an ambition held impersonally, equivocally and obscurely by the majority of members of the Association.' Certainly it would do violence to the material to impose modern day categories onto more elusive phenomena and processes: the term professional, with its connotations of seriousness of purpose, value-freedom, and white-tiled laboratories, will not do. For having adopted the category, we will find little to fit into it, and what is worse, the tendency will be to find all that is amateurish to be non-scientific and ideological.

Still, it remains that we must seek to tackle the equivocal and obscure statements and actions of scientists in the period 1830-1850. To understand what scientists were doing requires us to seek to comprehend what they thought they were doing. Likewise, to gauge the attitude and the position of the critics of science requires us to understand what they perceived science to entail in theory as well as in practice. The period which we are seeking to investigate witnessed major and long-lasting changes in

the image of science and the scientist; indeed, as we shall see, the 'scientist' was born in these two decades. When new disciples or parties or professions are developed, a period of self-appraisal inevitably occurs. Terrains are marked down, borders set up, definitions, rules and practices are formulated. The discipline, party or profession acquires an image for itself and for its audience. It is, in general terms, that image that we must attempt to examine.

In the case of science, two factors obviously come together to imbue the term with meaning. Science is both a method and a set of results. A scientist is known by what he does and by what his actions produce. The period under study profoundly altered the shape of scientific culture: science acquired body and depth, power and prestige. So powerful did its method become, and so impressive were its fruits, that what began as a narrowly delimited sphere of activity rapidly colonized other areas of work. But before lands can be conquered, the conquering must be tightly disciplined and carefully organized. Science advances only once it has a direction, a plan, a method, and a leadership. We have examined briefly, but it is hoped helpfully, some of the parameters of the BAAS - the forces which went into its making, the debates and controversies which followed it in its early years, and the relationships holding some of its most important spokesmen together despite their differences. We now turn in the following chapters to an investigation of the notions of scientific



method and of the aims of science to discover how those debates and controversies affected the character and development of early Victorian scientific culture.

NOTES: PART TWO, CHAPTER FOUR

1. See, for examples, Lyon Playfair (or Henry Brougham?), 'Dealty's Principles of Fluxions', Edinburgh Review, XXVII, 1816, 87-98, 98; Lyon Playfair (?), 'Woodhouses's Astronomy', Edinburgh Review, XXXI, 1819, 373-94, 392, 394; anon., 'Present System of Education', Westminster Review, IV, 1825, 147-76, 175-76; anon., 'Scientific Education of the Upper Classes', Westminster Review, IX, 1828, 328-73, 330-33.
2. See Henry Lyons, The Royal Society 1600-1940, Cambridge, 1944, 245-46; L. Pearce Williams, 'The Royal Society and the Founding of the British Association for the Advancement of Science', Notes and Records of the Royal Society, 16, 1961, 221-33.
3. See Anthony Hyman, Charles Babbage. Pioneer of the Computer, Oxford, 1982 for a well-researched background study; Maboth Moseley, Irascible Genius: A Life of Charles Babbage, Inventor, 1964 also has many details. In the biography of her father, Margaret Gordon refers to the debate spreading into popular and general books and cites Prospects of Britain by 'Mr Douglas' (see (M.M.) Gordon, The Home Life of Sir David Brewster, Edinburgh, 1869, 142). The book referred to was James Douglas's (Edinburgh, 1831) which contained a long section putting forward a pessimistic view of the position and future development of English science. It also proposed an 'Advancement Society'. The Edinburgh Journal of Science noticed the book (David Brewster (?), 'Observations on the Decline of Science', Edinburgh Journal of Science, n.s.

- VI, 1832, 33-39). For an immediate response to Babbage's allegations, by the directorship of the Royal Society see Davis Gilbert and P.M. Roget, 'Letters from the President and Secretary of the Royal Society, in Refutation of an alleged inaccuracy in the minutes of the Council', Philosophical Magazine, n.s. 7, 1830, 446-48.
4. Charles Babbage, Reflections on the Decline of Science in England, and on some of its Causes, 1830, vii-ix.
  5. ibid., vi-vii.
  6. ibid., 141.
  7. ibid., 11, 5-6.
  8. ibid., 156. Part of Babbage's attack was directed to the poor state of English scientific journals, including the Philosophical Transactions, a view which Herschel shared (see ibid., vii), and which Augustus Bozzi Granville made central to his anonymous Science Without a Head: or, The Royal Society Dissected, 1830.
  9. The Decline, 32. For similar remarks, see William Swainson, Preliminary Discourse on the Study of Natural History, 1834, 348.
  10. See Brewster's comments to Oersted, in M.C. Harding (ed.), Correspondance de H.C. Oersted avec divers savants (2 vols), Copenhagen, 1920, II, 282.
  11. D. Brewster, 'British Association for the Advancement of Science', North British Review, XIV, 1851, 235-87, 286.

12. The Decline, 21.
13. The Times had articles in issues of 8 May, 22 May, 28 May, 29 May, 31 May, 26 June, 8 July, and 15 July 1830. Quote from 22 May 1830. The Athenaeum was also sympathetic to Babbage and devoted its lead article of 22 May to the book ('Decline of Science', Athenaeum, 134, 1830, 305-06). The Decline was not reviewed in either the Edinburgh Review, nor the Foreign Quarterly Review, or the Westminster Review; the Literary Gazette only mentioned it in its list of new books (Literary Gazette, 694, 1830, 309).
14. See Reflections, 25-27, 30-36; Brewster, 'Decline of Science', 313-17. Maurice Crosland has studied the form of public recognition and encouragement provided to science during the period, the role of the Ecole Polytechnique, and the research group centred on Berthollet's country house near Paris in M.P. Crosland, The Society of Arcueil. A View of French Science at the Time of Napoleon I, 1967. Some doubts have been cast on the educational system of the time and on the harm done by Napoleon's direct interventions into science by L.P. Williams, 'Science, Education and Napoleon I', Isis, 47, 1956, 369-82, and R. Hahn, The Anatomy of a Scientific Institution. The Paris Academy of Sciences, 1666-1803, Berkeley, 1971, 310-12.
15. Charles Babbage, 'Account of the great Congress of Philosophers at Berlin', Edinburgh Journal of Science, (henceforth: EJS), X, 1829, 225-34. James F.W. Johnston later wrote an account of the 'Meeting of the Cultivators of Natural Science and Medicine at Hamburgh' in Edinburgh Journal of

- Science, n.s. IV, 1831, 189-244 (an article which, strangely [since I can find no trace of this aspect], has been judged to be a 'physiognomical' study of the participants). See O.J.R. Howarth, The British Association for the Advancement of Science: A Retrospect 1831-1931 (Centenary 2nd edition), 1931, 11.
16. On pages 213-23 of The Decline. For useful background, see George Haines, German Influence upon English Education and Science 1800-1866, New London, Connecticut (Connecticut College Monograph 6), 1957; Hans Duerner and Heinrich Schipperges, Wege der Naturforschung, 1822-1972, Berlin, 1972, and Max Pfannenstiel, Geschichte der Gesellschaft Deutscher Naturforscher und Ärzte, Berlin, 1958 (which reproduces a great deal of contemporary documentation).
17. Charles Babbage, Passages from the Life of a Philosopher, 1864, 200. A great influence at the 1828 meeting was its president Alexander von Humboldt; on his mesmeric presence, see Douglas Botting, Humboldt and the Cosmos, 1973, 235-38, and for a more general account of his role, Hanno Beck, Alexander von Humboldt, 2 vols, Wiesbaden, 1961, II, 85-87; Karl Bruhns (ed), Life of Alexander von Humboldt, 2 vols, 1873, II, 137f., and Pfennenschiel, Geschichte, 65-71. On Humboldt's influence on English science, see Cannon, Science in Culture, ch. 3.
18. D. Brewster, 'Reflexions on the Decline of Science in England', Quarterly Review, (henceforth: QR), XLIII, 1830, 305-42, 341.
19. See, for examples, Brewster, 'Memoir of the Life

of M. le Chevalier Fraunhofer', EJS, VII, 1827, 1-11 (esp. 10-11); Brewster, 'Exhibition of the National Industry of France', EJS, VIII, 1828, 344-46; Brewster, 'A New System of Chemical Philosophy', EJS, VIII, 1828, 346-55 (esp. 354-55); and George Harvey, 'On the Cultivation of the Science of Shipbuilding', EJS, IX, 1828, 298-300. The journal had in 1830 published an extract from The Decline (Charles Babbage, 'Observations on the National Encouragement of Science', EJS, n.s. III, 1830, 58-76). Brewster also adverted to the declinist thesis in his 'Herschel's Treatise on Sound', QR, XLIV, 1831, 475-511, 475-76.

20. See Brewster, 'Reflexions on the Decline', 324-25; also quoted in A.D. Orange, 'The Origins of the British Association for the Advancement of Science', British Journal for the History of Science, VI, 1972-73, 152-76, 156-57.
21. See Jack Morrell and Arnold Thackray's brilliant account of the early years of the BAAS, Gentlemen of Science. Early Years of the British Association for the Advancement of Science, Oxford, 1981, 58-60.
22. See D. Brewster, 'Great Scientific Meeting to be Held at York', EJS, n.s. IV, 1831, 374; Brewster, 'Observations on the Decline of Science in England', EJS, n.s. V, 1831, 1-16; Brewster, 'Observations on a Pamphlet, entitled "On the Alleged Decline of Science in England"', EJS, n.s. V, 1831, 334-58.
23. Babbage (12 February 1830), quoted in Morrell and Thackray, Gentlemen of Science, 47.

24. On this important provincial institution, see A.D. Orange, Philosophers and Provincials: The Yorkshire Philosophical Society from 1822 to 1844, York, 1973.
25. Report of the First and Second Meetings of the British Association for the Advancement of Science; at York in 1831, and at Oxford in 1832, 1833, 22 and passim. Further references to the BAAS Reports will read BAAS Report, town, year. All subsequent Reports were issued in single volumes.
26. BAAS Report, York, 1831, 41.
27. Morrell and Thackray, Gentlemen of Science, 548. Dickens's second 'scientific' Mudfog report was based on the Newcastle meeting, the scene, incidentally, of a major row which led Herschel to decline the presidency, and Babbage to cease attending annual meetings. This involved Murchison, as secretary, asking Babbage if he would accept the next presidency (which he did) and then asking Herschel (on his return from the Cape) if he would take on the job. Herschel, knowing nothing of the offer to Babbage, accepted. Babbage, on discovering what had occurred, called for Murchison's resignation. (See on this Hyman, Charles Babbage, 155-56.)
28. See Morrell and Thackray, Gentlemen of Science, 546. In London, many scientific societies had been long established and were, apart from the Royal Society, thriving. Most prominent were the Medical (founded 1773); Linnean (f. 1788); Mineralogical (f. 1799); Horticultural (f. 1804); Medical and Chirurgical (f. 1805); Geological (f. 1807);

Astronomical (f. 1820); Zoological (f. 1826); and Geographical (f. 1830). In Edinburgh, meanwhile, had been established the Royal Society (f. 1783); Royal Medical (f. 1734); Harveian (f. 1752); Royal Physical (f. 1771); Wernerian Natural History (f. 1808); Plinian (f. 1823); and the Hunterian Medical (f. 1824). Strangely, there were few societies in Ireland - most renowned were the Royal Irish Academy (f. 1786) and the Royal Dublin Society (f. 1731). One should not forget the Royal Institution in London (f. 1799). For an interesting report which finds the provincials to have more life and novelty, see Charles Lyell, 'Scientific Institutions', Quarterly Review, XXXIV, 1826, 153-79.

29. BAAS Report, York, 1831, 30. On Brougham's influence, see J. Hays, 'Science and Brougham's Society', Annals of Science, 20, 1964, 227-41. Another form in which science was diffused was in encyclopaedias, on which see A. Hughes, 'Science in English Encyclopaedias', Annals of Science, 7, 1951, 340-70. Whewell reported to Forbes in 1833, 'I find from Phillips that almost every little town in Yorkshire has its "Philosophical Society"' (Whewell to Forbes, 27 April 1833, in I. Todhunter, William Whewell, D.D., An Account of his Writings with Selections from his Literary and Scientific Correspondance, 2 vols, 1876, II, 165). Henry Brougham in an article on the Mechanics' Institutes in 1825 noted that 'the sacred thirst of science is becoming epidemic; and we look forward to the day when the laws of matter and of mind shall be known to all men.' (Henry Brougham, 'Mechanics' Institutions', Edinburgh Review, XLII, 1825, 499-504, 499). See also, 'On the Alleged Decline', Gentleman's Magazine, CI, 1831, 338.



30. Howarth, The British Association. This simple equation of BAAS = decline of science + German model has also been offered by J.T. Merz, A History of European Thought in the Nineteenth Century, 2 vols, Edinburgh, 1896-1903, I, 238-39, and by G.A. Foote, 'The Place of Science in the British Reform Movement, 1830-1850', Isis, XLIII, 1951, 192-208.
31. See, for instance, D. Brewster, 'Review of the First, Second, and Third Meetings', Edinburgh Review, LX, 1835, 363-94, 370.
32. This is the opinion articulated by L. Pearce Williams, 'The Royal Society and the Founding of the British Association for the Advancement of Science', Notes and Records of the Royal Society, 16, 1961, 221-33, in his Michael Faraday, 1965, 355-57, and in George Basalla, William Coleman, and Robert Kargon (eds.), Victorian Science: A Self-Portrait from the Presidential Addresses of the British Association for the Advancement of Science, New York, 1970.
33. See J.B. Morrell, 'Individualism and the Structure of British Science in 1830', Historical Studies in the Physical Sciences, 3, 1971, 183-204; A.D. Orange, 'The British Association for the Advancement of Science: the Provincial Background', Science Studies, I, 1971, 315-29; Orange, 'The Origins of the British Association', British Journal for the History of Science; Orange, 'The Idols of the Theatre: the British Association and its Early Critics', Annals of Science, 32, 1975, 277-94.
34. See Walter F. Cannon, 'History in Depth - the

Early Victorian Period', History of Science, 3, 1964, 19-38; Cannon, 'Scientists and Broad Churchmen: an Early Victorian Intellectual Network', The Journal of British Studies, 4, 1964, 65-88; and Susan Faye Cannon, Science in Culture: The Early Victorian Period, New York, 1978. As we shall see, there are problems in treating the Cambridge Network as a homogenous group, since there were particular conflicts within it at a philosophical level (e.g. between Whewell and Herschel), important disagreements between Babbage, Herschel and Whewell about Royal Society reform in response to the events of Davy's presidency, and differences of opinion about pedagogical matters.

35. Brewster, 'Reflexions', 325-27.
36. See Steven R. Turner, 'The Growth of Professional Research in Prussia, 1818-1848 - Causes and Context', Historical studies in the Physical Sciences, 3, 1971, 137-82; and W.V. Farrar, 'Science and the German University System, 1790-1850', in Maurice Crosland (ed), The Emergence of Science in Western Europe, 1975, 179-92. See also Bernard H. Becker, Scientific London, 1874, 267-77.
37. See Brewster, 'British Association', North British Review, 252-54; and Orange, 'British Association', Science Studies, 315 and passim.
38. See Morrell and Thackray, Gentlemen of Science, 547.
39. See, for example, Archibald Geikie, Life of Sir Roderick Murchison, 2 vols, 1875, I, 186; and John Willis Clark and Thomas McKenny Hughes, The

Life and Letters of Adam Sedgwick, 2 vols, Cambridge, 1890, I, 379, 390.

40. BAAS Report, York, 1831, 22; see also D. Knight, The Nature of Science: the History of Science in Western Culture since 1600, 1976, chapter 4; Orange, 'Origins of the British Association', 158-59 and passim. Lyon Playfair had earlier suggested that the dissemination of popular scientific knowledge would prevent the advance of 'real' science, i.e. mathematics ('An Elementary Treatise on Astronomy', Edinburgh Review, XXXI, 1819, 375-94, 393), and this seeming division between the universities and scientific societies was also enforced in the anonymous attack on the declinist movement; Gerrit Moll, On the Alleged Decline of Science in England, by a Foreigner, 1831 - a book sponsored, edited and with a foreword by Faraday (see on this work, Richard Yeo, 'Scientific Method and the Image of Science, 1831-1890', in Roy MacLeod and Peter Collins (eds), The Parliament of Science: the British Association for the Advancement of Science 1831-1981, Northwood, 1981, 84; Merz, History, I, 236; N. Reingold, 'Babbage and Moll on the State of Science in Great Britain', BJHS, 4, 1968, 58-64; and Moll to Faraday, 24 December 1830; 11 March 1831; 25 April 1831; 7 June 1831; 13 November 1831, in Faraday, The Selected Correspondance of Michael Faraday (ed. L. Pearce Williams), 2 vols, Cambridge, 1971, I, 187-89, 191-93, 195-98, 204-08.
41. Geikie, Murchison, I, 185.
42. Brewster, 'Review', Edinburgh Review, 374. Whewell himself rose to defend the universities from Brewster's charges in his 'Transactions of the

- Cambridge Philosophical Society. Volume III', British Critic, 9, 1831, 71-90.
43. See Brewster, 'Great Scientific Meeting', EJS, 374; Brewster, 'Notice', EJS, n.s. V, 1831, 181.
44. BAAS Report, York, 1831, 5-6.
45. ibid., 36.
46. ibid., 35.
47. Morrell and Thackray, Gentlemen of Science, 449.
48. Geikie, Murchison, I, 187-88.
49. Murchison to Whewell 1 March 1844, in ibid., II, 23. On Whewell's views at this time, see Clark and Hughes, Adam Sedgwick, II, 74.
50. Morrell and Thackray, Gentlemen of Science, 307.
51. William Whewell, The Philosophy of the Inductive Sciences, founded upon their History (1840), 2 vols, 1847, II, 366 (see later for details of this work). See also Whewell's remarks in BAAS Report, Cambridge, 1833, xi.
52. See Orange, 'British Association', Science Studies; Joe D. Burchfield, 'The British Association and its Historians', Historical Studies in the Physical Sciences, 13, 1, 1982, 165-74, and the references in notes 33 and 34 above.
53. Two useful studies are: Ian Inskter, 'Science and the Mechanics' Institutes, 1820-1850: the Case of Sheffield', Annals of Science, 32, 1975, 451-74,

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and Mabel Tylecote, The Mechanics' Institutes of Lancashire and Yorkshire before 1851, Manchester, 1957, 26-52 on their audiences.

54. On the Mechanics' Institutes as failed attempts at bourgeois persuasion, see S. Shapin and B. Barnes, 'Science, Nature and Control: Interpreting Mechanics' Institutes', Social Studies in Science, 7, 1977, 31-74; Ian Inkster, 'The Social Context of an Educational Movement: a Revisionist approach to the English Mechanics' Institutes 1820-1850', Oxford Review of Education, 2, 1976, 277-307; and C.M. Turner, 'Sociological Approaches to the History of Education', British Journal of Educational Studies, 17, 1969, 146-65.
55. Morrell and Thackray, Gentlemen of Science, 93.
56. See, for general background, Elie Halévy, The Triumph of Reform 1830-1841, (1927), 1961; G.B.A.M. Finlayson, England in the 1830s: Decade of Reform, 1969; A. Briggs, The Age of Improvement, 1783-1867, 1959; and Michael Brock, The Great Reform Act, 1973.
57. George Eliot in Felix Holt offers an insight into the changes brought about by reforms in the decades from 1830: the book begins literally with old coach-roads, well-polished tankards, pocket boroughs, and three-and-sixpenny letters... and ends literally with 'a young Felix, who has a great deal more science than his father, but not much more money' (see George Eliot, Felix Holt (1866), Harmondsworth, 1972, Author's Introduction, 75, and Epilogue, 606. Other important fictional accounts are Benjamin Disraeli's 'Young England' trilogy, Coningsby or The New Generation

- (1844), Sybil, or The Two Nations (1845) and Tancred, or The New Crusade (1847), particularly the first dealing with political struggles at Westminster and 'that condition-of-England question of which our generation hears so much' (Coningsby, Oxford, 1982, 61). On the links between the reform movements and the BAAS (and science generally) see Roy MacLeod, 'On the Advancement of Science' in MacLeod and Collins (ed), Parliament of Science, 17-42; Hilary Rose and Stephen Rose, Science and Society, 1969, 1-28; the excellent collection of essays in Ian Inkster and Jack Morrell (eds.), Metropolis and Province. Science in British Culture, 1780-1850, 1983; D.S.L. Cardwell, The Organisation of Science in England, 1972, 36-69; Everett Mendelsohn, 'The Emergence of Science as a Profession in Nineteenth-Century Europe', in Karl Hill (ed.), The Management of Science, Boston, 1964, 3-48; and G.A. Foote, 'Science and its Function in Early Nineteenth-Century England', Osiris, 11, 1951, 430-54.
58. Noted in his journal early in March 1831; The Journal of Gideon Mantell, Surgeon and Geologist, Covering the Years 1818-1852 (ed. E.C. Curwen), 1940, 93.
59. See BAAS Report, Dublin, 1835, liii; BAAS Report, Liverpool, 1837, xliii; Morrell and Thackray, Gentlemen of Science, 323-26; Geikie, Murchison, I, 185 and II, 264; and MacLeod, 'On the Advancement of Science', in MacLeod and Collins (eds), Parliament of Science, 37n2.
60. See on this Thomas Wemyss Reid, Memoirs and Correspondance of Lyon Playfair, 1899, 155-56 and anon, 'Babbage's Calculating Engine', Edinburgh

Review, LIX, 1834, 263-327, 324-27.

61. See, for example, Francis Baily, Remarks on the Present Defective State of the 'Nautical Almanac', 1829; James South, Refutation of the Numerous Mis-Statements and Fallacies contained in a Paper presented to the Admiralty by Dr. Thomas Young, 1829; South, Reply to a Letter in the Morning Chronicle... in the Promotion of an Astronomical Science, 1829. Thomas Young's appointment to the Board of Longitude was widely protested, e.g. by Babbage, The Decline, 55-56, 67-78, and passim, and in his The Exposition of 1851 (1851 2nd ed.), 195-98. See also J.L.E. Dreyer and H.H. Turner, History of the Royal Astronomical Society 1820-1920, 1923, 58-60.
62. See Brewster, 'British Association', North British Review, 244n (for references); and 'Notice', EJS, n.s. VI, 1832, 100.
63. See Morrell and Thackray, Gentlemen of Science, 141-42.
64. BAAS Report, York, 1831, 22 and passim.
65. See Brewster, 'British Association', North British Review, 255-56; Orange, 'Origins of the British Association', BJHS, 173; Morrell and Thackray, Gentlemen of Science, 142.
66. James F.W. Johnston, 'Account of the Scientific Meeting at York', EJS, n.s. VI, 1-32.
67. Brewster, 'British Association', North British Review, 262.

68. e.g. in 'Review of the First', Edinburgh Review, 363-94.
69. See, for example, Brewster's reference to the 'long list of distinguished characters whom England has starved and dishonoured' in his The Martyrs of Science; or, the Lives of Galileo, Tycho Brahe, and Kepler, 1841, 343; also the response by Thomas Galloway, 'The Martyrs of Science', Edinburgh Review, LXXX, 1844, 164-98, 197.
70. On this, see A.E. Musson and E. Robinson, Science and Technology in the Industrial Revolution, 1969.
71. See D.P. O'Brien, The Classical Economists, Oxford, 1975, 274-75.
72. See Morrell, 'Individualism', Historical Studies in the Physical Sciences, and Cannon, Science in Culture, 167-96 for enlightening discussions.
73. In 1831, Sir John Herschel, Sir David Brewster; in 1835, Sir William Hamilton; in 1836, Sir William Hooker; in 1842, Sir Henry de la Beche; in 1844, Sir James Ross; in 1845, Sir Charles Fellowes; in 1846, Sir Roderick Murchison, Sir Robert Kane, Sir John Richardson; and in 1850, Sir Charles Lyell.
74. In 1831, William Smith; in 1832-36, James Ivory; in 1833, John Dalton; in 1835, Airy, Faraday, J. Montgomery, Thomas Moore; in 1841, William Harris, Dr. Anster; in 1842, Richard Owen, John Curtis; in 1843, Robert Brown; in 1844, Sir William Hamilton; in 1846, J.D. Forbes; in 1847, G. Newport; in 1848, J. Couch Adams.



75. George Peacock was appointed Dean of Ely; Airy appointed Astronomer Royal, Whewell appointed Master of Trinity; Buckland, dean of Westminster; Challis, Astronomer at Cambridge; Sedgwick, Prebendary of Norwich; and Hamilton, Astronomer Royal, Dublin.
76. Brewster, 'British Association', North British Review, 280 (my data on pensions, appointments, and knighthoods are derived from this article, 279-80).
77. For details, see Howarth, British Association, 266-92; Brewster, 'British Association', North British Review, 272-74; Morrell and Thackray, Gentlemen of Science, 314-15; and W.H. Brock, 'Advancing Science: The British Association and the Professional Practice of Science', in MacLeod and Collins, Parliament of Science, 89-117, esp. 102-09.

CHAPTER FIVE: IN THE PUBLIC EYE/ IN THE PRIVATE MIND

I. An Image of Science; or, a First Taste of Bacon

The early prototype of the BAAS in the minds of Babbage, Brewster and other declinists was, as we have seen, the *Deutscher Naturforscher* - what Richard Owen later called the 'Okenian model'.<sup>1</sup> There were notable differences between the two organizations,<sup>2</sup> but many historians have followed the most vociferous (and volatile) scientific critic of the period, Brewster, in seeing the origins of the BAAS in the 'decline of science' movement and the inspiration of developments on the continent. Vernon Harcourt, who is coming to be recognised as the most powerful force behind the founding of the BAAS, dug further back into history and into home ground for his inspiration. He found it in Francis Bacon's New Atlantis (1627).

Harcourt's was in many respects an apposite and timely choice, as Bacon's ideas were once again attracting general notice, particularly as a result of Lord Montagu's edition of his works (1825-34). Some declinists, or simply critics of contemporary science, looked abroad for solutions to their dilemmas; others thought it more proper to think of the period in which the Royal Society and English science had reached its peak. Who better then to turn to than the inspirer of the Royal Society, Francis

Bacon? Nowadays, we are wiser, and we naturally question the notion of Baconianism as a founding moment of mid-seventeenth century science.<sup>3</sup> Bacon's philosophy is very rarely treated sympathetically in our age,<sup>4</sup> and some who find it appealing appear to do so for the wrong reasons.<sup>5</sup> We may think of Bacon's life and work, like Huxley, as a 'failure'<sup>6</sup> or like Alexandre Koyré, as a 'joke'.<sup>7</sup> It seems difficult to imagine that the man or the model could have led to anything, still less inspired anyone. We have seen recent studies purporting to show - and in some instances, succeeding in their aims - that Bacon was little more than a warmed up Aristotelian,<sup>8</sup> that he followed in a line of medieval and renaissance thinkers,<sup>9</sup> that he affected - or failed to affect - the *philosophers*,<sup>10</sup> that he was, or was not, a lackey of incipient capitalism,<sup>11</sup> and so forth. What is required if we are to understand the strange attraction Bacon and Baconianism had for many early-Victorian natural philosophers, is clearly to understand what was thought and known about his philosophy of science. What scientists thought of Bacon rather than whether what they thought was correct or not, is one issue we will seek to address in this chapter, with particular reference to the writings of Herschel and Whewell.

One view which seems to have been shared both by those who derived inspiration from his work and by those who denigrated it, was that Bacon's writings on induction were neither unique, nor particularly original. With a good deal of inflated rhetoric, Macaulay in his famous

1837 review of Montagu's edition of the Works of Bacon argued that the inductive method had been widely used at least since classical times. It was a point made so vehemently that one tends not unnaturally to think that Macaulay was establishing a polemical position, arguing his own case. Yet looking at studies of Bacon published in the two previous decades, one finds this point reiterated time and time again.<sup>12</sup> As Sir James Mackintosh wrote reviewing Dugald Stewart's long essay on the development of philosophy, 'what Bacon aimed at, he accomplished; which was, not to discover new principles, but to excite a new spirit, and to render observation and experiment the predominant character of philosophy'.<sup>13</sup>

Yet to many eighteenth century writers (including those involved in the elocution movement and the development of modern philology),<sup>14</sup> the works of Bacon offered the key to understanding the true method of scientific discovery; by 'induction' the natural philosopher started with the observation of effects and deduced from them the *verae causae* in nature. The method of 'hypothesis' was viewed as a false and debilitating means by which the mind was led to make wild guesses at the hidden workings of the world. In short, induction led to truth, hypothesis to error. Moreover, this notion was commonly seen to have the added sanction of Newton himself - had he not ended the second edition (1713) of his Principia by claiming that 'hitherto I have not been able to discover the cause of those properties of gravity from phenomena,

and I feign no hypotheses. For whatever is not deduced from the phenomena is to be called an hypothesis; and hypotheses, whether of occult qualities or mechanical, have no place in experimental philosophy'.<sup>15</sup> Recently, it is true, we have come to realise that Newton's philosophy is more complex than at first appears, and that he did indeed use 'hypotheses' and seek the causes of gravity in his work;<sup>16</sup> but in the eighteenth century and for much of the nineteenth, he was the fellow who in Charles Lamb's words, 'believed nothing unless it was as clear as the three sides of a triangle'.<sup>17</sup> Even to picture Newton as refusing to 'feign' hypotheses is to modernize him; in Motte's influential eighteenth-century translation of the Principia, Newton declines even to 'frame' them.<sup>18</sup>

Bacon's and Newton's views of method were frequently conflated during the 1700s, and this only served to guarantee still further their truth. A 'Baconian-Newtonian' influence was especially powerful in Scottish philosophy and widely disseminated through the Scottish universities. Thomas Reid, teaching first in Aberdeen and then in Glasgow, counselled the scientist in his Essays on the Intellectual Powers of Man (1785) to 'treat with just contempt hypotheses in every branch of philosophy',<sup>19</sup> and this along with the view that causes had to be both true and sufficient - a restatement of Newton's first rule of philosophizing<sup>20</sup> - formed the ground for his methodological attitudes.<sup>21</sup> Bacon - and Newton - were fundamental

reference points for a Common Sense philosophy which in opposition to Humean scepticism sought certainty in knowledge, which by showing the dangers of analogical reasoning could hope to reduce the theory of ideas to the status of a fanciful hypothesis based on misleading physical analogies. That moral philosophy itself came to assume an enormous importance since it formed, as George Davie has shown, the keystone around which other intellectual disciplines were organized as part of a liberal education.<sup>22</sup> There was, in short, during the eighteenth and early nineteenth centuries a fertile and pervasive influence and interaction between natural and moral philosophy within the Scottish universities, a relation symbolised perhaps by Hume's own Treatise on Human Nature: An Attempt to Introduce the Experimental Method of Reasoning into Moral Subjects (1739).<sup>23</sup>

Though Bacon and Newton are crucial nodes within the Scottish intellectual network, it is important to recall that Baconian inductivism itself was coming under question by a number of those within the 'Common Sense' school. The hostility to hypotheses and analogies shared by Reid, James Beattie, the chemist Joseph Black and the scientific polymath Henry Brougham was significantly softened by the 'Edinburgh' (as opposed to the 'Aberdonian') school of Dugald Stewart and Thomas Brown which impacted upon Brewster.<sup>24</sup> Here there was far more emphasis placed on the unifying and creative interpretation of the natural world, which could employ cautious and controlled ana-

logical and hypothetical reasoning. The effect of the methodological debates within the Scottish tradition upon scientific theory choice has begun to be considered in particular case studies,<sup>25</sup> but it remains difficult to gauge to what degree general philosophical and methodological developments percolated downwards across the border to make an impact upon English science.<sup>26</sup> Though this issue does not form part of our study, we shall in the subsequent discussion of the work of Herschel, Whewell and others make occasional reference to Scottish debates. What does seem clear is that the interest shown in the work of Bacon by Scottish natural and moral philosophers was the most explicit expression of a more general rethinking about scientific method, about the epistemological bases of specialized forms of knowledge, which occurred throughout Britain.

\* \* \* \*

Bacon, it was thought, had excited a new spirit: he had invented nothing, but changed everything. This, one can see, renders Bacon's philosophical views almost timeless, almost always applicable. He, too, was a reformer; in an age of reforms, then, who better to turn to for guidance? To Harcourt, the Baconian model had a direct appeal, for the foundation of the Royal Society was an 'attempt to reduce to practice the splendid fiction of the New Atlantis'.<sup>27</sup> The migratory aspect of the BAAS along with its careful division of labour and organization

of tasks, seemed also to match Bacon's fiction in fact.

A recent historian of the BAAS has claimed that at the outset the organization consciously assumed a Baconian stance.<sup>28</sup> This is certainly true; and we might add that as a figure of appeal, Bacon continued to be referred to in later years. In his 1858 presidential address, the superintendent of the Natural History Museum, Richard Owen, spoke of the BAAS 'realising the grand Philosophical Dream or Prefigurative Vision of Francis Bacon.'<sup>29</sup> As no more than a vaguely outlined figure, Bacon seemed to play the role of Newton in the mid-eighteenth century: quite simply everyone professed allegiance to his views. In some cases, this worship reached absurd and easily caricaturable proportions. As a Quarterly Review critic wrote in the 1830s:

'Some time back, the eminent person who now as Lord Chancellor, is peculiarly Bacon's successor (i.e. Lord Brougham), expressed a hope that in the course of the schoolmaster's triumphs, the day would come when every Englishman would be able to read Bacon; Mr Cobbett, who has long maintained that the true interest of Englishmen is to keep pigs and read his Register, observed somewhat contemptuously that it would be more to the purpose to hope that we might all come to *eat* bacon'.<sup>30</sup>

The reviewer was William Whewell, exercising his characteristically trenchant wit to good effect. As we shall see, he had a clear case to argue; a more ferocious but less articulate critique of Bacon flowed from the pen of



of Macaulay. To his mind, Bacon had not only repeated philosophical views held from Aristotle onwards, but in Novum organum (1620), Bacon provided no more than 'an analysis of that which we are doing from morning to night, and which we continue to do in our dreams.'<sup>31</sup> This being so, induction could be performed well or poorly, and could equally lead to error or to truth. The method in itself was therefore useless as a guide to the advancement of knowledge.<sup>32</sup> All the philosopher could do, argued Macaulay, was to provide others with good reasons for performing their tasks well, not with the rules for the performance itself.<sup>33</sup> But by this time, as we have suggested, Bacon's stature was as more than a philosopher. Macaulay therefore felt impelled to launch an attack - a garbled and distorted one, it later transpired<sup>34</sup> - on Bacon the man. His ethical and political beliefs and actions having been impeached, the implication was clearly that the inductive method was no guard against duplicity and treachery. Induction could lead to knowledge or ignorance; the Baconian version tended, so it appeared by association, towards the latter.

Against this wild and furious denunciation (which passed lightly over Bacon's writings on scientific method), one must place the earlier positions developed in John Herschel's Preliminary Discourse on the Study of Natural Philosophy (1831),<sup>35</sup> a work which had a profound impact on the orientation of the BAAS, and indeed, on scientific culture in the period 1830-1850.<sup>36</sup>

Scholars have traditionally found in this work a rehearsal of hypothetico-deductivist views, with, as one has put it, 'the blessing of Bacon' thrown in.<sup>37</sup> To think that such an important work could have anything but tenuous links to Bacon's ideas is, at a time when those ideas are ridiculed, quite unthinkable. Yet, the Preliminary Discourse was, with its Baconian title-page (see plate 10), an updated rendering of the Novum organum, with the general precepts on method which Bacon had formulated but had been unable to illustrate now interpreted afresh in the light of the scientific achievements of the intervening two centuries. Herschel began by accepting in some senses that Baconian induction was a restatement of the obvious. But sometimes the obvious needs stating and restating again; moreover, what he saw as characteristic of Bacon's philosophy was 'his keen perception, and his broad and spirit-stirring, almost enthusiastic, assessment of its paramount importance, as the alpha and omega of science, as the grand and only chain for the linking together of physical truths, and the eventual key to every discovery and every application'.<sup>38</sup> At a time of widespread talk of decline, pessimism, and the break-up of a number of long-held scientific beliefs, Baconianism seemed promising, attractive, missionary.

At the heart of Herschel's text is the contrast between abstract science and natural science. The truths of the first are arrived at by reason alone pondering the

relations between ideas; those of the second come from the experience of the relations of cause and effect holding between facts.<sup>39</sup> But this contrast is questioned thoroughly and with devastating effect, as we shall see. Like Bacon, Herschel holds that the major impediment to scientific progress is prejudice; or rather the two prejudices of sense and opinion. These distort man's view of nature and prevent the development of merely passive observation into a more active mode, that is, roughly speaking, the development from experience to experiment.<sup>40</sup> Prejudices cast aside, the observation of facts and the accumulation of data can begin. What is required by the natural philosopher for these tasks is merely skill and patience - the techniques which can be acquired to record accurately, literally and without prejudice, and to measure and enumerate carefully. At the heart of the scientific enterprise lies not an all-powerful mind, nor native genius, nor even especial talents, but skill. The 'very soul of science', writes Herschel, 'is numerical precision'.<sup>41</sup> There are no heroes in the Herschel chronicle of scientific history either, nor any big leaps: just simple, gradual steps up the mountainside.<sup>42</sup>

Science is the study of those phenomena, or, what seem to be the same things, sense impressions which occur uniformly and invariably under the same circumstances.<sup>43</sup> For phenomena to be useful as a grounding for physical science, they must be governed by law. The process of

scientific work may be democratic, but it needs nonetheless to be organized. That law is discovered by gently moving from a lower to a higher level of generality. The law indeed is little other - perhaps nothing more - than general facts.<sup>44</sup> And general facts themselves are facts made general by their preponderance in nature, and also by their causal relations one with the other. The law then is a causal law, with causality (though variously described),<sup>45</sup> seeming most strongly to suggest Newton's *verae causae*. The paradigm case of a causal law is therefore the law of gravitational attraction.

'When any phenomenon presents itself for explanation', Herschel writes, 'we naturally seek, in the first instance, to refer it to some one or other of those real causes which experience has shown to exist.'<sup>46</sup> To be certain that *verae causae* have been discovered, Herschel finds it necessary to argue analogically from experience.<sup>47</sup> Needless to say, without this resort, Herschel was bound to encounter difficulties with his advocacy of the wave theory of light, since one can neither see nor experience the undulations. Hence the use of analogy in some papers on the subject,<sup>48</sup> though by 1841, Herschel had come to accept unity and simplicity as important factors of a theory, and thus as reasons for that theory's acceptance.<sup>49</sup> Still, in the Preliminary Discourse, cause follows effect 'invariably',<sup>50</sup> where invariance is synonymous with law-like behaviour.<sup>51</sup> Hence Herschel is led to question his distinction between abstract science and

the natural sciences; for all laws are causal laws - even those of the mathematical sciences, which Herschel provocatively terms 'unverified inductions'.<sup>52</sup> The induction process is the process of formulating laws, either between classes of things (as in 'mature' sciences), or between things within a class (as in 'infant sciences'). No natural phenomenon, wried Herschel, 'can be adequately studied in itself alone, but, to be understood, must be considered as it stands in relation with all nature'.<sup>53</sup>

Science therefore searches for real causes, and does so knowing that it will discover uniformity in nature,<sup>54</sup> a uniformity which is reflected in the singular method it deploys in the search. The problem of proof is a problem of verification by the deduction of predictions and the comparison of these with observed facts.<sup>55</sup> It is in this sense that 'the successful process of scientific enquiry demands continually the alternate use of both the inductive and deductive methods'.<sup>56</sup> Herschel can only be made to fit the twentieth-century category of the hypothetico-deductivist by denying the nineteenth-century distinction between a 'context of discovery' and a 'context of justification'. Induction to Herschel serves to discover new laws and facts in science; it is a generalization on the basis of particular facts, and a deployment of such generalizations to lead to higher level laws. In both instances however, the native character of induction is the same. The worker capable of the first

is capable of the second. Hence, the axioms or 'unverified inductions' of geometry can be thought of as obtained from experience and verifiable by the appeal to nature'.<sup>57</sup>

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This brief summary of the positions staked out in the Discourse will suggest that Herschel has inadequately distinguished law from cause, theory from law, and force from cause; Herschel, we are tempted to say, had not sufficiently recognized the epistemological nature of his enterprise. But despite this seeming superficiality - or perhaps as its result - the message of the work rings loud and clear. General rules can be given - indeed Herschel does provide them with his 'ten rules of philosophizing' - to guide and formulate the search for causes and the discovery of laws. The advancement of knowledge can be brought about by following rules.<sup>58</sup> By such rules, error will be eliminated in science and prejudice curbed, for what is deemed knowledge will be that which has come from induction. To think of rules is to think of abiding by a system of prescriptions and proscriptions, and this is just what Herschel intends. Science will advance to the extent that the mind which naturally 'delights to escape from the trammels which had bound it to earth', learns to accept 'self-restraint'.<sup>59</sup>

It hardly needs to be said that the tone, the conjuncture, and the aim is Baconian. The only way out of the

tunnel and into the light is to follow the road. There is no 'royal road' to science, nor an especially 'popular one'. In this much Herschel would agree with Whewell - but *there is a road nonetheless* and it is one which can be charted.

Bacon also serves as a reminder that the philosophy of induction is a philosophy of works. Herschel's text is not an abstract treatise of philosophical method, but an announcement that scientific method will improve man's estate. For Herschel, as for Macaulay's Bacon, the central elements of the programme are utility and progress.<sup>60</sup> This is not to say that science is merely a vehicle for social improvement, for Herschel recognizes that science would be degraded by 'placing it in the light of a mere appendage to and caterer for our pampered appetites'.<sup>61</sup> But if there is a balance to be made between science as theory and science as practice, the Discourse leans markedly towards the latter; the beauty of science, its elevated and elevating character - these are aspects Herschel mentions almost always in the same breath as pronouncements about the goodness of the Creator.<sup>62</sup> There is no doubt, however, that the method is destined in Herschel's mind to intrude into other more prosaic spheres of life. 'The successful results of our experiments', he writes, 'tend of necessity to impress something of the well weighed and progressive character of science on the more complicated conduct of our social and moral relations.'<sup>63</sup> And in case the point was under-

stated, he adds, 'It is thus that legislation and politics become gradually regarded as experimental sciences.'<sup>64</sup>

In a period of doubt, not to say outright pessimism, about the future course of scientific knowledge, Herschel offers a recipe for success - one tried and tested. With anxieties about the overthrow of Newtonian optics uppermost in his mind, he offers a method used by Newton which can be guaranteed to produce equally startling results. The single, unified method will bring together the scientific community; it will solder together the different branches of natural philosophy; it will produce riches and improve man's lot in the world; and it will further knowledge of the world (and hence of its Creator). A philosophy of success then, as Joseph Agassi has rightly claimed.<sup>65</sup>

But the scientific method will not only make more known and even (through the science of statistics) capture previously elusive phenomena like mental impressions and human diversity.<sup>66</sup> It will in addition make more known to *more people*. The success will spread through the community of scientists but also through society. Science will not hand out its products, but invite the audience to join in its labours as participants. Science is not spectacle but sport. Even astronomy, that most elevated and mathematical of the sciences, will profit from the lowly labours of the multitude observing falling stars, or measuring atmospheric pressure, or looking



heavenwards at the aurora borealis.

Harcourt it will be remembered, spoke of the £1 passport into the BAAS. Herschel wishes to make it equally easy to enter the land of scientific work: all that is required is the ability to see, and the skills which the Discourse is designed to inculcate. Observation is the common denominator, the universal leveller. Certainly, the art of discovery or invention cannot be reduced to rule; but, writes Herschel, that is because there is no such thing as the art of discovery, only the *art of observation*.<sup>67</sup> Babbage's 'observer, possessing ordinary faculties'<sup>68</sup> is the *dramatis persona* of Herschel's textbook. Nature, both agree, sometimes hides her secrets but these remain concealed not because the philosopher lacks theory, or ideas, or genius. These are not the keys which will unlock the treasure-chest. Scientists suffer the mysteries of nature '*from not knowing how to see (them)*'.<sup>69</sup> Babbage's book, like Herschel's, is designed to train the observer '*how to see*' objects.<sup>70</sup> Of course, the category of 'observation' bears a great weight in this empirical discourse; as Augustus de Morgan later wrote, 'by observation', Herschel means 'the whole course of discovery, observation, hypothesis, deduction, comparison etc.'<sup>71</sup>

This may well be the reading we are required to have of Herschel's text, but its more immediate effect was to encourage the popular participation of cultivators of

science in the accumulation of evidence; evidence collected deliberately and determinedly. Herschel himself is remembered for his philosophical work, but also for his own attempts to classify and to chart every single nebula in the heavens, to collect, that is, a huge mass of data. His collecting was intended, to be sure, to furnish evidence for his father's theory of the evolution and structure of the cosmos; though later in life he began an enormous double-star catalogue which had far less overt theoretical direction. And, as Cannon has noticed, even Herschel's monographs in physics (like those of Faraday in chemistry) are a very different kind of reading than say, the Principia (1687). 'They reported', writes Cannon, 'exhaustive tests on a wide variety of different substances and different forms of substances'.<sup>72</sup> In other sciences the same kind of fact-gathering occurred during the period 1830-50. Even in geology, the example which seems least amenable to our picture, it is worth remembering that the desire of the founders of the Geological Society of London was to encourage observation from individuals scattered around the country and promote co-operation amongst those with, and without, formal scientific training.<sup>73</sup> Figures like Lyell, Sedgwick and Murchison ranged far and wide in Europe to amass the data for their theoretical speculations. The funding of observatories in the 1830s, which we have already drawn attention to, provided for the establishment of an advance guard of data-accumulation bases for fields such as astronomy, meteorology, tidology

and magnetism.

In the pages of the BAAS in the earlier years of its development - indeed, those years in which it witnessed such astonishing growth - one can find dozens of reports of 'amateur' sightings and measurements of tides, falling stars, and various atmospheric phenomena. Dickens's parody of the remarks of the Mudfog Association's Baconian president to the effect that the individual Sections were to be built on 'nothing but facts and figures',<sup>74</sup> was clearly an accurate statement of some currents within the BAAS. That he tied the remark to the example of the aurora borealis, which shed its 'refulgent light upon the town',<sup>75</sup> may seem at first a trifle odd. But this phenomenon was widely reported at BAAS meetings throughout the thirties.<sup>76</sup> Moreover, it also gave rise to a controversy which in essence typifies the objections to Baconianism. For whilst 'amateur' observers continued to bring forth their notices of the aurora, some, like Dalton, argued that the need was for a theoretical understanding of the phenomenon, an understanding which, he proposed, could only be available to those trained in the physical sciences.<sup>77</sup> This illustrates something of the reaction to Herschel's model of scientific work. It was, as we have shown, one which sought to advance and *spread* science, rather than to concentrate its power in a few hands.

Reading the Preliminary Discourse, it is easy to see how

a whole generation of men and women could have been inspired to philosophize and scientize about the world surrounding them. 'Science', writes Herschel in concluding his book, 'still remains boundless and unexplored, and, after a lapse of a century and a half from the era of Newton's discoveries, during which every department of it has been cultivated with a zeal and energy which have assuredly met their full return, we remain in the situation in which he figured himself - standing on the shore of a wide ocean, from whose beach we may have culled some of those innumerable beautiful productions it casts up with lavish prodigality, but whose acquisition can be regarded as no diminution of the treasures that remain.'<sup>78</sup>

This call for the input of zeal and energy into scientific research met a quick response in the BAAS, and through numerous reports in the press and the quarterlies, and books and pamphlets on popular science, spread scientific culture throughout early Victorian society. Once we abandon our preconceptions about what constituted that culture, we can begin to fathom how it was that it had such widespread influence. From the unknown, unremembered participant at the first BAAS meeting in York to the pinnacle of Victorian science, Herschel's Discourse had the same impact; as Darwin later recalled, it 'stirred up in me a burning zeal to add even the most humble contribution to the noble structure of Natural Science'.<sup>79</sup>

The period from 1830 to 1850 is not only important because it witnessed the growth of science throughout society, along with the publication and diffusion of Herschel's remarkable study of scientific method. We have examined the early history of the BAAS in sufficient detail to know that the model for science, and image of science, which Herschel, Babbage, Harcourt and many others promoted was not accepted by all. The period we are submitting to study also saw the development of a quite different *kind of explanatory structure* (and hence image of science) in Britain. It was an ideology which Herschel recognized as being 'diametrically opposed' to his own.<sup>80</sup> It is to this ideology that we now turn.

## II. Another Image of Science; or, The Sheep and the Goats

The nineteenth-century quarterlies not only produced monumental reviews, they also published these shortly after their subjects of attention had appeared in the bookshops. Almost before the Preliminary Discourse had appeared, a glowing tribute to it was printed in the Quarterly Review, at the time the most receptive of the three general quarterlies to scientific matters. The reviewer praised Herschel in the most fulsome terms; he has 'shown himself with singular alacrity at every point of the frontier of human knowledge, where there seemed to be a chance that the boundary line might be pushed forward'. And then to emphasize the point, the reviewer

continued with a catalogue of the path-breaking researches Herschel had undertaken in pure mathematics, physical optics, chemistry, astronomy, acoustics, geology, magnetism, mineralogy, and galvanism.<sup>81</sup>

This tone was quite typical for its time, for in 1831 Herschel was recognized throughout Britain as the most distinguished and renowned living natural philosopher. As we have suggested, he was also a formidably popular figure; to be scientific in the popular mind, a recent scholar has written, 'was to be as much as possible like Herschel.'<sup>82</sup> And the fame continued unabated and unquestioned throughout the century. In Arabella Buckley's hugely popular Short History of Natural Science ('for the use of schools and young persons') we learn that he 'died in 1871, and was buried in Westminster Abbey, but never will those who knew him forget the beautiful truth-loving spirit which breathed in every word he spoke.'<sup>83</sup> Herschel had, it is true, failed to achieve the Presidency of the Royal Society but he would undoubtedly have been consoled to know that in his 1833 President's Address, the Duke of Sussex remarked of him that 'such a model of an accomplished philosopher can rarely be found beyond the regions of fiction'.<sup>84</sup> A fair comment indeed - except that many might first have heard of Herschel in just those regions. Witness the favourite nursery rhyme of the epoch:

'Oh Herschel! Oh Herschel! Where do you fly?  
To sweep the cobwebs out of the sky.'<sup>85</sup>

In addition to being a distinguished scientist and a figure of popular imagination, Herschel had through his book provided what his Quarterly Review critic described as 'one of the first considerable attempts to expound in any detail the rules and doctrines of that method of research to which modern science owed its long-continued steady advance and present flourishing condition.'<sup>86</sup>

The critic was clearly an admirer then, but a reviewer of stature who did not abide by all the talk of decline and collapse. Herschel's critic was in fact William Whewell, his long-time friend and admirer.<sup>87</sup> This however, is not the Whewell we would recognize, and we would be hard pressed to find any traces of idealism, of Kantianism, or talk of consilience of inductions in his review. On the contrary, the fact that Whewell refrained from strong criticism of the Discourse may well be part testimony to the immediate impact of its doctrines, as well as evidence of the general acceptability of neo-Baconianism. For as Whewell conceded, 'the whole atmosphere of literature rings with the name of *'Lord Bacon'*, and with the paeans of "Inductive Philosophy"'.<sup>88</sup>

Two years later (that is, two years into the life of the BAAS), Whewell's address to the Cambridge meeting of the association reveals a decisive change of tone. His colleague at Trinity College, George Airy, had earlier criticized the English scientist for thinking that, unlike his continental counterpart, 'he has done every

thing when he has made an observation.'<sup>89</sup> Whewell followed up the line of criticism to pronounce that the common antithesis of fact and theory was divisive and deluding, adding that far from facts existing ready for the researcher to gather them up, these had to be organized, connected and linked together with that 'unconquerably obnoxious' term 'theory'.<sup>90</sup> Whewell did however add that each deduction from theory had itself to be made solely for the purposes of comparison with observable facts - the paradox of these two statements seeming to pass unnoticed.<sup>91</sup> Whewell is in 1833 quite unsure of how to reconcile the demands of empiricism and rationalism, those of induction and deduction. In his 1833 Bridgewater treatise, Whewell suggests (or seems to suggest)<sup>92</sup> that deductivism has a greater tendency to religion than induction.<sup>93</sup> Yet he remains faithful to Herschel's view that the most deductivist of the sciences, mathematics, is based on experience and not on any innate *a priori* intuitions.<sup>94</sup>

Herschel rightly recognized that the great change in Whewell's views on the philosophy and methodology of science was perceptible only in Whewell's two major treatises published at the end of the decade.<sup>95</sup> These works, were, however, being written in the mid-1830s. In a short pamphlet on the teaching of mathematics, printed in 1835, Whewell is already advancing the opinion that it would be wrong to instruct pupils about the axioms of geometry as though these were derivable from



experience.<sup>96</sup>

For Whewell's developed positions on the philosophy of science we must turn to his History of the Inductive Sciences (1837), and his Philosophy of the Inductive Sciences (1840).<sup>97</sup> It is here that we can find that philosophy of knowledge which Herschel referred to as 'diametrically opposed' to his own.<sup>98</sup> An indication of the opposition is Whewell's estimation of Bacon and Baconianism. In 1831, Whewell announced that only the person who had wilfully and ignorantly *misread* Bacon's works could judge these as anything but a major contribution to philosophy, and indeed, to the progress of natural science.<sup>99</sup> Six years later, one might have expected a developed account of this contribution, but in fact in the 1600 pages of text in the History barely three are devoted to Bacon's work. Bacon is to be remembered, it would appear, for his refusal to accept Copernicanism, and for the 'obvious' response he gave to the problem of the transmission of sound.<sup>100</sup> By 1840, Whewell returns to the subject to claim that while Bacon's general maxims still guide and animate philosophical debate, these are simply 'inapplicable' to the contemporary epoch. 'The technical parts of his method failed in his hands, and are forgotten among the cultivators of science.'<sup>101</sup> We might be faced here with another paradoxical set of responses - 'still guiding' yet 'inapplicable', 'animating discussion' yet 'forgotten' - except for the fact that the opposition is intended to underscore a

distinction Whewell wishes to inaugurate: that between philosophy and science. We shall return to this subject a little further.

Notwithstanding the fact that Bacon's work remains to all extents and purposes outmoded and useless, Whewell still admits that one of the Lord Chancellor's doctrines remains pertinent. Whewell agrees with Bacon that true knowledge is only to be obtained from facts by induction.<sup>102</sup> What then is intended by 'induction'?

Part of the meaning of the term is accumulated in difference - as a black contrast to the clarity of its opposite, deduction. One is servile, the other elevating (epistemologically, theologically and so forth). 'Induction', writes Whewell, 'moves upwards, and deduction downwards', but he adds, 'on the same stair'.<sup>103</sup> We are offered then a faint reminiscence of Baconianism, but one which bears little relation to that in Herschel's Discourse. To the most perceptive minds of the era, it was clear that something important was happening in the field of philosophy. J.S. Mill was quick to note, in response to Whewell's books, that 'a revolution is peaceably and progressively effecting itself in philosophy'. What was occurring was a subtle shift of position in relation to a fixed point (or since Bacon was, of course, interpreted in many ways, we should say a relatively fixed point). Mill went on to describe the revolution as 'the reverse of that to which Bacon has attached

his name. That great man changed the method of the sciences from deductive to experimental, and it is now rapidly reverting from experimental to deductive.<sup>104</sup> In truth, Baconianism had become a fiercely contested term, in as much as to be scientific entailed being inductivist. Whewell's doctrine was diametrically opposed to inductivism, yet he was forced by the weight of respect that term had acquired, to define his position as in some measure inductivist. Later in life, he frankly admitted that he had appropriated the word for his method, for the whole world seemed to make the two synonymous.<sup>105</sup> To Whewell, induction is not a process of inferring from the particular to the general, nor a summary description of observations, but a mental process of applying ideas to facts which involves two separate, but he maintains, simultaneous acts. The first, what he terms the 'explication of concepts' is intended to render concepts clearer, whilst the second, the 'colligation of observed facts', binds facts together more strictly. Put simply, induction is a conceptual process which involves understanding the ways in which a group of data can be better organised or 'colligated' under a certain conception. That conception is a comprehensive and *a priori* form of thought. 'My argument', he wrote to Herschel, 'is all in a single sentence'.

'You must adopt such a view of the nature of scientific truth as makes universal and necessary propositions possible; for it appears that there are such, not only in arithmetic and geometry, but in mechanics, physics, and other things. I know no solution of this difficulty except by assuming *a priori* grounds.'<sup>106</sup>

Whewell's fundamental ideas are set out in his Philosophy and in the work he aims to show how particular ideas - or Ideas - have been the foundation for particular sciences, how for example, geometry and arithmetic have developed on the basis of the Ideas of Space, Time and Number; how the mechanical sciences are founded on the Ideas of Force and Matter, and so on. The framework is (to us at least) recognisably Kantian, but it should be remembered that this was a debt few of Whewell's critics drew attention to or even noticed.<sup>107</sup>

For such basic Ideas to serve as foundations, it is clear that the conceptions themselves need to be analysed and the facts need to be reduced to their basic elements; the concepts, to use Whewell's language, must be 'explicated' and the facts 'decomposed'. This aspect of Whewell's doctrine might be considered as methodological rather than philosophical. In broad philosophical terms, induction is judged to be demonstrative in that it leads one to necessary truths, statements whose negation is not only false but impossible to conceive.<sup>108</sup> There are, as in Herschel's account, a number of different stages in Whewell's 'induction', with the 'highest' taking place when a 'concilience of inductions' occurs once a richer theory is imagined which can then be deployed to arrange previously disorganized facts.<sup>109</sup>

After the two stages of induction have taken place, the next process is the verification of the colligating

character of the conception. To Whewell, this verification involves three tests: the prediction of facts by the conception; the consilience of separately induced conceptions; and the progressive simplification of conceptions. Again, without delving deeply into the technical nature of these processes, we can note that the major feature of the whole procedure is that the criteria of acceptability for a theory are not evidential.

One central difference between Whewell's and Herschel's methods can be illustrated by their approaches to the science of mechanics. Whewell always attached great importance to his understanding of this science, particularly as it was in this area that he first developed his notion of causality.<sup>110</sup> Quite simply, he believed that the laws of motion were necessary consequences of the Idea of cause. This idea entails, for Whewell, the axiom that 'nothing can take place without a Cause',<sup>111</sup> and this in itself furnishes the *a priori* character of the first law of motion. 'Though the discovery of the First Law of Motion', he writes, 'was made, historically speaking, by means of experiment, we have now attained a point of view in which we see that it might have been certainly known to be independent of experience.'<sup>112</sup> This being the case, since the two other laws of motion are derivable from the first axiom, 'the whole science of Mechanics, including its most complex and remote results, exists as a body of solid and universal truths'.<sup>113</sup> The contrast to Herschel is clear and stark, since in

the Preliminary Discourse we are offered laws of motion based on experience, laws which can be accepted because there exists such a vast body of evidence in their favour. So whilst Whewell feels confident that he can extract an axiom of statics from Newton's 'necessary' third law, to Herschel, our faith in that self-same axiom comes from 'simple experience'. It is 'a scientific transformation and more refined mode of stating a coarse and obvious result of universal experience'.<sup>114</sup> Whereas to Herschel the axioms of mathematics are based on experience, that science is in Whewell's view purely deductive.<sup>115</sup>

What then of the practical consequences of induction in Whewell's doctrine? In a study of Whewell's views of Newton's rules of philosophizing, Robert Butts has emphasized that Whewell intended his method to have a practical import.<sup>116</sup> While this is in general terms correct, the impact of his notion of induction is to make it if not irrelevant, then at least of dubious use as a device for scientific advance. For his conclusions seem to suggest that there are no rules for induction, nor, it appears, can there be such rules. Herschel, as we have seen, offered ten rules of philosophizing, and these Mill took up and developed into his four methods (of agreement, difference, concomitant variation, and residues), recognizing that his source was the Preliminary Discourse.<sup>117</sup> In response, Whewell claimed that Mill's methods 'take for granted the very thing which is most difficult to discover, the reduction of phenomena

to formulae'.<sup>118</sup> For, to Whewell, the problem is that the 'Art of Discovery' is 'not possible'.<sup>119</sup> At each step of the progress of inductive science, what are needed are indefinable and non-rule-governed mental faculties such as inventiveness, genius, and foresight, 'elements which no Art can give.'<sup>120</sup> The selection of an Idea - a central feature of scientific work - depends mainly on 'inventive sagacity: which operates by suggesting and trying various hypotheses'.<sup>121</sup>

Discovery, the essence of progress in science, is a matter of hypothesis and guesswork; indeed, to Whewell, it is the element of surprise which the scientist experiences on subsuming various experiences under a single law or mental construct which signals a discovery. Without a 'Eureka', the discovery will in all likelihood merely reiterate what is already known in another form.<sup>122</sup> The notion that boldness and licence in guessing lie at the heart of the scientific enterprise Whewell takes to be established by history.<sup>123</sup> The so-called 'inductive epoch' of Hipparchus began with his guess that the theory of epicycles would be correct.<sup>124</sup> But of course, Whewell must also admit that Plato had previously had the same flash of insight.<sup>125</sup> It then becomes difficult to reckon how both are to be linked together. To take another more straightforward example: in the Philosophy Whewell presents an inductive table of astronomy, a kind of 'genealogical tree' he calls it, whose various branches lead by successive and gradual upward movements to

Newton's theory of universal gravitation.<sup>126</sup> The table of induction is intended to display in a formal manner the validity of inductive inferences. But at the same time, Whewell lays considerable stress on the non-logical components in induction, as we have noted. This leads to a particular, not to say peculiar notion of a logical progression in knowledge; indeed, as de Morgan pointed out, it questions the notion of logic itself. Whewell's reply is illuminating: 'I do not wonder at your denying these devices a place in logic; and you will think me heretical and profane, if I say, *so much the worse for logic.*'<sup>127</sup> There is no 'art' of discovery; nor then is there a logic to it.

In truth, though Whewell presents us with a table of astronomical discovery, we are really to see there something far more primaeval: an overgrown forest perhaps. In the History, the great inductive epoch of Newton is presented as founded on deductions, preceded by 'trials, seekings, and guesses on the part of others'.<sup>128</sup> The strength and foundation of the Principia is its beauty, for it is this which gathers together the wild conjectures of the preludial history. Newton's great labour was the fruit of a uniquely fertile imagination.<sup>129</sup> Thus the notion of planetary motion based on a central solar force was, Whewell contends, available before Newton's time, but it fell to Newton to posit the generalization.<sup>130</sup> Newton's gift was an 'extravagant measure' of deductive skill.<sup>131</sup>



Scientific advance is, in a word, a 'mysterious step'.<sup>132</sup>  
 Yet deductive skills can, paradoxically, be taught.<sup>133</sup>  
 Logical thinking, Whewell argued in his pamphlet on  
 education, should cede to mathematical thinking in the  
 curriculum of a liberal education - a viewpoint destined  
 to provoke a fierce response, as it did.<sup>134</sup> Science,  
 indeed, can be taught - it can become the property, as  
 Whewell carefully phrases it, 'of all *cultivated* men.'<sup>135</sup>

Rational knowledge, for reasons which are clear bearing  
 in mind our discussion above, is to become the preserve  
 of a Cambridge-educated elite made of the 'leading cul-  
 tivators of science'.<sup>136</sup> The historical development of  
 science through successive 'inductive epochs' confirms  
 that such an elite has always been at the head of the  
 queue when the need was for a 'consilience of induc-  
 tions'. That elite, moreover, makes bold deductive leaps  
 into the dark in a way which is mysterious, but also  
 more than a little religious and mystical.<sup>137</sup> Like Her-  
 schel's, Whewell's is a philosophy of success, and a  
 history of success, too, with its 'Fabulous periods'  
 and 'Heroic ages'.<sup>138</sup>

These two rival methodologies suggest two very different  
 images of how science is, has, and should be done, and  
 therefore of *who* is to do science. We have seen that  
 Herschel's view is that scientific laws, even those in  
 mechanics and geometry, are based on empirical data;  
 the laws are confirmed and to be trusted because they

are based on such a wide mass of evidence. Herschel's science needs massive public participation if it is to be successful; not surprisingly, Herschel is the popular scientific writer par excellence of the early and mid-nineteenth century.<sup>139</sup>

\* \* \* \*

The 'tenor of facts' lies at the heart of Herschel's Discourse, and the neo-Baconianism that work articulated gave a massive initial impetus to the BAAS, and indeed to the growth of popular science in the period 1830-50.<sup>140</sup> As Harcourt said triumphantly at the first meeting of the Association, there were 'scattered throughout the country....many who only wait for instruction'.<sup>141</sup> 'I ask', he continued with the President of the Geological Society in the audience, 'whether in the science of geology there is not a *multitude of facts* to be ascertained in every district, in which he (i.e. the President) would be glad to see a much greater number of observers employed'.<sup>142</sup> This was not, as we hope to have shown, a simple-minded bid for popular appeal on Harcourt's behalf. The notion that science could be advanced by huge popular participation, by rule-governed observations, and by the skill and patience of laypersons, was founded on a clear and articulate scientific methodology. By these means, science would advance steadily and progressively. 'It was Bacon's boast that Induction as applied to nature, would equalize all talents, level

the aristocracy of genius, accomplish marvels by co-operation and method, and leave little to be done by the force of individual talent', wrote William Hamilton.

'This has been fulfilled; Science has, by the Inductive Process, been brought down to minds who previously would have been incompetent for its cultivation, and physical knowledge now usefully occupies many who would otherwise have been without any rational pursuit.'<sup>143</sup>

The contrary view, which we have sought to study in relation to Whewell's work, possessed equally sturdy methodological and philosophical pretensions. Whewell, as we have seen, was as confident as his Baconian rivals in the power and success of science, but felt that control and authority had to be vested in a narrow elite of scientists. He came to this view on the basis of his historical and philosophical analysis of scientific advance. To Hamilton's suggestion, he would doubtlessly have responded as Mill himself did: 'Everyone who has obtained any knowledge of the physical sciences from really scientific study, knows that the questions of evidence presented, and the powers of abstraction required, in the speculations on which their generalizations depend, are such as to task the very highest capacities of the human intellect'.<sup>144</sup> It is a view which in Mill's work sits rather uncomfortably in his attack on Whewell, and indeed in his support for the empirical view of mathematics as scholars have shown,<sup>145</sup> but the thrust of the claim is plain enough. As a con-

sequence of this notion of *what* constitutes real science, we are offered an account of *who* can constitute and advance that science. We have noted how from 1830 onwards, Whewell argued vociferously (and with increasing success) that the leading role within the BAAS should fall to the professional academics, and that stricter standards of admission into that body would 'avoid the crowd of lay members whose names stand on the lists of the Royal Society'.<sup>146</sup>

It was not necessary to agree with the substantive claims made by Whewell in his Philosophy and History to follow the conclusion he reached regarding who should practice science. J.D. Forbes gave a favourable review to Whewell's works and made his own distinction between the lay membership of the BAAS whose function it was to gather up 'raw materials', and the '*projectors* of science' whose task it was to fashion these into useful scientific theories.<sup>147</sup> As he put it in 1834, 'a division of labour is as practicable in intellectual as in mechanical science'.<sup>148</sup> On the other hand, Brewster, though he disagreed violently with many of the elements of Whewell's doctrines, joined him enthusiastically in attacking Bacon's philosophy and its nefarious influence.<sup>149</sup> Democracy had to be resisted, for the real inquirers in science depended for their work on a body of lowly 'functionaries';<sup>150</sup> on 'lesser corporations' concerned with 'municipal drudges', who could do the scientific groundwork.<sup>151</sup>

Faraday had referred in 1823 to the 'free masonry of science',<sup>152</sup> but by 1835 the character of the annual published Reports of the BAAS had changed in a symptomatic manner. The progress reports specially commissioned by the BAAS along with experimental work carried out under its direction were gathered together at the head of the Report, other 'amateur' work being condensed, abstracted and squeezed into a separate section in the rear. 'Philosophical Investigation', the 1835 BAAS report announced in introducing the change, 'will be entirely dependent on the continued presence and concurrence of the *master-spirits* of science.'<sup>153</sup> A year later in his opening address, Daubeny referred to 'one of the principal charms' of the BAAS meetings being the possibility of being amongst audience listening to the discourse of great authors, drawing to the parallel, 'who would not have listened with delight to a Newton, had he condescended to converse on the great truths of Astronomy?'<sup>154</sup> In some five short years, we have moved from Herschel's Newton, a figure encouraging popular participation in science, to Daubeny's Newton who condescends to give lectures to a static and quiescent audience.<sup>155</sup>

In theory, the distinctions were clear and stark enough. But how were the distinctions we have drawn between competing notions of the work and workers of science put into practice? We have discussed the manner in which a different personnel came to control the BAAS, and how a

different philosophy of science was developed in opposition to that articulated by Herschel and others. Yet the period we are examining also witnessed a gradual, but nevertheless powerful, shift in the notion of science as a norm of truth. From a situation in which different methods, images, and ideologies of science existed, we can see develop the rule of a unitary method, a solid image, and a hegemonic ideology. As deduction came to replace induction, so too the sciences of deduction came to usurp those of induction. Certain kinds of scientific practice, in other words, came to serve as a model for *all* scientific practice. In the following chapter we shall attempt to chart this development, again taking as a major point of reference, the BAAS. We shall investigate how and why it was that the science of physical astronomy came to stand at the head of the BAAS and how and why, as a consequence, other sciences like those of physiology, medicine and statistics were shunned, or barely tolerated, by the Association.

The character of physical astronomy was to pose a number of problems for the BAAS and impel the organization to rethink its links with various public constituencies: women, the working-classes, the press. While it furnished a model for scientific endeavour, the lack of any methodological procedures accepted throughout the scientific community of the BAAS, rendered that model ineffective as anything more than a general standard to be aimed at by its various Sections. The image of science and the

scientist nurtured by the BAAS was therefore grounded in other considerations of a social, political and ideological character.

As we have shown, the BAAS throughout the 1830s was in a process of transformation. Its internal organization changed as it instituted Sections and sought to enforce the methods of Section I onto other sectional sciences. Historians have agreed that the efforts made by the leadership of the BAAS to build a hierarchy of the sciences on the basis of the sciences of Section I were quickly and decisively successful. This is a view we shall question in the following chapter both as an illustration of the continuing powerful presence of Baconianism within the BAAS and as an example of the fact that the alternative 'Whewellian' model and ideology of science has little by way of a coherent set of proscriptions which it could deploy to regiment the work of the BAAS. Having shown the incoherence of physical astronomy and physics during the 1830s in Britain, and studied the shape and form of this incoherence, we shall be in a better position to show precisely how and where Baconianism was able to exert continuing power through the 1830s. In addition, having showed the tensions within the BAAS based on differing conceptions, models and ideologies of science and scientific practice, we shall be in a position to understand the public and press attitudes both towards its work and towards scientific culture more generally. We begin however by examining the status and content of the two sciences which were often referred to as providing models by which other, lesser, sciences were to be judged- and then frequently denounced as dogmas.

NOTES: PART TWO, CHAPTER FIVE

1. Richard Owen, 'Oken, Lorenz', Encyclopaedia Britannica, 32 vols, 1926, XIX, 55-57, 56.
2. The BAAS differed, for instance, in having Reports on the recent developments and current position of various sciences, and in its 1831 committee structure (after 1831).
3. Though strong claims have recently been made that the Royal Society was in many senses 'Baconian' (see, e.g., Margery Purver, The Royal Society: Concept and Creation, Cambridge, Mass., 1967, esp. chapter 2).
4. Exceptions which come to mind are R. Harré's Matter and Method (1964) and W. Salmon's The Foundations of Scientific Inference (Pittsburg, 1967).
5. I am thinking of Mary Hesse's rather modernistic reading of Bacon as almost a twentieth-century hypothetico-deductivist (in 'Francis Bacon', in D.J. O'Connor (ed.), A Critical History of Western Philosophy, 1964).
6. See T.H. Huxley, 'The Progress of Science' (1887), in Method and Results, 1893, 42-129, 46.
7. Alexandre Koyré, Galileo Studies, Hassocks, 1978, 39n6.
8. See R. Larson, 'The Aristotelianism of Bacon's Novum Organum', Journal of the History of Ideas, XXIII, 1962, 435-50.



9. See P. Rossi, Francis Bacon: From Magic to Science, 1968.
10. See A. Vartanian, Diderot and Descartes, Princeton, 1953; and H. White, 'The Influence of Bacon on the Philosophes', Studies on Voltaire and the 18th Century, XXVII, 1963, 1849-69.
11. See Benjamin Farrington, Francis Bacon: Philosopher of Industrial Science, 1973; and (or versus), David Dickson, 'Science and Political Hegemony in the 17th Century', Radical Science Journal, 8, 1979, 7-37. My references on Bacon are, needless to say, no indication of the views I have on the merits or demerits of particular studies: I have tried as economically as possible to indicate something of the range of differing assessments of Bacon's work and influence. One might add to my list the study of Webster on Bacon's prophetic impact for the Puritans (Charles Webster, The Great Instauration, 1975), and two interesting works on Bacon from a literary viewpoint (Lisa Jardine, Francis Bacon: Discovery and the Art of Discourse, Cambridge, 1974; and Brian Vickers, Francis Bacon and Renaissance Prose, Cambridge, 1968), and to broaden the field still further, the collection of studies edited by Brian Vickers, Essential Articles for the Study of Francis Bacon, Connecticut, 1968.
12. See, for example, Thomas Young, A Course of Lectures on Natural Philosophy and the Mechanical Arts, 2 vols, 1807, I, 16, 247; Dugald Stewart, Elements of the Philosophy of the Human Mind (3 vols, 1792, 1814, 1827) in William Hamilton (ed.), The Collected Works of Dugald Stewart, 10 vols, Edinburgh, 1854-55, III, 253-63 (Pt. II,

Ch. IV, Sect. 2); and the frequent remarks to the same effect in Stewart's Dissertation: Exhibiting the Progress of Metaphysical, Ethical, and Political Philosophy (1816), in Collected Works, I, e.g. 63-79, 538-40. This last work, which originally appeared in a Supplement to the Encyclopaedia Britannica, was widely reviewed, e.g. by James Mackintosh, 'A General View', Edinburgh Review, XXVII, 1816, 180-244, and Mackintosh assumed the point in passing. Similar views appear in Macvey Napier's brilliant (but I believe little studied) assessment, 'Remarks, illustrative of the Scope and Influence of the Philosophical Writings of Lord Bacon', Transactions of the Royal Society of Edinburgh, VIII, 1818, 373-425, e.g. 385; and throughout J. Hoppus's anonymous Account of Lord Bacon's novum organon scientiarum, 1827. See, lastly, the acceptance of this view in a hostile review of Stewart's work: anon., 'Dissertation prefixed to Supplemental Volumes', Quarterly Review, XVII, 1817, 39-72.

13. 'A General View', Edinburgh Review, 186. Mackintosh later made the same point in his 'On the Philosophical Genius of Lord Bacon and Mr. Locke', in The Miscellaneous Works of Sir John Mackintosh, 3 vols, 1846, I, 309-33, 315.
14. One of the desiderata of Bacon's De augmentis scientiarum (1623) was the study of philosophical, universal grammar, that is, the scientific discovery of the laws governing language. For the impact of Bacon's work on eighteenth-century philologists, see Scott Elledge, 'The Naked Science of Language, 1747-1786', in Anderson and Shea (eds.), Studies in Criticism, 266-95, esp.

281ff.

15. Quoted in Charles Coulston Gillispie, The Edge of Objectivity, Princeton, 1973, 147. The passage forms part of the final 'General Scholium' in Isaac Newton's Philosophiae Naturalis Principia Mathematica (1687, 3rd ed. 1726), eds. Alexandre Koyré and I. Bernard Cohen in 2 vols, Cambridge, 1972, II, 764.
  
16. See in particular: Alexandre Koyré, Newtonian Studies, Chicago, 1968, 25-52; From the Closed World to the Infinite Universe, Baltimore, 1976, 229-34; I. Bernard Cohen, Introduction to Newton's 'Principia', Cambridge, 1978, 240-45; idem, 'Hypotheses in Newton's Philosophy', Physis, rivista internazionale di storia della scienza, 8, 1966, 163-84; idem, The Newtonian Revolution, Cambridge, 1983, 99-109; Ralph M. Blake, 'Sir Isaac Newton's Theory of Scientific Method', The Philosophical Review, XLII, 5, 1933, 453-86; Robert Palter, 'Newton and the Inductive Method', Texas Quarterly, X, 3, 1966, 160-73; E.W. Strong, 'Newton's "Mathematical Way"', Journal of the History of Ideas, 12, 1951, 90-110; and E.A. Burtt, The Metaphysical Foundations of Modern Science, 1972, 211-16 and passim.
  
17. Lamb quoted in The Autobiography and Memoirs of Benjamin Robert Haydon, 2 vols, ed. Tom Taylor, 1926, I, 269. On Newton's influence in the eighteenth century, see the excellent discussion in the early part of I. Bernard Cohen's Franklin and Newton, an Inquiry into Speculative Newtonian Experimental Science and Franklin's Work in Electricity as an Example Thereof (Philadelphia, 1956); Gerd Buchdahl, Metaphysics and the Philoso-

phy of Science (Oxford, 1969, 333-37); Paul Hazard, The European Mind 1680-1715 (Harmondsworth, 1973, 357ff.) - these three works alone suggest the kinds of general and particular interpretations of 'Newtonianism' current in the 1700s, though also stressing the Newton of the 'General Scholium'.

18. See Koyré, Newtonian Studies, 29; Closed World, 299n12.
19. Quoted in Geoffrey Cantor, 'The Reception of the Wave Theory of Light in Britain: A Case Study Illustrating the Role of Methodology in Scientific Debate', Historical Studies in the Physical Sciences, 6, 1975, 109-32, 110.
20. See Newton, Principia, II, 550.
21. See L.L. Laudan, 'Thomas Reid and the Newtonian Turn of British Methodological Thought', in Robert E. Butts and John W. Davis (eds.), The Methodological Heritage of Newton, Oxford, 1970, 103-33; and S.A. Grave, The Scottish Philosophy of Common Sense, Oxford, 1960, 131 and passim.
22. George Davie, The Democratic Intellect: Scotland and her Universities in the Nineteenth Century, Edinburgh, 1961, 3-25.
23. On this see Gladys Bryson's Man and Society: the Scottish Inquiry of the Eighteenth Century, Princeton, 1945.
24. Why this shift should have occurred is a difficult issue, which may revolve around attitudes to natural theology; Reid was not in favour of

analogy or natural theology, whereas Stewart perhaps needed a positive concept of analogy for his natural theology.

25. The work of Geoffrey Cantor stands out, especially his study cited in note 19 above, and his 'Henry Brougham and the Scottish Methodological Tradition', Studies in the History and Philosophy of Science, 2, 1971, 69-89.
  
26. Richard Olson (in Scottish Philosophy) makes a very strong case for the importance of particular Scottish moral philosophers in influencing other Scottish natural philosophers, but the network of relations which he intends to have spread throughout Britain is less securely established. Not only does Olson fail to acknowledge important English empirical inductive thinkers outside the Common Sense tradition (e.g. J.S. Mill), but his arguments often lean more heavily than can be accepted on personal links as if these did more than imply shared methodological views. John R.R. Christie brings to light some of its central weaknesses in his essay-review, 'Influencing People', Annals of Science, 33, 1976, 311-18. If Common Sense views did have an impact on scientific activity, it remains, as Olson acknowledges, that this impact was restricted to Scotland in general and the University of Edinburgh in particular until the third decade of the nineteenth century (see Scottish Philosophy, 252).
  
27. BAAS Report, York, 1831, 24; see also 23-32 where Harcourt displays a close familiarity with Bacon's work.
  
28. See Orange, 'Idols of the Theatre', Annals of

Science, esp. 277.

29. Quoted in Howarth, British Association, 43.
30. William Whewell, 'Modern Science-Inductive Philosophy', Quarterly Review, XLV, 1831, 374-407, 378.
31. T.B. Macaulay, 'Lord Bacon', Edinburgh Review, LXV, 1837, 1-104. I have used the text from Macaulay's Critical and Historical Essays, 1883, 346-414, quote on 404.
32. Even so, like so many others, Macaulay found it expedient to use the figure of Bacon when the occasion demanded it, as for instance in his Baconian attack on utilitarian attempts to deduce a rationalist science of politics (see John Clive, Macaulay. The Shaping of the Historian, New York, 1973, 130). As Popper has shown, Macaulay's use of Bacon here was no more than rhetorical, serving to undermine as best he could, J.S. Mill's assumptions about human nature (see K.P. Popper, The Open Society and its Enemies, 2 vols, 1977, I, 264).
33. 'Lord Bacon', Critical and Historical Essays, 406-08.
34. See James Spedding, Evenings with a Reviewer, or, Macaulay and Bacon, 1881; and Pieter Geyl, Debates with Historians, 1970, 42.
35. Though the title page of the first edition reads '1830', the frontispiece with its portrait of Bacon has 1831, and this last is therefore the publication date. My edition is John F.W. Herschel,

Preliminary Discourse on the Study of Natural Philosophy, 1851. Since a number of editions are in circulation, my references will be to paragraph number first, followed by page.

36. Herschel's work has been seen by Olson as the first means by which the basic tenets of Common Sense methodology were made available in England, but, though highly suggestive, the discussion Olson offers fails to demonstrate that Herschel's views were derived from Scottish thinkers rather than directly from Bacon. Though in some ways identical with the doctrines of Stewart and Brown, Herschel's could (as Olson concedes) equally well have had their direct source in Bacon himself; something which is easier to acknowledge in view of the interest in Bacon's works in England in the decades leading up to the publication of the Discourse (see Olson, Scottish Philosophy, chapter 10).
37. See, for a typical statement, Michael Ruse, The Darwinian Revolution, Berkeley, 1979, 57 and passim. Cannon has dismissed the idea that Herschel may have owed anything to Bacon, preferring instead to see strong traces of Humboldtianism in his work. Strangely though, she refuses to confront the evidence in the work itself - thinking that Baconianism is 'an idea in the minds of modern historians' (Science in Culture, 74).
38. Preliminary Discourse, 105/114.
39. ibid., 66/75-76.
40. See ibid., 67-73/76-83.

41. ibid., 115/122. If Herschel owes anything substantial to Humboldt, it is probably his stress on measurement, for as Cannon rightly says, his 'creed was measurement' (Science in Culture, 80, see also 75-76 for a list of the measuring devices he took with him on his American travels from 1797 to 1804).
42. See ibid., 105/113-14; and John F.W. Herschel, 'Whewell on the Inductive Sciences', Quarterly Review, LXVIII, 1841, 177-238, in Essays from the Edinburgh and Quarterly Reviews, 1857, 142-256, 159-60.
43. Preliminary Discourse, 109-110/118-19.
44. ibid., 94/102.
45. See Curt J. Ducasse's useful discussion in his 'John F.W. Herschel's Method of Experimental Inquiry', in Edward H. Madden (ed.), Theories of Scientific Method, Seattle, 1966, 153-82, esp. 165-70.
46. Preliminary Discourse, 141/148; 209/197; and 138/144 (where Herschel refers to Newton); also Essays, 245.
47. See Preliminary Discourse, 208/196-97 for a clear statement on the role of analogies.
48. See for example, J.F.W. Herschel, 'On the Absorption of Light by Coloured Media, viewed in Connexion with the Undulatory Theory', The London and Edinburgh Philosophical Magazine, Third Series, III, 1833, 401-12. Whewell quickly picked up on this, endorsing Herschel's use of analogy



(see his 'Suggestions respecting Sir John Herschel's Reports', BAAS Report, Edinburgh, 1834, 550-52, 552 especially. See also, for relevant discussion of Mill's later use of analogy in relation to Whewell's and Bacon's, John D. North, 'Science and Analogy', in M.D. Grmek, Robert S. Cohen and Guido Cimino (eds.), On Scientific Discovery (Boston Studies in the Philosophy of Science 34), Dordrecht, 1981, 115-40, esp. 123.

49. See Essays, 234.

50. Preliminary Discourse, 145/151.

51. See ibid., 26/35-36.

52. ibid., 187/178.

53. ibid., 95/102-03; 286/259.

54. Herschel had been reading the first volume of Charles Lyell's Principles of Geology (published 1830-1833), before, or during the writing of his own book, and gives strong approval to the uniformitarian thesis (see e.g., 146n; 313/281 (where he uses the Huttonian phrase, 'evidence of a beginning, or the prospect of an end'), and 320/285). A surprise, no doubt, for those who associate Baconianism with conservatism, and see the appeal to facts as a bulwark against innovation. Herschel in fact spoke warmly of Lyell's book in correspondence with the author in 1836 (see W.F. Cannon, 'The Impact of Uniformitarianism: Two Letters from John Herschel to Charles Lyell, 1836-1837', Proceedings of the American Philosophical Society, 105, 1961, 301-14. See, in addition, for extracts of Herschel's correspondence with Lyell

and Murchison, Charles Babbage, The Ninth Bridge-water Treatise. A Fragment (1837), 2nd ed., 1838, 225-47. In fact even men like Sedgwick and Whewell, who rejected its scientific methodology, praised Lyell's volume; see Todhunter, William Whewell, II, 108-09, and Whewell, 'Lyell - Principles of Geology', British Critic, 9, 1831, 180-206; for Adam Sedgwick's opinion, see his 'Address of the President' (1831) in Proceedings of the Geological Society of London, I (1826-33), 281-316, 302-303. Lyell himself was evidently startled by the reception of his work; K. Lyell (ed.), Life, Letters, and Journals of Sir Charles Lyell, Bart., 2 vols, 1881, I, 270, 312, 355, 359.

55. Preliminary Discourse, 144/150-51.
56. ibid., 184/175. The deductive method is here conceived as serving to extend the scope of laws, that is, to predict and - what is the same thing - to verify the original laws. For a penetrating study of this and other facets of Herschel's views, see W.F. Cannon, 'John Herschel and the Idea of Science', Journal of the History of Ideas, XXII, 1961, 215-39. In important respects, it will be seen that I differ from Cannon in my reading, and in the emphases I detect in the Discourse.
57. See Preliminary Discourse, 86/95 and 100/108.
58. See ibid., 146-63/152-59. The influence of the rules on later developments in the philosophy of science is discussed by Ducasse in 'Herschel', in Madden (ed.), Theories of Scientific Method, 181-82.

59. Preliminary Discourse, 201/191.
60. See Macaulay, Critical and Historical Essays, 389, 399; Herschel in BAAS Report, Cambridge, 1845, xl; and 'An Address' (1845), in Critical Essays, 634-82, 679. On page 649 and passim, Herschel makes plain that the key to achieving utility and progress is directed scientific research funded by the government at all levels.
61. Preliminary Discourse, 7/10.
62. e.g., ibid., 5/7.
63. ibid., 64/72-73. See also Herschel in Critical Essays, 148.
64. Preliminary Discourse, 64/73.
65. Joseph Agassi, 'Sir John Herschel's Philosophy of Success', Historical Studies in the Physical Sciences, 1, 1969, 1-36.
66. See Herschel's 'Quetelet on Statistics' (1850), in Critical Essays, 365-465.
67. ibid., 249.
68. Babbage, Decline of Science, 169.
69. ibid., 210.
70. Herschel quoted in ibid., 211; see also Norwood Russell Hanson, Patterns of Discovery, 1962, 184n.
71. Augustus de Morgan, A Budget of Paradoxes (1872), 2 vols, Chicago, 1915, I, 81.

72. Cannon, 'History in Depth', History of Science, 20.
73. See M.J.S. Rudwick, 'The Foundation of the Geological Society of London: Its Scheme for Co-operative Research and its Struggle for Independence', British Journal for the History of Science, 1, 1963, 325-55, esp. 333-38.
74. Charles Dickens, Sketches by Boz (1836-37), 1966, 641.
75. ibid., 632.
76. See, for example, BAAS Report, Oxford, 1832, 254-58, 85; BAAS Report, Cambridge, 1833, ixff., 401, 486; BAAS Report, Edinburgh, 1834, x; BAAS Report, Dublin, 1835, 18; BAAS Report, Bristol, 1836, 32; and BAAS Report, Liverpool, 1837, 28. (An 'Auroral Committee' was established by the time the BAAS gathered in Dublin - see 1835 Report, xxxix.)
77. See BAAS Report, Bristol, 1836, 32 and the report of the debate in the Athenaeum, 461, 1836, 596.
78. Preliminary Discourse, 391/359-60.
79. Charles Darwin, Autobiography (written 1876-81) in Charles Darwin and T.H. Huxley, Autobiographies (ed. Gavin de Beer), 1974, 38.
80. Herschel, Critical Essays, 150.
81. Whewell, 'Modern Science-Inductive Philosophy', Quarterly Review, 376.

82. Ruse, The Darwinian Revolution, 25; see also, Cannon, Science in Culture, 36.
83. Arabella B. Buckley, A Short History of Natural Science (1875), 3rd ed., 1894, 306. Buckley had been Lyell's long-time secretary and dedicated the book to him and his wife. See also John Brown, 'With Brains, Sir' (1858) in his Rab and His Friends and other Papers and Essays, 1970, 175-92, 185.
84. Quoted in Cannon, 'John Herschel', 218.
85. Clark and Hughes, Adam Sedgwick, II, 107.
86. Whewell, 'Modern Science', QR, 377. William Minto has claimed that Herschel's book was the first such attempt (in Logic, Inductive and Deductive, New York, 1904; quoted in Madden (ed.), Theories of Scientific Method, 153, 325).
87. Their friendship lasted from 1815 when they were both at Cambridge, until Whewell's death in 1866. Whewell dedicated his History to Herschel, and Herschel wrote Whewell's obituary, 'The Reverend William Whewell, D.D.', Proceedings of the Royal Society, 16, 1868, li-lxi. No study of this friendship has yet been made; nor has a biography of Whewell appeared, to my knowledge.
88. Whewell, 'Modern Science', 377.
89. BAAS Report, Oxford, 1832, 184.
90. BAAS Report, Cambridge, 1833, xx.
91. ibid., xxii.

92. This is a point taken up vigorously by Charles Babbage in The Ninth Bridgewater Treatise. A Fragment (1837), 2nd ed., 1838, Preface, e.g. xii.
93. See William Whewell, Astronomy and Physics considered with Reference to Natural Theology, 1833, 334, and passim. This book, and particularly the claims Whewell made for deduction (and induction) caused considerable debate. Apart from Babbage's reply, Brewster attacked it in his 'The Bridgewater Bequest', Edinburgh Review, LVIII, 1834, 422-57, esp. 438, 449n., and 454-55. To this review, Whewell responded in the Athenaeum (see Todhunter, William Whewell, I, 129) and with a letter to the editor of The British Magazine ('Bridgewater Treatises', V, 1834, 263-68). An anonymous review in the Athenaeum quoted from this letter and also emphasized Whewell's attempt to promote deductivism theologically (see 'The Ninth Bridgewater Treatise', the Athenaeum, 503, 1837, 436). Adam Sedgwick, who took a position against Herschel's method, lent his support to Whewell's views as expressed in his Bridgewater Treatise, finding the relevant sections 'original and beautiful' (see Adam Sedgwick, A Discourse on the Studies of the University (Cambridge, 1833), Leicester, 1969, 84-85).
94. Whewell, Astronomy and Physics, 336.
95. See Todhunter, William Whewell, I, 70-71.
96. William Whewell, Thoughts on the Study of Mathematics as Part of a Liberal Education, 1835, 8 (also in his On the Principles of English University Education, 1837, 141-81, 151).

97. William Whewell, History of the Inductive Sciences, from the Earliest to the Present Time (3 vols, 1837); my edition is the 2nd in 3 volumes, published in 1847. It is described as revised and continued, but from a comparison it would appear that most of the changes and additions are to the early section on the fundamental antithesis of philosophy, a part of the book I shall not be using. I have also used the second edition of The Philosophy of the Inductive Sciences, founded upon their History (2 vols, 1840), published in 2 volumes in 1847. This contains about 200 additional pages, but these are mostly made up of a longer table of contents, the use of a larger typeface in some places, and some philosophical essays added at the end of volume two. The Philosophy was later split into three parts: The History of Scientific Ideas (2 vols, 1838), Novum organon renovatum (1858), and On the Philosophy of Discovery (1860). Of these three only the last contained any important additions to the Whewellian philosophy.
98. Herschel, Critical essays, 150.
99. 'Modern Science', 379n. Whewell here emphasizes that Bacon is not stating the obvious in his methodological pronouncements.
100. Whewell, History, I, 406; II, 137; II, 340.
101. Whewell, Preface to the Second Edition (1847), Philosophy, I, v.
102. ibid., vi.
103. Philosophy, II, 92.

104. J.S. Mill, A System of Logic (1841), eds. J.M. Robson and R.F. McRae, in J.M. Robson (ed.), Collected Works of John Stuart Mill (Toronto, 1963-), VII (1973), 312-313 (Bk. III, Ch. 3, Section 2); and in VIII (1974), 879-80 (Bk. VI, Ch. 7, Section 1).
105. Whewell to Augustus de Morgan (18 January 1859): 'My object was to analyse, as far as I could, the method by which scientific discoveries have really been made; and I called this method Induction, because all the world seemed to have agreed to call it so, and because the name is not a bad name after all. That it is not exactly the Induction of Aristotle, I know; nor is it that described by Bacon...' (in Todhunter, William Whewell, II, 416-17). Whewell was, of course, one of the great neologizers of the age and could easily have coined a term for the new method he was offering. That he did not is significant, though not in the sense in which Whewell suggests!
106. Whewell to Herschel, 22 April 1841, in Todhunter, William Whewell, II, 298.
107. Whewell's Kantian debts are now widely accepted (though the nature of his relationship to Kant's work remains rather unclear); see, for example, A.W. Heathcote, 'William Whewell's Philosophy of Science', British Journal for the Philosophy of Science, IV, 1954, 302-14, and R. Butts, William Whewell's Theory of Scientific Method, Pittsburg, 1968. Of the contemporary reviews I have examined, the only one I have seen which treats (or indeed mentions) the German influence on Whewell is anon., 'Whewell's "Philosophy of



the Inductive Sciences"', The Dublin University Magazine, XVII, 1841, 194-217; and the same author's 'Whewell's Philosophy of the Inductive Sciences', The Dublin University Magazine, XVIII, 1841, 555-72.

108. Philosophy, I, 85. On this, see R. Butts, 'Necessary Truth in Whewell's Theory of Science', American Philosophical Quarterly, 2, 1965, 1-21.
109. See L. Laudan, 'William Whewell on the Concilience of Inductions', The Monist, 55, 1971, 368-91.
110. See William Whewell, 'On the Nature of the Truth of the Laws of Motion', Transactions of the Cambridge Philosophical Society, 5, 1834, 149-72.
111. Philosophy, I, 178.
112. ibid., I, 221.
113. ibid., I, 193.
114. Herschel, Critical Essays, 219.
115. Philosophy, I, 83 and passim.
116. Robert E. Butts, 'Whewell on Newton's Rules of Philosophizing', in Robert E. Butts and John W. Davis (eds.), The Methodological Heritage of Newton, Oxford, 1970, 132-49. For a public comment by Whewell on the 'rules of philosophizing' and verae causae see BAAS Report, Dublin, 1835, 6.
117. Mill, System of Logic, in Collected Works, VII,

414-20 (Bk. III, Ch. 9, Section 3), see also 406 (Bk. III, Ch. 8, Section 7) and 426-28 (Bk. III, Ch. 9, Section 5). Mill, incidentally, agreed with Herschel that geometrical axioms were generalizations from experience, and cited Herschel's Quarterly Review article to criticize Whewell (see 224-51; Bk. II, Ch. 5).

118. Philosophy of Discovery, 263.
119. Philosophy, I, viii.
120. ibid.
121. Quoted in David B. Wilson, 'Herschel and Whewell's Version of Newtonianism', Journal of the History of Ideas, 14, 1974, 79-97, 81n.
122. Philosophy, II, 442.
123. See Philosophy, II, 55; and History, I, 393.
124. History, I, 182ff.
125. The same problem occurs with the precursors of Copernicus, when the great 'Inductive Epoch' of Copernicus is in the end little more than a lucky guess; when that is, the aim of the chapters is contradicted by their content.
126. See Philosophy, II, 118, 76.
127. Whewell to Augustus de Morgan, 18 January 1859, in Todhunter, William Whewell, II, 417.
128. History, II, 135.

129. See History, II, 160-94.
130. Philosophy, II, 387; I, 255ff.
131. Philosophy of Discovery, 284.
132. ibid. This is a point brought out especially strongly in the articles 'Whewell's "Philosophy of the Inductive Sciences"', Dublin University Magazine, 196-97, 566-67.
133. See Philosophy, II, 360.
134. Especially in William Hamilton's 'Study of Mathematics' in Edinburgh Review, LXII, 1836, 409-55, which claimed, amongst other things, that Whewell had confused the requirements of a professional with a liberal education, and the utility of mathematics as a science with its use as an exercise for developing the mind. Whewell, as usual, responded, and was allowed the rare privilege of replying in the next issue ('Note to the Article on the Study of Mathematics', Edinburgh Review, LXIII, 1836, 270-75), a reply which was widely circulated in other journals and newspapers. Whewell expresses similar views on mathematics in his English University Education, 42-46, and 47-71 (Olson's chapter on 'Common Sense Concerns with the Nature of Mathematics' is excellent).
135. Philosophy, II, 364 (my emphasis).
136. ibid., 373.
137. See Astronomy and General Physics, 261-94.

138. See Todhunter, William Whewell, I, 125 (quoting Whewell's 1839 Presidential Address to the Geological Society).
139. Some of his popular and provincial lectures are collected in John F.W. Herschel, Familiar Lectures on Scientific Subjects (1867), others in the Critical Essays. A Treatise on Astronomy (1833) was, like the Preliminary Discourse, aimed at the general reader - both were in the Rev. Dionysius Lardner's Cabinet Encyclopaedia; a medium Whewell disapproved of (see Todhunter, William Whewell, I, 57). Herschel also edited a volume of essays outlining subjects which men of the Royal Navy could study in their off-duty hours, including advice on how to observe and how to record useful information (see Herschel (ed.), A Manual of Scientific Inquiry; Prepared for the Use of Her Majesty's Navy; and adapted for Travellers in General, 1849).
140. Preliminary Discourse, 216/204.
141. BAAS Report, York, 1831, 20.
142. ibid., 21.
143. William Hamilton, Lectures on Metaphysics (eds. Henry Longueville Mansel and John Veitch), 4 vols, 1859-60, IV, 138.
144. J.S. Mill, An Examination of Sir William Hamilton's Philosophy (1865), ed. J.M. Robson (1979), in Collected Works, IX, 369.
145. See R.P. Anschutz, The Philosophy of J.S. Mill, Oxford, 1953, chapter IX; and Alan Ryan, The

Philosophy of John Stuart Mill, 1970, chapter V.

146. See Whewell to Harcourt, 1 September 1831, in Todhunter, William Whewell, II, 129; Whewell to Forbes, 14 July 1831, ibid., II, 122; and ibid., I, 49-50.
147. See J.D. Forbes, 'The History of Science, and some of its Objects', Fraser's Magazine, LVII, 1858, 283-94; and 'The Plurality of Worlds', Fraser's Magazine, XLIX, 1854, 245-56.
148. See BAAS Report, Edinburgh 1834, xii, xxii.
149. See David Brewster, The Life of Sir Isaac Newton, 1831, esp. 112-13, 330-36; and the later Memoirs of the Life, Writings, and Discoveries of Sir Isaac Newton, 2 vols, Edinburgh, 1855, e.g., II, 404. Brewster actually claimed that the negative reassessment of Bacon's influence which was apparent in Whewell's History and Philosophy had been derived without acknowledgement from his own Life of Newton (see Brewster's 'Whewell's History of the Inductive Sciences', Edinburgh Review, LXVI, 1838, 110-51, 125).
150. David Brewster, 'M. Comte's Cours of Positive Philosophy', Edinburgh Review, LXVII, 1838, 271-308, 272. Like Whewell, Brewster here argued for the introduction of bold hypotheses into scientific work (305).
151. Brewster, 'Review of the First....Meetings', Edinburgh Review, 387.
152. Faraday to Robison, 13 July 1823, in Selected Correspondence, I, 145.

153. BAAS Report, Dublin, 1835, 3.
154. BAAS Report, Bristol, 1836, xxxiv.
155. Augustus de Morgan, 'Science and Rank', Dublin Review, XIII, 1842, 413-48, 445-46.

CHAPTER SIX: SCIENTIFIC CULTURE TAKING SHAPEI. The Nature of Physics

In his important study of early nineteenth-century European thought, J.T. Merz suggested that whilst there existed in the early 1800s a rigid demarcation between the sciences on the continent, in 'England alone the name of natural philosophy still obtained, and in the absence of separate schools of science, such as existed abroad, suggested, at least to the self-taught amateur or to the practical man, the existence of a uniting bond between all natural studies.'<sup>1</sup> In France, it is true that within physics itself, a distinction was often drawn between 'general' and 'particular' physics which was not accepted in Britain.<sup>2</sup> The distinction was made at a number of levels. It was, for one thing, a difference between the study of the general properties of all bodies (e.g. their extension, impenetrability, inertia and motion) and the study of those properties which distinguished bodies one from the other (say their hardness, opacity and conductivity). So general physics was broadly speaking equated with mechanics, whilst particular physics was an umbrella term for researches into heat, light, electricity and magnetism. Next, the distinction was between an exacting and quantitative science and one which was more experimental and less strictly bound by speculative theories. Lastly, we might see both types of physics as existing within a broad Newtonian tradition, the first deriving from

the Principia and following its mathematical, even geometrical, analyses, and the second inspired by Newton's Opticks and therefore more observational and experimental in approach. Both branches were pursued with enthusiasm and great success in France; with experimental physics being recognized institutionally from the mid-eighteenth century onwards,<sup>3</sup> and mathematics equally-well supported and having achieved a high level of recognition throughout Europe.<sup>4</sup>

Though these two branches were pursued relatively independently, the rise of Laplacian physics did much to reshape the contours of physics and to wed the two disciplines together. The reductionist programme of mathematical physics inaugurated by Laplace aimed to account for all phenomena on the celestial, terrestrial and molecular levels in terms of the central forces between particles of both ponderable and imponderable matter.<sup>5</sup> These forces were broadly analogous to Newton's gravitational forces, but they could be both repulsive and attractive. More importantly perhaps for the development of a new research programme in physics, they were, like Newton's, acceptable and accepted as explanatory devices not requiring further analysis within natural philosophy. The result was that a programme of researches was established which bound together experimental, theoretical and mathematical physics. With the backing of Napoleon, Laplace was able to control important aspects of scientific life in France and established a band of disciples of the calibre of Biot, Arago, Gay-Lussac, Malus and Poisson.<sup>6</sup> The powerful influence of Laplace does much to soften Merz's



claims, since it unified French physics to a considerable degree.

Yet even in 1816, Biot, one of Laplace's most fervent disciples, characterised European physics as being in a state of general disunity:

'Everyone who has had occasion to make extensive researches has seen with regret the scattered state of the materials of this fine science, and the uncertainty under which it still labours. One result is admitted in one country, and another in another. Here one numerical value is constantly employed, while in another place it is regarded as doubtful or inaccurate. Even the general principles are far from being universally adopted... *What it wants is union.*'

Though Laplacian physics had been developed in fields such as heat, optics, chemistry and electro-magnetism,<sup>8</sup> it had been felt by some - particularly those in the Revolutionary leadership in the 1790s - that it did not offer a complete account of physical nature.<sup>9</sup> Biot's call for a union of the scattered branches of science was met by the work of such figures as Fourier, Dulong, Fresnel, Petit and Arago but the result was not such as to create a single unified general science. As Robert Fox has shown, 'there emerged no single well-defined new style of science that was capable of filling the gap left by the old and of yielding a clear program for the future... a certain diversity of approach was a natural enough product of a period of reaction against the Laplacian orthodoxy.'<sup>10</sup>

Turning now to the general character of physics in Britain before the 1830s, one can find a similar 'diversity of

approach'.<sup>11</sup> This existed even at the most fundamental level of the definitions given of physics. 'Physics' had from classical times been associated with Aristotle's treatise by that name and during the scientific revolution had retained the general sense of the study of nature or knowledge of natural things. In 1771, the short entry in the Encyclopaedia Britannica read simply: 'Physics, a denomination sometimes given to natural philosophy'.<sup>12</sup> A decade or so later, d'Alembert described physics in similar terms, as 'also called natural philosophy... the science of the properties of natural bodies, their phenomena, and their effects'.<sup>13</sup> The first substantial entry in the Encyclopaedia Britannica on physics appeared in the third edition of 1797, and was written by John Robison, who had been from 1774 professor of natural philosophy at the university of Edinburgh. Robison knew the writings of Laplace and those of the pure mathematician Lagrange and appreciated their work, though he favoured a Newtonian geometrical approach to the solution of physical problems and denounced the determinism and materialism of Laplacian physics in favour of a theology of nature.<sup>14</sup>

In his article, Robison began by suggesting that physics entailed the study of that part of the universe which was governed by causation and natural law, but rapidly changed its object into the world's 'material system'.<sup>15</sup> Physics was then divided into two sections, one dealing with the appearances of bodies moving sensibly, the other concerned with the behaviour of bodies which were not propelled by

outward forces - a distinction intended to separate the world of material objects and the domain of physiological beings (though phenomena such as light and heat fell naturally into the latter category). Once laid down, Robison then used the notions of motion, force and the laws of dynamics to establish another distinction between natural philosophy, and chemistry and physiology, natural philosophy being equivalent to 'material philosophy'. Following this, he began without explanation to juggle about with the categories he had set up to conjure up new fields such as hydrostatics, hydraulics, magnetism and optics which were not assigned positions within any of the areas previously mapped out. The terms physics, material philosophy and natural philosophy were used interchangeably, though at times Robison suggested that further differentiation was necessary on the basis of the distinction between experimental philosophy and demonstrative science.<sup>16</sup> What was intended was to use the concepts of force and motion as a demarcation criterion separating one broad field from chemistry and natural philosophy, as well as serving to bring unity to the various branches of natural philosophy as a mechanical science.

Shortly after the publication of Robison's article, Thomas Young set out another definition of physics and classification of its various branches in discourses to the Royal Institution in 1802-03. Natural philosophy was here initially divided into three sections. The first, mechanics, was to embrace statics and dynamics; the second, hydrodynamics, to

cover hydraulics, acoustics and optics; and the last, physics, to deal with astronomy, geography and the study of the properties of matter.<sup>17</sup> Having established these, Young then introduced another branch of natural philosophy, hydrostatics, which was then further subdivided into three sections.<sup>18</sup> Physics was then seen to be concerned with 'the history of the particular phenomena of nature',<sup>19</sup> that is, everything in the natural world except, for reasons which were not made clear, chemistry and mineralogy.<sup>20</sup> Having begun by dividing natural philosophy into three branches, one of which was physics, Young then saw physics as colonising all the terrain of natural philosophy - a view which left a good many of his audience at the Royal Institution more than a little baffled by his presentation.<sup>21</sup>

Following this came a further classification and definition of physics by John Playfair, who succeeded Robison in the chair of natural philosophy at Edinburgh. Like Robison, Playfair knew the writings of the French school and used these to attack the work and the geometrical approach to physical problems used in Oxford and Cambridge and in the Royal Society.<sup>22</sup> In his Outlines of Natural Philosophy (1812), he first separated philosophy into the study of those actions which produce change within bodies and those which do not - that is, chemistry and natural philosophy properly speaking (though, Playfair conceded that the division could not be strict).<sup>23</sup> At the heart of natural philosophy stood the study of motion, itself composed of dynamics, then two modifications of dynamics: hydrodynamics

and statics.<sup>24</sup> Apart from a further subdivision of hydrodynamics into hydrostatics, hydraulics, aerostatics and pneumatics,<sup>25</sup> and the addition of theoretical and physical astronomy, this was as far as Playfair ventured with his classification of natural philosophy.

This brief survey suggests that there was lacking in Britain in the first three decades of the nineteenth century any coherent and systematic programme in physical science such as the one inaugurated by Laplace in the first edition of his Exposition du système du monde in 1796.<sup>26</sup> The fact that Robinson's entry on physics in the Encyclopaedia Britannica remained unchanged in four subsequent editions of the work is an indication that at least until 1830 no new compelling classification or clarification of natural philosophy had become established - or perhaps, as the Quarterly Review suggested, that no scientific audience had been constituted which could exert pressure upon either the editor or the author to have the entry changed.<sup>27</sup> The actual community of physicists would only come into existence in mid-century.<sup>28</sup>

The absence of any systematic programme was gradually recognised by critics of English science, men like Babbage and Brewster in particular,<sup>29</sup> but many others also acknowledged the lack of any coherence and institutional cohesion in physical researches. In a Statement by the Council of the University of London, explanatory of the Nature and Objects of the Institution (1827), it was noted that 'It is a matter of considerable difficulty to ascertain the dis-

tribution of Physics, a vast science, or rather class of sciences, which consists in the knowledge of the most general facts observed by the senses in the things without us'. Dionysius Lardner's Introductory Lecture on Natural Philosophy addressed to the university a year later was scarcely more specific in defining the range of interests of the discipline.<sup>30</sup>

In Scotland, as we have suggested, the work of Laplace and Lagrange was known, but there, as in England, there was not in existence an adequate mathematical mode of analysis to extend or develop such work. Instead, as Crosland and Smith has argued, there existed throughout Britain a 'speculative natural philosophy' concerned with epistemological and ontological problems of matter theory and with the theme of attractive and repulsive forces as the basic entities of matter theory.<sup>31</sup> Thus, such figures as Faraday and Davy adopted a qualitative rather than a quantitative approach in chemical and material investigations - following, it has been suggested, what might be thought of as a Kantian movement in the physical sciences.<sup>32</sup> Even Robison, as his article indicates, devoted himself to an exposition of mechanical philosophy whilst also giving sympathetic consideration to the theory of basic forces.<sup>33</sup>

It was widely recognized that the Laplacian programme had failed to make an impact in Britain. Thomas Young in 1809 lamented that 'we do not believe that ten persons in the universe have read Laplace's Mécanique céleste as it ought

to be read'.<sup>34</sup> In 1832, the professor of mathematics at Glasgow, James Thomson said that 'In the field of original discovery we have no men to place in competition with Clairault (sic), D'Alembert, Euler, Lagrange and Laplace'.<sup>35</sup> And a year later, reviewing an American edition of Laplace's work, Herschel wrote:

'It is to our continental neighbours, but more especially to the geometers of France, that we owe the disclosure of this magnificent truth (the stability of the solar system established by Laplace): Britain took little share in the enquiry. As if content with the glory of originating it, and dazzled and spell-bound by the first great achievement of Newton, his countrymen, with few and small exceptions, up to a comparatively late period, stood aloof from the great work of pursuing, into its remote details, the general principle established by him.'<sup>36</sup>

As France had been at the forefront of the advances made in the physical sciences from the 1790s, so too substantial progress had been made there in mathematics. Behind the developments in this field stood not far distant Napoleon and behind him, his supporter Laplace. In a letter to a German colleague in 1798, the French astronomer Lalande noted that in Paris, 'the love of mathematics is daily on the increase, not only with us but in the army...Bonaparte himself has a mathematical head, and though all who study this science may not become geometricians like Laplace and Lagrange, or heroes like Bonaparte, there is yet an influence upon the mind which enables them to accomplish more than they could possibly have achieved without this training'.<sup>37</sup>

While in Britain, the country which had seen the invention of the 'method of fluxions' in the seventeenth century,

geometrical exposition was given priority over analysis, in France new analytical methods had been pioneered to extend Newton's principles to the complex system of the universe with its multiplicity of bodies. This provoked in some a jealous and hostile reaction; England's old enemy across the channel had only succeeded, it was said, because she had failed to develop as a commercial (and hence 'practical' nation), because Paris had been so lavishly cared for at the expense of the provinces, and because her xenophobia had allowed the development of original scientific methods.<sup>38</sup> But a more general reaction was to look in envy at French (or at least Parisian) techniques of mathematical analysis. Even the fiercest critique of the declinist movement had to admit that England had been left behind in the field of mathematics.<sup>39</sup>

Envy slowly but effectively prompted a more positive reaction. In Cambridge in 1803 Robert Woodhouse issued a polemical treatise on analytical calculation aimed at his colleagues but this had little effect, and his 1809 Treatise on Plane and Spherical Trigonometry, less argumentative but equally analytical, had only slightly more impact.<sup>40</sup> James Ivory began teaching the new methods at the Royal Military College from 1804 and published Laplacian work in the Philosophical Transactions between 1809 and 1812,<sup>41</sup> but these memoirs, as Herschel later reported, 'met with slender applause and no imitation at home'.<sup>42</sup> The major developments occurred firstly from 1812, when Babbage, Herschel and George Peacock founded the 'Analytic Society' at



Cambridge with the intention of converting the university from Newtonian mathematics to the new analysis,<sup>43</sup> and then at the end of the second decade of the nineteenth century. Woodhouse published his Physical Astronomy in 1818, and Peacock (who had remained at Cambridge rather than moving with Babbage and Herschel to the metropolis) was appointed in the same year to the position of moderator, or examiner, for the Cambridge Tripos.<sup>44</sup> A year later, Whewell brought out his Elementary Treatise and this, along with his Dynamics published four years afterwards, was probably the most influential early vehicle for mathematical reform in England, both of these being frequently re-issued and amended.<sup>45</sup> Following these came Airy's Mathematical Tracts (1826) and then a decade later J.H. Pratt's Mathematical Principles.<sup>46</sup>

The late arrival in England of new methods of mathematical analysis, coupled with the absence of any coherent definition of, or programme for, physics, along with the native tradition of 'speculative natural philosophy' produced a peculiar amalgam of theoretical positions. For while translations and reports of the work being undertaken in Paris did appear in England, the works we have cited above and produced from Cambridge were more than simple propagations of analytic techniques. As an example, we may note that in his important 1819 Treatise Whewell stated unequivocally that his intention was not to substitute the 'language of analysis for that of facts', adding that dynamics was 'really a physical and experimental science'.<sup>47</sup>

Cannon has argued that 'Herschel and Babbage, and Whewell and Airy, deliberately reversed the Lagrangian impulse to reduce dynamics to mathematics', and has supported this claim by setting out in outline a strong contemporary tendency to use physical devices in mathematics, devices such as Babbage's calculating engines, William Thomson's harmonic analyzers, and Herschel's machine for solving transcendental equations.<sup>48</sup>

In France, until the late eighteenth century, only a few subjects such as mechanics and hydrodynamics had demanded or received advanced mathematical treatment. In other fields the methods of geometry, trigonometry and algebra were judged to be sufficient. But the subsequent work of Laplace, Fourier and Carnot made such treatment necessary for the study of heat. Likewise, Poisson and Ampère successfully transferred analytical methods to the phenomena of electricity and magnetism, while Fresnel and his followers made huge strides forward by using such methods in the study of optics. Such applications of advanced mathematics to the treatment of physical problems prompted scientific research in a wide variety of different domains.<sup>49</sup> One scholar has gone so far as to speak of this period in France as a 'second scientific revolution'.<sup>50</sup>

Such a revolution did not take place in England; or rather, if it did so, one can recognize it occurring from the 1840s - at a time, ironically, when French science itself was undergoing its own movement of decline.<sup>51</sup> So one thinks

of the application of analytical mathematics by William Thomson in electrostatics in the mid-1840s, of James Clerk Maxwell's Treatise on Electricity and Magnetism in 1873,<sup>52</sup> and of Phillip Kelland's work on light in mid-century as expressions of the Laplacian and Lagrangian programme in operation. By the 1820s, the analytic methods had become established in England but in a form which did not involve translating dynamical ideas into the language of calculus but instead retaining the physicality of moving bodies as a central feature of natural philosophy. Laplacian physics came to be accepted, but once again, in a form shorn of its deterministic, dogmatic and materialistic implications and rendered acceptable within a theistic Newtonian tradition.

An immediate consequence of this was that instead of analytical mathematics being developed in fields such as optics, chemistry, electricity and magnetism, the gravitational principle which had proved so successful in Laplace's celestial mechanics came to serve as an analogue for other kinds of laws operating at different levels in nature. Moreover, it was a tool which though powerful in principle was deprived of its full potency by the Newtonian tradition, by the adherence of some like Faraday and Davy to a Kantian problematic, or one owing much to *Naturphilosophie*, and by the support of others for a resolution of physical problems according to the primary components of ether and matter, rather than repulsive and attractive forces.

This being so, it was physical astronomy (the synonym for

celestial mechanics) which found most widespread and ready acceptance from the 1830s, from figures as diverse as Whewell, Herschel, Airy, Robison and Playfair. In Cambridge, physical astronomy was judged to be the standard by which other sciences had to be assessed, and to bring these up to its own level the Cambridge Mathematical Journal was founded in 1837. Its aim was to cultivate natural philosophy in the fields of electricity, magnetism, light and heat in part by publishing abstracts and articles from foreign academies and scientific societies.

## II. Clarity and Class

In 1831, Whewell termed physical astronomy the 'peculiar boast and glory of the inductive method', adding that he was 'very far from being able to assert that all the departments of physics cultivated by the moderns have completed this cycle (of induction and deduction) and reached their consummation'.<sup>53</sup> Basing himself on a proscriptive methodology of induction and deduction from axioms, as well as on the relative degree of mathematization within particular sciences, Whewell then proceeded to offer a roughly-drawn hierarchy of the sciences. Compared to physical astronomy, natural history, chemistry and mineralogy appeared 'to be only past the outset of their inductive careers'.<sup>54</sup> The sciences which Whewell judged to be part of physics, sciences such as heat, electricity and magnetism, had been partially reduced to mathematical formulae by Biot, Poisson, Fourier

and Laplace.<sup>55</sup> Light was placed next in line, with the work of Malus, Arago, Biot, Brewster, Herschel and Fresnel raising it substantially in the past decades. Then last in the hierarchy came the 'old-established and long-cultivated sciences' such as optics, mechanics, theoretical astronomy and fluid mechanics which had reached the ideal state for less developed sciences.<sup>56</sup>

The French methods of analysis had been drawn to the attention of the BAAS from its earliest days,<sup>57</sup> and in 1833 Whewell was able to refer to these methods to present to the Cambridge meeting the view that 'in a stricter sense of the term, the only perfect science' was physical astronomy.<sup>58</sup> Two years later, it was simply the 'Queen of the Sciences'.<sup>59</sup> A year later, in his opening address to the BAAS meeting in Bristol, Daubeny proclaimed that:

'All the physical sciences aspire to become in time mathematical: the summit of their ambition, and the ultimate aim of the efforts of their votaries, is to obtain their recognition as the worthy sisters of the noblest of these Sciences - Physical Astronomy. But their reception into this priveleged and exalted order is not a point to be lightly conceded; nor are the speculations of modern times to be admitted into this august circle, merely because their admirers have chosen to cast over them a garb, oftentimes ill-fitting and inappropriate, of mathematical symbols. To weigh the credentials of these physical sciences which have been pointed out as mathematical, is therefore a proper office for the Association to impose on its members.'<sup>60</sup>

This, it will be readily gathered, was a very different aim for the BAAS than had been anticipated by its founders. But it did not take long for the most elaborate and technical treatises on mathematics to appear in its transactions -

the first such paper was one by W.R. Hamilton in the year 1836. The difficulty of the presentation meant of course that it was accessible only to the few, to the constituency represented by Whewell and the Cambridge network, rather than to the provincial 'cultivators of science'. When astronomy was to be the subject of work carried out by BAAS members, what was intended was physical astronomy, that is astronomy based on dynamics<sup>61</sup> - not the astronomy of the star-gazers. The latter, as we have indicated, continued to be practiced, but by the mid-1830s, reports of falling stars, the aurora borealis and other atmospheric phenomena had been relegated to a separate section of the BAAS Reports, tucked away in the rear of the volumes in a 'Notes and Abstracts' appendix. By mid-century, the status and character of astronomy had changed profoundly in the popular imagination. From being the subject of popular verse and nursery rhymes of the kind we have cited above ('Oh Herschel! Oh Herschel! Where do you fly? / To sweep the cobwebs out of the sky'), it had become an inaccessible, threatening, alienating science identified with the mathematics and the determinism of Laplace. Hence the irony of the Victorian poet Arthur Hugh Clough's 'The New Sinai':

'Earth goes by chemic forces; Heaven's  
 A Mécanique Céleste!  
 A heart and mind of human kind  
 A watch-work as the rest!'<sup>62</sup>

The high regard that natural philosophers had for physical astronomy in the 1830s and 1840s did not necessarily lead all of them to erect a classification of the sciences based on the model and character of astronomy. Herschel, for example,

accepted like others that physical astronomy was 'the most perfect of the sciences',<sup>63</sup> but he did not subscribe to the view that other physical sciences should develop in its image. Indeed, in an address to the BAAS in 1845, he reiterated that it was impossible to conceive that all the phenomena of nature could ever be accounted for according to the principles of celestial mechanics or by means of the forces of attraction and repulsion.<sup>64</sup> In his Preliminary Discourse he had used the terms physics, natural philosophy and physical science interchangeably and even in a section of the work purportedly devoted to the 'subdivision of physics into distinct branches and their mutual relations', he refused to accept any hard and fast classification of the kind Whewell made in the same year. Though he judged the question of classification to be an important one, the impression one receives from following his treatment of it is that for Herschel all such judgements must necessarily be temporary and open to change and refutation. As more of the natural world is opened up to inspection and study, old categories will be rejected and so new classes of fact will require separate forms of treatment. On the other hand, as knowledge increases, so potentially unconnected branches will fuse by processes of analogy and parallel.<sup>65</sup> The fact that physical sciences had failed to reach the status of physical astronomy meant that they were likely to develop further, and therefore that any classification would fail to capture the specificity of the particular domains of those physical sciences.

There was another problem in accepting physical astronomy as a model, and it was one which troubled the early founders of the BAAS and natural philosophers who followed the Herschelian image of science in particular. This was simply that the science, because it was technical and mathematical (and based on the conquests made by dynamics, statics and mechanics) was impossible to make available to the public newly interested in following, if not advancing, scientific developments. Thomas Young had claimed in 1809 that fewer than a dozen persons had read the Mécanique céleste as it ought to be read; but the real problem even twenty years later was being able to read it at all. It was a difficult work, not least because Laplace was more interested in results than in how these were reached. He therefore frequently omitted all but his conclusions with the famous and optimistic remark '*il est aisé à voir*'<sup>66</sup> - to which his early American translator, Nathaniel Bowditch retorted: 'I have never come across one of Laplace's 'Thus it plainly appears' without feeling sure that I have hours of hard work before me to fill up the chasm and find out and show how it plainly appears'.<sup>67</sup>

If physical astronomy was to become established and widely accepted by the leaders and functionaries of science as the model to be emulated, some attempt clearly needed to be made to present its major tenets in an accessible form. Thus it was that in 1827 Henry Brougham put forward a proposal for an English account of Laplace's work. 'The kind of thing wanted is such a description of that divine



work as will both explain to the unlearned the sort of thing it is - the plan, the vast merit, the wonderful truths unfolded and methodized - and the calculus by which all this is accomplished and will also give a somewhat deeper insight to the uninitiated'.<sup>68</sup> The person he had in mind to undertake the task was one of Laplace's greatest English admirers, someone who when the great physicist died received a lock of his hair - one of the foremost women of science of the nineteenth century, Mary Somerville.<sup>69</sup>

Somerville accepted the challenge but after struggling courageously for several months was forced to concede that the result could never be suitable for inclusion in Brougham's library of the Society for the Diffusion of Useful Knowledge. With the assistance of Herschel, the treatise was issued separately in 1831 as The Mechanism of the Heavens.<sup>70</sup> It was lavishly praised in the quarterly press and elsewhere by Sedgwick, Humboldt, Peacock, Airy and Brougham,<sup>71</sup> while the Royal Society hailed the work by placing a portrait bust of the author in their Great Hall.<sup>72</sup> With Whewell's forceful backing, the Mechanism was adopted as a textbook at Cambridge.<sup>73</sup> Herschel, though publicly enthusiastic, felt privately that the work may have given 'too strong a stimulus to the study of abstract science'.<sup>74</sup> Certainly, the majority of the text was devoted to reproducing Laplace's mathematical analyses, but Somerville did preface the work with a lengthy dissertation in which she attempted to present in outline the results of his celestial mechanics for a popular audience, or, as one of the few

hostile critics remarked in the Athenaeum, 'for the hands of the unwashed'.<sup>75</sup>

The dissertation was published separately in the following year,<sup>76</sup> and it was later to form the basis for an important milestone in the attempts to classify and regiment the physical sciences on the basis of the dominion of physical astronomy - Somerville's On the Connexion of the Physical Sciences published in 1834 and then frequently reprinted.<sup>77</sup> Somerville, no doubt encouraged by Herschel's suggestions of connecting links, relations of mutual dependence, and attempts in the Preliminary Discourse to show how 'sciences, however apparently remote, may throw light upon each other',<sup>78</sup> aimed to pursue the subject of the relations between the sciences in her work.<sup>79</sup> At the time, as we have seen, physics or natural philosophy was variously divided into a mass of groups, sections, and sub-units. The hope in some quarters was evidently that the rule of physical astronomy would bring order to the physical sciences, that a single mathematical form of analysis would filter down the hierarchy of knowledge, and that a unified methodology would provide the conceptual glue necessary to bind the disparate branches of natural philosophy together firmly.

The need for a work on the connection of the physical sciences was widely felt. Geology had already become a successful and independent science, with its own Society (founded in 1807) and with William Buckland and Adam Sedgwick occupying chairs in geology at Oxford and Cambridge

respectively (the first set up in 1813, the second in 1818). Other sciences had also formed separate and autonomous organisations by 1830, amongst them zoology, geography, astronomy, mineralogy and horticulture.<sup>80</sup> One indication of the degree of specialization which had taken place in the first three decades of the century is the development of scientific vocabulary.

A good many scientific disciplines had been created (at least in language) in the seventeenth century: one thinks of chemistry, pathology, meteorology, zoology, mineralogy, botany, mechanics, statics, hydrostatics, dynamics and kinematics. In the next hundred years, the English vocabulary was extended by terms such as ornithology, entomology and conchology. Then from 1800 to 1830 were created crystallography (1802), stoichiometry (1807), petrology (1811), biology (1813), helminthology (1819), obstetrics (1819), herpetology (1824), taxonomy (1828) and morphology (1830) - a development which indicates increasing attention to smaller groups of natural phenomena like crabs, mosses and reptiles. Moreover, within each branch there was an enormous increase during this period of new terms for substances, for new forms of apparatus and measuring instruments, for new diseases and units of measurement - words which were based on Greek and Latin rather than Anglo-Saxon. That they were so derived suggests the greater degree of specificity which was assigned to the scientific vocabulary - one has only to consider the difference between 'geology' and its Anglo-Saxon equivalent 'earth-lore' to see what processes

were being undergone by English vocabulary. There were words snatched from ordinary speech and then given new scientific dress, words imported from abroad to serve particular purposes, and words simply invented when the need arose.<sup>81</sup>

If anything encouraged Somerville in her work, it would probably have been the way chemistry had recently begun to define its sub-groups. For it was only in 1831 that Thomas Thomson's bestselling A System of Chemistry began to divide its subject matter into distinct (and it must be said, peculiar) areas. No such attempt had been made by the author since the first edition in 1802, but now he proceeded to elaborate one part of chemistry devoted to heat and electricity, another on inorganic chemistry, another on organic chemistry, and a fourth given to geology and mineralogy. In the preface to his work, Thomson also suggested that chairs be instituted at universities in the fields of magnetism, heat, light, and electricity - subjects he judged to be mature enough to support a separate existence.<sup>82</sup>

Faced with the increasing diversification of the scientific community and the mounting specialization of its subject matters, how did Somerville herself classify and order the physical sciences? The most forceful indication of her preferences can be gained from the amount of space given to each of the sciences she covers (the order and contents remained roughly equivalent through the first nine editions). First comes physical astronomy which is given thirteen

sections; next electricity and magnetism with eight; after this light with seven; then matter theory, sound and descriptive astronomy with two each, and then tidology, heat, and meteorology each with one section. That the authors most cited and quoted in the first edition are Herschel, then Faraday, then Laplace, followed by Biot and Arago further reinforces the impression one forms from Somerville's division of material in the work.

In two ways, one can see immediately that Somerville has departed from contemporary views. Firstly, she does not distinguish between dynamics, pneumatics, statics and hydraulics - nor does she provide any reasoned arguments for her dissolution of such categories. And secondly, she does allow non-technical sciences like tidology, meteorology and descriptive astronomy a prominent role in her schema of the physical sciences. Chemistry, geology, mineralogy and geography we may note are not discussed.

What then, it might be asked, did Somerville propose as a common feature of the physical sciences, as a basis for her classification of them? Remarkably and significantly in a work devoted specifically to the question of the connections between these sciences, Somerville had at her immediate disposal only the most tenuous thread with which to weave her scientific tapestry. She seems to have shared with Herschel and others the view that quantification and measurement were important features of research,<sup>83</sup> but she did not use these as a foundation for the sciences. Instead,

she suggested that these shared a common method of mathematical analysis. To Whewell, the physical sciences were characterized by disintegration, 'like that of a great empire falling to pieces'<sup>84</sup> - Somerville believed that the decline would be halted by the importation of the continental method of analysis, for this was 'daily extending its empire, and will ultimately embrace almost every subject in nature in its formulae.'<sup>85</sup> Yet, as her words indicate, the conquest had not yet occurred. Only physical astronomy had been thoroughly colonized, and its practitioners required to be 'well versed in the higher branches of mathematical and mechanical sciences'<sup>86</sup> - a view which was neither novel, nor liable to cause dissention.<sup>87</sup>

So analysis was only a *potential* unifier. Likewise, the existence of real natural connections between the different physical sciences was only gradually becoming apparent. So whilst she dwelt on the common features of magnetism and electricity, heat and motion and other phenomena in her book,<sup>88</sup> the correlations, analogies and connections established on the molecular and chemical levels, in the fields of light, heat, electricity, magnetism, and matter theory would only unify the forces of nature, and thereby the study of nature, at some unspecified point in the future.<sup>89</sup> James Clerk Maxwell suggested later that about the only connection among the sciences Mary Somerville had been able to find was that they were capable of being bound together in the same volume.<sup>90</sup> An exaggeration no doubt, but neither an ill-founded, nor a particularly inaccurate

one. The only existing connections Somerville was able to point to in her work were those based on the activities of natural philosophers, that is, the fact that in order to master any one science it was necessary for practitioners to have a clear grasp of many.<sup>91</sup> This was a view clearly traceable to Herschel's notion that 'no natural phenomenon can be adequately studied *in itself alone*, but to be understood, must be considered *as it stands connected with all nature*'.<sup>92</sup> The derivation from the Preliminary Discourse was manifest, but Somerville had instituted an important shift. For the physical sciences were not seen to be joined together according to the necessary indivisibility of their objects, but because of the community of physical scientists. The unity of science such as it existed was the unity of *scientists*.

The Connexion was widely praised,<sup>93</sup> but it was Whewell who best understood the nature of Somerville's work. For what he stressed above all in his review of the book was the manner in which the practitioners of various sciences had been following different paths in different and autonomous scientific organizations. 'The mathematician turns away from the chemist; the chemist from the naturalist; the mathematician, left to himself, divides himself into a pure mathematician and a mixed mathematician, who soon part company; the chemist is perhaps a chemist of electro-chemistry; if so, he leaves common chemical analysis to others...'.<sup>94</sup> The response to this process of organizational disunity was organizational integration, and this, of course,

was the aim of the BAAS. Whewell continued by suggesting that a term might be coined to signify the man 'who studies heat, moisture, and the like', to 'designate the students of the knowledge of the material world collectively'.<sup>95</sup>

The need for such a term, Whewell says

'was felt very oppressively by the members of the British Association for the Advancement of Science, at their meetings at York, Oxford, and Cambridge, in the last three summers. There was no general term by which these gentlemen could describe themselves with reference to their pursuits. *Philosophers* was felt to be too wide and too lofty a term... *savans* was rather assuming, besides being French instead of English; some ingenious gentleman proposed that, by analogy with *artist*, they might form *scientist*'.<sup>96</sup>

That gentleman was Whewell himself.<sup>97</sup>

Somerville's Connexion may stand then as testimony of the fact that by 1834, there was lacking in England any clear differentiation of the sciences and any commonly-accepted scientific method which could be relied upon to serve as a norm with which to distinguish and classify the various branches of the physical sciences. Physical astronomy, it was agreed, furnished the model but it could hardly serve as anything other than a general standard, a target to be aimed for by other sciences but not a criterion for judging those sciences. There remained throughout the 1830s no clearly established scientific method applicable to investigate the various sections of nature, nor even any acceptable notion of what those sections were. Without a unified method, without a unifying model, without the unity of the physical world, how could 'science' be consti-



tuted and set apart from other forms of knowledge such as literature, poetry, religion and politics? The Literary Gazette had suggested that Somerville's work could be recommended to 'all who wish to be agreeably initiated into a love of science'.<sup>98</sup> The Athenaeum which had almost alone attacked the Mechanism, heaped praise on the Connexion: it was, said the reviewer, second only to Herschel's Preliminary Discourse, and 'at the same time a fit companion for the philosopher in his study, and for the literary lady in her boudoir; both may read it with pleasure, both consult it with profit'.<sup>99</sup>

This was fine, but as we have seen, many natural philosophers wanted a means to differentiate the knowledge produced by those with a 'love of science' and by those with expertise and training in the subject. Many wanted to distinguish between the 'philosopher in his study' and the 'literary lady in her boudoir'. Somerville's work had manifestly failed to do this, or indeed to provide any practical means of so doing. Was physical astronomy to be the only subject privileged enough to be assigned the title of 'science'? This would have been absurd and impractical: no-one suggested the idea. Was the method of induction and deduction from axioms to be the only scientific method? Whewell and his supporters clearly felt so; but Herschel's influential neo-Baconianism made this a difficult tenet to hold to. Should a system of grades be instituted which would assign privileges to particular studies? In principle this seemed an attractive solution, but in practice there was little

agreement on what system and classification could and should be employed. As we have seen, even the study of physics persistently refused to be kept within narrow and pre-assigned boundaries; and in any event, many used the term itself in its widest sense to mean no less than the investigation of the physical world.

Our study of attempts to classify the sciences into a hierarchy and of efforts made from 1820 to 1840 to ensure that sciences other than those in the category of the 'physical sciences' would live under the rule of certain model sciences in that category has allowed us to clarify precisely what the alternative model to Baconianism entailed. We have shown that the abstract protocols advanced by those we have termed 'Whewellians' did indeed exert great influence and have managed to document precisely when this influence became decisive in the BAAS and in other important sites of or for scientific culture. But, more importantly, we have shown that such protocols as were framed within this scientific ideology were inconsistently applied and could not be applied in any other way. The struggles over a definition of physics and physical astronomy had far wider implications, for as we have suggested, what was involved when debate took place on this and associated issues was the status, general characteristics, and explanatory structures of science as a whole. Put more precisely: at issue was the possibility of Baconianism as a scientific ideology and practice.

This chapter will have raised two issues. First, the links it has established between figures within and without the BAAS

will have prompted speculation about how the possibility of Baconianism as a scientific ideology and practice was debated and resolved within that organisation, and what the implications of this debate and resolution were. Second, if as we have suggested the norms of physics and physical astronomy were not such as could be applied either proscriptively or prescriptively, how was a common scientific outlook generated and maintained within the BAAS and within other important fields?

It is to the answer to these two related issues that we now turn. We shall see that during the 1830s extra-scientific criteria were summoned to assist in the assessment and treatment of differing sciences. What was to be judged were not the sciences themselves, but rather the practice of scientists or purported scientists, the general moral and political implications of those sciences, and where it was thought appropriate the social class, sex or beliefs of the scientists being assessed. Such manoeuvres had far reaching consequences as we shall shortly see.

NOTES: PART TWO, CHAPTER SIX

1. Merz, History of European Thought, II, 98.
2. See Maurice Crosland and Crosbie Smith, 'The Transmission of Physics from France to Britain: 1800-1840', Historical Studies in the Physical Sciences, 9, 1978, 1-61, 5-6; and R.H. Silliman, 'Fresnel and the Emergence of Physics as a Discipline', Historical Studies in the Physical Sciences, 4, 1974, 137-62, 141.
3. See Jean Torlais, 'La Physique expérimentale' in R. Taton (ed.), Enseignement et diffusion des sciences en France au XVIIIe siècle, Paris, 1964, 619-45.
4. See M.P. Crosland, 'The Development of a Professional Career in Science in France', in Crosland (ed.), Emergence of Science, 139-59. For the way in which the sub-groups of physique developed in the late eighteenth century, studies of the Paris Academy are enlightening; see particularly Hahn, Anatomy of a Scientific Institution, 99-100; also Henry Guerlac, 'Chemistry as a Branch of Physics: Laplace's Collaboration with Lavoisier', Historical Studies in the Physical Sciences, 7, 1976, 193-276, 194-95n., and J.L. Heilbron, Elements of Modern Physics, Berkeley, 1982, 4-5. Recent work by Robert Fox has highlighted the role of the network of French provincial learned societies in constructing and diffusing science. See his 'The savant confronts his Peers: Scientific Societies in France, 1815-1914', in R. Fox and G. Weisz (eds.), The Organization of Science and Technology in France, 1808-1914, Cambridge, 1980, 240-82;

- 'Learning, Politics, and Polite Culture in Provincial France: the Sociétés Savantes in the Nineteenth Century', Historical Reflections/Refléxions historiques, 7, 1980, 543-64; and 'Science, Industry, and the Social Order in Mulhouse, 1798-1871', British Journal for the History of Science, 17, 1984, 127-68. Other important studies include Terry Shinn, 'The French Science Faculty System, 1808-1914', Historical Studies in the Physical Sciences, 10, 1979, 271-332; Harry W. Paul, 'Apollo courts the Vulcans: the Applied Science Institutes in Nineteenth-century French Science Faculties', in Fox and Weisz, Organization of Science, 155-81; and Mary Jo Nye, 'The Scientific Periphery in France: the Faculty of Sciences at Toulouse (1880-1930)', Minerva, 13, 1975, 334-403.
5. Laplace's major works were Traité de mécanique céleste (Paris, 1799-1825) and Exposition du système du monde (Paris, 1796). An excellent study is Robert Fox, 'The Rise and Fall of Laplacian Physics', Historical Studies in the Physical Sciences, 4, 1974, 89-136.
6. See Maurice Crosland, The Society of Arcueil: A View of French Science at the Time of Napoleon I, 1967; R. Fox, 'Scientific Enterprise and the Patronage of Research in France, 1800-1870', Minerva, II, 1973, 442-73; T. Shinn, 'The French Science Faculty System: Institutional Change and Research Potential in Mathematics and the Physical Sciences', Historical Studies in the Physical Sciences, 10, 1979, 271-332; and J. Cawood, 'Terrestrial Magnetism and the Development of International Collaboration in the Early Nineteenth Century', Annals of Science, 34, 1977, 551-87.

7. Biot quoted in Crosland and Smith, 'Transmission', 8-9.
8. See, for examples, J. Herivel, Joseph Fourier: the Man and the Physicist, Oxford, 1975; E. Frankel, 'J.B. Biot and the Mathematization of Experimental Physics in Napoleonic France', Historical Studies in the Physical Sciences, 8, 1977, 33-72; Guerlac, 'Chemistry as a Branch of Physics'; Crosland and Smith, 'Transmission', 10-55.
9. I am thinking particularly of the role of Mesmerism and theories of animal magnetism during this period; see Robert Darnton, Mesmerism and the End of the Enlightenment in France, Cambridge, Mass., 1968, and R. Lenoir, 'Le Mésmerisme et le système du monde', Revue d'histoire de la philosophie, 1, 1927, 192-219, 294-321.
10. Fox, 'Rise and Fall', 127-28.
11. Three texts I have found especially useful for an understanding of physics in Britain during the early nineteenth-century are: P.M. Harman, Energy, Force, and Matter. The Conceptual Development of Nineteenth-Century Physics (Cambridge, 1982, 1-44 especially); R.E. Schofield, Mechanism and Materialism: British Natural Philosophy in the Age of Reason (Princeton, 1970, 277-97 especially); and Richard Olson, Scottish Philosophy and British Physics 1750-1880. A Study in the Foundations of the Victorian Scientific Style, Princeton, 1975.
12. anon., 'Physics', Encyclopaedia Britannica, 3 vols, Edinburgh, 1771, III, 478.
13. Jean Le Rond d'Alembert, 'Physique', in Encyclo-

- pédie, ou dictionnaire raisonné des sciences, des arts et des métiers, par une Société de gens de lettres. Mis en ordre et publié par M. Diderot; et quant à la partie mathématique, par M. d'Alembert, 36 vols, Lausanne and Berne, 1780-1782, XXV, 701.
14. See J.B. Morrell, 'Professors Robison and Playfair, and the Theophobia Gallica: Natural Philosophy, Religion and Politics in Edinburgh, 1789-1815', Notes and Records of the Royal Society of Edinburgh, 26, 1971, 43-63.
15. John Robison, 'Physics', Encyclopaedia Britannica (3rd ed.), 18 vols, Edinburgh, 1797, XIV, 637-59, 637, 643.
16. ibid., 647, 650, 654-55. See Crosbie Smith, '"Mechanical Philosophy" and the Emergence of Physics in Britain: 1800-1850', Annals of Science, 33, 1976, 3-29, 6-11.
17. Thomas Young, A Course of Lectures, I, 9.
18. ibid., I, 258.
19. ibid., I, 487.
20. ibid., I, 725. Mathematics was treated in volume two.
21. See Morris Berman, Social Change and Scientific Organization. The Royal Institution 1799-1844, 1978, 24.
22. See John Playfair, 'Traité de mécanique céleste', Edinburgh Review, XI, 1808, 249-284. Something of the relations between Playfair, Young and Robison

may be gauged from Lyon Playfair's notice of Robison ('Biographical Account of the Late John Robison', Transactions of the Royal Society of Edinburgh, 7, 1815, 495-539), and Young's life of Robison ('Life of Robison', in George Peacock (ed.), Miscellaneous Works of the Late Thomas Young, 3 vols, 1855, II, 505-17).

23. This was because the action of one cause could often pass from one domain to another, as when heat expanded a body and also changed its internal make-up. See John Playfair, Outlines of Natural Philosophy, 2 vols, Edinburgh, 1812-14, I, 1-2.
24. ibid., I, 15-16. This view, shared by Robison, contrasted sharply with Whewell's later claim that statics and dynamics were distinct sciences (see on this Crosbie Smith, '"Mechanical Philosophy"', 12).
25. ibid., I, 161-62.
26. It was with this work, according to Fox, that the true Laplacian programme was inaugurated (see Fox, 'Rise and Fall', 95).
27. See Hughes, 'Encyclopaedias', 347.
28. See Thomas S. Kuhn, The Structure of Scientific Revolutions (2nd edition), Chicago, 1970, 179. The gradual evolution of a scientific body of physicists figures at the centre of the studies by Gaston Bachelard, where the developments are treated far more rigorously and with particular reference to events in France (see in particular his La Formation de l'esprit scientifique, Paris, 1977; and Le Rationalisme appliqué, Paris, 1949,



- 12-30). This work, first published some forty years ago, still remains untranslated, though it has become known through commentary, e.g. D. Lecourt, Marxism and Epistemology, 1975 (see especially, 7-19 for comments on Bachelard and Kuhn), and S.W. Gaukroger, 'Bachelard and the Problem of Epistemological Analysis', Studies in the History and Philosophy of Science, VII, 1979, 189-244.
29. Babbage, Decline of Science, 25-27, 30-36; Brewster, 'Decline of Science', 313-17.
30. See Crosbie Smith, '"Mechanical Philosophy"', 16-17.
31. Crosland and Smith, 'Transmission', 9; see also R.E. Schofield, Mechanism and Materialism: British Natural Philosophy in an Age of Reason, Princeton, 1970, and for the influence of this tradition in another field, Arnold Thackray, Atoms and Powers. An Essay on Newtonian Matter Theory and the Development of Chemistry, Cambridge, Mass., 1970.
32. See on this Joseph Agassi, Faraday as a Natural Philosopher, Chicago, 1971, esp. 28-29n.; Williams, Michael Faraday, esp 60-73, 125; and P.M. Heimann, 'Faraday's Theories of Matter and Electricity', British Journal for the History of Science, 5, 1971, 235-57, for debates about Faraday's views on matter and debts to Kant. On Davy, see R. Siegfried, 'The Chemical Philosophy of Humphry Davy', Chymia, V, 1959, 193-201; idem, 'Bosovich and Davy. Some Cautionary Remarks', Isis, 58, 1967, 236-38; and D.M. Knight, The Transcendental Part of Chemistry, Folkestone, 1978.

33. See Thackray, Atoms and Powers, 191-92.
34. Quoted in Crosland and Smith, 'Transmission', 11. In a footnote, the authors of this article note half a dozen short notices or reviews of works on or by Laplace in the British literature (11n30).
35. Quoted in Crosland and Smith, 'Transmission', 10.
36. J. Herschel, 'Mechanism of the Heavens', Quarterly Review, XLVII, 1832, 537-59; reproduced in Herschel, Essays, 21-62, quote from 29. The review also dealt with Mary Somerville's Mechanism of the Heavens, 1832.
37. Quoted in Bruhns, Humboldt, I, 232. Like others whose sympathies lay with the ancien régime, Lalande used the term geometry as an equivalent for mathematics.
38. See Richard Chenevix, 'Comparative Skills and Industry of France and England', Edinburgh Review, XXXII, 1819, 340-89; and James Pillar (?), 'Education of the Poor in France', Edinburgh Review, XXXIII, 1820, 493-509, esp. 508.
39. See Möll, Alleged Decline, 11-12; also Merz, History of European Thought, I, 100.
40. Robert Woodhouse, Principles of Analytical Calculation (Cambridge, 1803); A Treatise on Plane and Spherical Trigonometry (Cambridge, 1809). The latter text was quite widely used as a textbook, but its effect as a reformist work was small (see Augustus de Morgan, 'Robert Woodhouse', Penny Cyclopaedia, 27 vols, 1833-43, XXVII, 526-27).

41. For a list of Ivory's early publications, see Crosland and Smith, 'Transmission', 16n57.
42. Herschel, Essays, 35.
43. On the introduction of the new mathematics to Cambridge, W.R.R. Ball's A History of the Study of Mathematics at Cambridge (Cambridge, 1899, 117-37) is useful. More general studies are J.M. Dubbey, 'The Introduction of the Differential Notation to Great Britain', Annals of Science, 19, 1963, 37-48 which covers the period from Woodhouse's 1803 work to Whewell's 1819 Treatise on Mechanics; and the same author's The Mathematical Work of Charles Babbage, Cambridge, 1983, 31-48 (on the Analytical Society); J. Herivel, 'The Influence of Fourier on British Mathematics', Centaurus, 17, 1973, 40-57; and Elaine Koppelman, 'The Calculus of Operations and the Rise of Abstract Algebra', Archive for the History of the Exact Sciences, 8, 1971, 155-242.
44. Robert Woodhouse, Physical Astronomy (Cambridge, 1818). See David Philip Miller, 'Between Hostile Camps: Sir Humphry Davy's Presidency of the Royal Society of London, 1820-1827', British Journal for the History of Science, 16, 1983, 1-47, 15-19 for the importance of the position of moderator and the changes in the examination system. It might be mentioned at this point that both Herschel and Babbage were appalled by the ignorance of mathematics shown by members of the Banksian regime at the Royal Society (on this, see G. Buttman, The Shadow of the Telescope: a Biography of John Herschel, New York, 1970, 3-20; Moseley, Irascible Genius, 52-64).

45. William Whewell, An Elementary Treatise on Mechanics (Cambridge, 1819); A Treatise on Dynamics (Cambridge, 1823). Todhunter provides an account of the changes and editions of these works (William Whewell, I, 13-21). An excellent recent study is H.W. Becher, 'William Whewell and Cambridge Mathematics', Historical Studies in the Physical Sciences, 11, 1980, 1-48.
46. G.B. Airy, Mathematical Tracts on Physical Astronomy, the Figure of the Earth, Precession and Nutation, and the Calculus of Variations (Cambridge, 1826); J.H. Pratt, The Mathematical Principles of Mechanical Philosophy (Cambridge, 1836).
47. Whewell, Treatise, vii.
48. Cannon, Science in Culture, 35-36.
49. See for excellent studies, Robert Fox, The Caloric Theory of Gases from Lavoisier to Regnault, Oxford, 1971; and Gaston Bachelard, Etude sur l'évolution d'un problème de physique, Paris, 1973.
50. To be more precise, T.S. Kuhn refers to this development as 'one facet of a second scientific revolution' (The Essential Tension, Chicago, 1977, 220. Kuhn's essay 'The Function of Measurement in Modern Physical Science' is devoted to elaborating this insight - 178-224).
51. On the decline, see R. Fox, 'Scientific Enterprise and the Patronage of Research in France, 1800-70', Minerva, 11, 1973, 442-73; and H.W. Paul, 'La Science française de la seconde partie du XIXe siècle vue par les auteurs anglais et

américains', Revue de l'histoire des sciences, 27, 1974, 147-63.

52. Cannon quotes a revealing passage from Maxwell's Treatise: 'The aim of Lagrange was to bring dynamics under the power of the calculus... Our aim, on the other hand, is to cultivate our dynamical ideas. We therefore avail ourselves of the labours of the mathematicians, and retranslate their result from the language of the calculus into the language of dynamics, so that our words may call up the mental images, not of some algebraical process, but of some property of moving bodies' (Science in Culture, 35).
53. Whewell, 'Inductive Science', 390.
54. ibid., 394.
55. ibid.
56. ibid., 395-97.
57. Airy first raised the issue in his 1832 Report on Astronomy (see BAAS Report, 1832, Oxford, 185-86). For later examples, see J. Challis in BAAS Report, 1833, Cambridge, 131-51; and in BAAS Report, 1835, Dublin, the papers by Whewell (pages 1-17) and by H. Lloyd (388-92).
58. BAAS Report, 1833, Cambridge, xiii.
59. BAAS Report, 1835, Dublin, 1.
60. BAAS Report, 1836, Bristol, xxiii (see also xxxv).
61. See on the relations of dynamics and physical

- astronomy in the work of Whewell and Herschel, Wilson, 'Herschel and Whewell', 83-85.
62. Quoted in Jacob Körg's useful article 'Astronomical Imagery in Victorian Poetry' in James Paradis and Thomas Postlewait (eds.), Victorian Science and Victorian Values: Literary Perspectives, New York, 1981, 137-58, 137.
63. Herschel, Preliminary Discourse, 67, 78.
64. BAAS Report, 1845, Cambridge, xli.
65. Preliminary Discourse, 85/93-94.
66. Quoted in E.T. Bell, Men of Mathematics, 2 vols, Harmondsworth, 1965, I, 193.
67. Quoted in Dirk J. Struik, A Concise History of Mathematics, New York, 1967, 135.
68. Henry Brougham to William Somerville, 27 March 1827, in Elizabeth Chambers Patterson, Mary Somerville and the Cultivation of Science, 1815-1840, The Hague, 1983, 49.
69. On Somerville, see the study cited in the note above as well as two articles by the same author: 'Mary Somerville', British Journal for the History of Science, 4, 1969, 311-39, and 'The Case of Mary Somerville: An Aspect of Nineteenth-Century Science', Proceedings of the American Philosophical Society, 118, 1974, 269-75.
70. On Herschel's efforts to secure publication by John Murray, see Martha Somerville, Personal Recollections, from Early Life to Old Age, of

Mary Somerville, with Selections from her Correspondance, 1873, 173. Herschel and Somerville appear to have held similar views about the need to make scientific pursuits more accessible. As an example of this, Somerville later wrote a Physical Geography (2 vols), 1848 which inspired Herschel to bring out a similar kind of work with the same title in 1861 (see on this J.N.L. Baker, 'Mary Somerville and Geography in England', Geographical Journal, 111, 1948, 207-22; and on the rapid development of the subject after Somerville's pioneering work, Edmund W. Gilbert, British Pioneers in Geography, Newton Abbot, 1972, 132ff.).

71. The major reviews in the quarterly press were: Thomas Galloway, 'Mechanism of the Heavens', Edinburgh Review, LV, 1832, 1-25; and J.F.W. Herschel, 'Mechanism of the Heavens', Quarterly Review, and in Essays. For Sedgwick's praise, see Lyell, Charles Lyell, I, 368; for that of Humboldt, Somerville, Personal Recollections, 287. Other views are given in Patterson, Mary Somerville, 83-94.
72. See Patterson, Mary Somerville, 89-91.
73. Somerville, Personal Recollections, 171. The Mechanism was adopted as a Cambridge textbook in 1832.
74. Somerville, Personal Recollections, 167.
75. Athenaeum, 221, 1832, 43.
76. Mary Somerville, A Preliminary Dissertation on the Mechanism of the Heavens, 1832.

77. The edition used is Mary Somerville, On the Connexion of the Physical Sciences (1834), 9th ed., 1858.
78. Preliminary Discourse, 381-82/344-46.
79. See Personal Recollections, 178.
80. See note 28, chapter 4 above for details.
81. My major source is the Oxford English Dictionary. The best general account of the growth of scientific vocabulary in the nineteenth century is in T.H. Savory, The Language of Science (1967). On the derivation and construction of scientific terms, see W.E. Flood, Scientific Words: their Structure and Meaning (1960) and Lancelot Hogben, The Vocabulary of Science (New York, 1971) and The Mother Tongue (1964), especially chapter seven. An interesting study of the evolution of scientific language in one particular field (in this case biomedicine) is E. Andrews, A History of Scientific English (New York, 1947).
82. See Thomas Thomson, A System of Chemistry (1802), 7th ed., Edinburgh, 1831.
83. See Patterson, Somerville, 128.
84. William Whewell, 'On the Connexion of the Sciences', Quarterly Review, LI, 1834, 54-68, 59.
85. Somerville, Connexion, 427.
86. Connexion, 2.
87. It had earlier been expressed in Mary Somerville,



The Mechanism of the Heavens, 1831, 7; and quoted in Herschel's review (in his Essays, 43). Brewster in his review of Connexion cited the passage with approval (David Brewster, 'Mrs Somerville on the Physical Sciences', Edinburgh Review, LIX, 1834, 154-71, 157).

88. See e.g. Connexion, 274-75, 341.

89. Somerville, Connexion, 427.

90. See Cannon, 'Herschel', 231.

91. Connexion, 426-27.

92. Herschel, Preliminary Discourse, 286/259.

93. Humboldt found it 'exact and admirable' (Alexander von Humboldt, Cosmos: a Sketch of a Physical Description of the Universe (German ed., 1845-62), 4 vols, 1848-51, I, 103n); Faraday found it instructive and delightful (see Faraday to Somerville, 17 January 1859, in Selected Correspondance, II, 921). For further contemporary opinion, see Patterson, Mary Somerville, 135-46.

94. Whewell, 'Connexion', 59.

95. ibid.

96. ibid.

97. See on Whewell's formulation of the term 'scientist', Merz, History, I, 89n; and J.B. Morrell, 'London Institutions and Lyell's Career: 1820-41', British Journal for the History of Science,

IX, 1976, 132-46, 134.

98. Literary Gazette, 894, 1834, 173.

99. Athenæum, 333, 1834, 203.

CHAPTER SEVEN: WHAT GOES IN, WHAT COMES OUT

We have shown that interest in Francis Bacon's work grew in Britain in the first three decades of the nineteenth century, and that a number of forms of Baconianism pervaded the ideology of the early BAAS. That a body of philosophical and scientific work could become accessible to a wide range of people was aided in large part by the enormous increase in cheap literature especially during the 1820s and 1830s, at a time when the market was flooded with literally thousands of sixpenny and shilling tracts, pamphlets, novelettes and periodicals.<sup>1</sup> Before the BAAS had been established, Henry Brougham had set up his Society for the Diffusion of Useful Knowledge (SDUK) with the aim of spreading mainly scientific information amongst the lower classes, the audiences which were then flocking to the recently-formed Mechanics' Institutes. In 1825, Brougham issued a pamphlet incorporating his views on the extension of adult education in which he wrote: 'Although much may be done by the exertions of individuals, it is manifest that a great deal may be effected by the labours of a body, in furthering this important measure... and I am not without hopes of seeing formed a Society for promoting the composition, publication and distribution of cheap and useful works'.<sup>2</sup> That scientific education was to lie at the heart of the SDUK's activities was plain from the Society's list of Objects;<sup>3</sup> and Brougham continually emphasized the utilitarian benefits deriving from such an education. In the SDUK's first publication in 1827, he

wrote that 'the Pleasures of Science go hand in hand with the solid benefits derived from it... they tend, unlike other gratifications, not only to make our lives more agreeable, but better'.<sup>4</sup>

If we try to compare the BAAS and the SDUK, it becomes immediately plain that they shared a broadly similar reformist outlook and liberal-Whig political affiliations. Brougham was an important and popular figure in the Whig party and was made Lord Chancellor in 1830,<sup>5</sup> and he later claimed that the Society he founded had been 'eminently conducive to allaying the reckless spirit which, in 1830, was leading multitudes to destroy property and break up machines'.<sup>6</sup> This was, as we know, far from being the case since popular upheavals continued throughout this decade and the early 1840s.<sup>7</sup> But Brougham himself and the Society certainly earned the mistrust of radicals, Chartists and eventually even the Westminster Review.<sup>8</sup> In Cobbett's view, 'Brougham and Birkbeck, and the rest of the Malthusian crowd' were 'constantly at work preaching content to the hungry and naked'. What education, asked Cobbett, 'what moral precepts, can quiet the gnawings and ragings of hunger?'.<sup>9</sup> As E.P. Thompson has reminded us, 'If Brougham appears in some recent writing as a great, but opportunist, Radical, this was not at all how he was viewed by the 'Old Radicals' of 1823.'<sup>10</sup> Thus it was that men like Hetherington, Watson and Cleave - who spoke for tens of thousands of people - quickly regarded the SDUK with implacable hostility, as 'an object of derision and contempt among

working-class radicals'.<sup>11</sup> A leading Chartist complained that the Society's Penny Magazine purveyed the 'most poisonous doctrines in company with the most fascinating information', while a labourer from Poplar wrote in the Poor Man's Guardian in 1832, 'This first number of their Penny Magazine, insinuates that poor men are not qualified to understand the measures of governments.'<sup>12</sup>

This may well have been true of the moral and political tracts issued by the SDUK, but the aims of the founders of the Society included that of making accessible to the working classes the latest advances in science. If Newton can be thought of as replacing the figure of Bacon by the mid-1830s in the BAAS, it was to the latter that the SDUK repeatedly made reference as an exponent of a popular and accessible scientific ideology. It was no accident that the first philosopher to whom the SDUK devoted a tract was Bacon himself.<sup>13</sup> While the BAAS moved rapidly towards issuing technical treatises, with reports from its lay membership tucked neatly out of sight in the rear of its annual Reports, the SDUK sought consciously and consistently to give pride of place to expositions of scientific work written in a clear, simple and easy style. Instead of the annual progress reports which took pride of place in the BAAS's proceedings,<sup>14</sup> the SDUK instead commissioned original short studies which were to include a wealth of illustrative and practical material. While the BAAS sought to narrow its scope and membership, the SDUK tried instead to make their own more extensive. In a letter of 1828 to

the Marquis of Landsdowne, Brougham wondered:

'Would your Wiltshire yeomen... read treatises (very cheap) on the natural history of domestic animals, anatomy etc. - their treatment, diseases etc? Or is there any other subject (likely to enlarge their minds) which they would prefer? Our Useful Knowledge Society, of course, intends to publish regular treatises on all branches of agriculture as well as science, but some such as I have mentioned...appear to afford a more likely means of attracting readers among a very un-reading class of the community.'<sup>15</sup>

The result of the query was the SDUK's Farmer's Library, but before this appeared, there came the Library of Useful Knowledge with tracts priced at sixpence and containing 32 closely-printed pages, the equivalent it was boasted of more than 100 ordinary octavo pages.<sup>16</sup> The many tracts were later gathered together into four stout volumes from 1829 to 1838, and these included a number of works written by eminent natural philosophers of the day. Dionysius Lardner of Cyclopaedia, Cabinet Library and Museum of Science and Art fame, brought out tracts on Pneumatics, Mechanics, and Newton's Optics; David Brewster did tracts on Optics and on the Polarisation of Light. Charles Bell wrote on animal mechanics; P.M. Roget on electricity; John Lindley on botany, and Airy on gravitation. The SDUK also brought out a series on mathematics to which Augustus de Morgan was a frequent contributor, along with an enormous collection of works on birds, insects and natural history, on the Mechanics' Institutes, statistics and history, biography and geography. From 1828 onwards, the Society broke the monopoly of the Stationers' Company by issuing impressive Almanacs,<sup>17</sup> then from 1829 to 1843 it sold excellent and nowadays collected maps of all kinds, while from 1831

to 1835 it campaigned vigorously for state-controlled and secular education through its Quarterly Journal of Education.

It is difficult to imagine any other publishing venture which matches that of the SDUK in terms of scope and readership, unless it be that of Penguin books in this century. Boosted by excellent notices in the quarterlies - those in the Edinburgh Review, written by Brougham himself, were especially praising - the Library of Useful Knowledge was an immediate success.<sup>18</sup> Each of its popular scientific tracts sold around 25,000 copies<sup>19</sup> - a figure which only seems minor when compared with that achieved by the Penny Magazine and the Penny Cyclopaedia established with the Society's blessing by Charles Knight from 1832 and 1833. The Penny Magazine had, so its editor claimed, a readership of no less than a million<sup>20</sup> (see plate 11). With such a wide audience, a good press in the established quarterlies, and vociferous attacks from the radicals and Chartists, it did not take long for the Society to be granted official recognition: it received its Royal Charter in 1832.

It would be foolhardy to attempt any general assessment of the character, status and development of the SDUK, and it is unfortunate that there are no full-length published accounts of the organization available which would allow us to establish its role within early Victorian scientific culture. Nonetheless, it is possible to set out some of

the major contrasts between the Society and the BAAS. Sharing with the British Association a generally Whig and reformist outlook, the SDUK had a similarly undemocratic internal structure. Its general committee was appointed at the start of the Society's history and the Rules made no mention of staging later elections; the Chairman, Vice-Chairman and Treasurer were appointed by this self-perpetuating elite. But this general committee was distinct from the grouping of the twenty leading figures of the BAAS. In prosopographical terms, the first was closely connected with London University, whilst the latter was manned predominantly by scientists trained, or established, at Trinity College, Cambridge and Trinity College, Dublin.<sup>21</sup> And during the 1820s and 1830s, the atmosphere at Cambridge was distinctly anti-Paleyian,<sup>22</sup> whereas, though the SDUK purportedly steered clear of 'controversial Divinity' and the 'principles of revealed Religion',<sup>23</sup> many of its tracts were clearly written within the natural theological framework.<sup>24</sup> Brougham himself, the leader of the Society throughout its history, had written a work enthusiastically supporting the connections of design, use and the Deity.<sup>25</sup>

Science in the eyes of the SDUK was to be presented accessibly and practically. Elementary treatises were published to enable anyone to pursue the study of a subject with the aid of books alone. Self-instruction was the means of self-improvement. The sciences were to Brougham's mind divisible into three great classes, those relating to number and quantity (mathematics), those relating to matter (natural



philosophy), and those dealing with mind (intellectual or moral philosophy).<sup>26</sup> Natural philosophy itself was subdivided into various branches according to the subject matter treated; thus dynamics, mechanics and statics were concerned with weight and motion, chemistry with the qualities and composition of substances and natural history with the classification of animals.<sup>27</sup> Physical astronomy, the shining beacon of the BAAS leadership, was no more than a glaring absence from the programme of scientific work undertaken by the SDUK. In its place stood simply 'astronomy', a subject B.H. Malkin introduced to the readers of his treatise on the subject with the statement that 'the results of observation will not be explained from principles assumed in the first instance, but the principles of astronomy will be deduced, as far as they can be so without complicated mathematical investigation, from observation'.<sup>28</sup> Mathematics, Brougham stressed, needed to come to the aid of the practicing natural philosopher 'only in a few cases.'<sup>29</sup>

While the BAAS sought increasingly to restrict investigations to those specifically trained to carry them out, the SDUK if anything moved in the opposite direction, branching out from its first Library of Useful Knowledge to its Library of Entertaining Knowledge, aiming to give simple pleasures where its predecessor offered simple instruction. Still, even in the earliest scientific tracts, the emphasis fell always on the simplicity of science, its easy attainability and approachability. In his treatise

on chemistry, J.F. Daniell began by proclaiming that 'the general principles of the science may be learnt from operations which are continually going on around us, or which we can command at pleasure; and with which it would highly benefit everyone, whatever his station in life, to become acquainted'.<sup>30</sup> Even physiology, said another author, was open to anyone since none would find in it 'any extraordinary difficulties'.<sup>31</sup> The rare exception did occur, it is true, and this gave the Library of Useful Knowledge an uneven and unpredictable character.<sup>32</sup> Brewster's work on the polarisation of light, as we might expect from his role in the BAAS, stood out as particularly technical for he made no attempt to follow the lead set by other contributors in using illustrations, devices, and familiar examples. His text was only enlivened by the repetitious use of terms such as 'beautiful', 'wonderful' and 'singular' - descriptions he found it easy to apply when describing, as he did in the tract, his own researches.<sup>33</sup>

It is clear that the image of what constituted science and who was to constitute, take part in, and learn of its work, was of a very different nature in the mid-1830s BAAS and the SDUK at the same period. Each organization had its own constituency for one thing, and its own procedures for relating to it. Each had a different notion of the role of empirical investigations within scientific research; each its own philosophical figurehead; and each its own distinguishable tier of leadership. We have noted that the extent of the SDUK's scientific interests was

large and far-ranging: the Library concerned with natural philosophy, for example, was planned to include alongside the more familiar physical sciences, tracts on millwork and dialling, gunnery and fortification, husbandry, the use and arrangement of plants, bleaching, dyeing, and assaying, and literally dozens of others besides.<sup>34</sup> The BAAS meanwhile, as we have indicated, faced a serious problem both in conceiving of its scientific role in relation to its membership, as well as in delimiting what should be its field of activity.

Its resolution to these twin problems we have suggested was an organizational one. In the first year of its existence, the BAAS was not divided into separate Sections but only into a series of loosely organized subcommittees on mathematics and physical science; chemistry; mineralogy; geology and geography; zoology and botany; and the mechanical arts. As one of the leading figures present at the founding York meeting recalled, we 'worked harmoniously with our small force *in cumulo*.'<sup>35</sup> The following year saw the establishment of 4 Sections, each with its own Chairman and Secretary, the first devoted to a whole range of physical sciences including mechanics, light, sound, magnetism, mathematics and astronomy; the second dealing with chemistry, mineralogy, electricity, and magnetism again; the third on geology and geography; and the last covering zoology, botany, physiology and anatomy. In 1833, under Buckland's Presidency, the BAAS was, as Murchison recalled, 'licked into shape, and divided into

six sections.'<sup>36</sup> The following year witnessed a severe narrowing of the scope of individual Sections. Section One which had included in 1833 astronomy, mechanics, hydrostatics, hydraulics, light, sound, heat, meteorology and mechanical arts, now covered only mathematics and general physics. Section Two which had covered in 1833 chemistry, electricity, galvanism, magnetism, mineralogy, chemical arts and manufacture, was in 1834 tailored to fit only chemistry and mineralogy. The following year, Section One (renamed Section A in a general and henceforth permanent move to label the Sections by letter rather than number) was further narrowed to mathematics and physics, with the mechanical sciences assigned the status of a subsection. In 1835, the Sections were assigned a strengthened leadership structure consisting of a president, a vice-president and a secretary. In 1836, the number of Sections was increased to seven as the mechanical sciences subsection became Section G, 'Mechanical Science'. A year afterwards, Section C, 'Geology and Geography' was assigned one more Secretary and President. This, apart from some minor changes was how the BAAS was constituted for the next decade.<sup>37</sup>

One trend which can be noted is that affecting the status of the mechanical arts. From the position of occupying a subcommittee in 1831, these disappeared totally from the organizational structure in 1832, 1833 and 1834, to reappear again first as a subsection and then in 1836, no longer as the mechanical arts, but as Mechanical Science.

It had been strongly argued by Babbage amongst others at the second meeting of the BAAS that the choice of venues for annual meetings should be influenced by the aim of bringing together men of theory and men of art, science and practice.<sup>38</sup> In his Decline of Science, Babbage had indeed proposed a modified university curriculum one part of which would conjoin political economy to the 'Applications of Science to Arts and Manufacture'.<sup>39</sup> A similar argument sprang from Babbage's important work On the Economy of Machinery and Manufactures (1832) in which, in the final chapter especially, Babbage had argued that Britain would only advance by harnessing the work of scientists to the requirements of industry. But the work, like Babbage's plea at the 1832 meeting, had little immediate impact.<sup>40</sup> All he could do was to bemoan the lack of interest the BAAS took in industrial and technological innovation.<sup>41</sup>

Counter to Babbage's orientation was that of Whewell which as the development of the organization shows was quickly and decisively victorious. To Whewell and the Cambridge network practical science was merely the stimulus of theory, not its end; Art was the Mother of Science, no more. Science was separate from art, theory from practice, and pure knowledge from its useful applications.<sup>42</sup> While mechanical science was tolerable, the mechanical arts were not. Indeed, even when it was finally constituted, Section G devoted to Mechanical Science was run not by engineers - the architects of the railway age, builders

of machinery, iron bridges, structures and engines - but by academic gentlemen philosophers. Patent law reform, a pressing requirement for inventors, technologists and engineers, and a central concern of the declinists in the 1830s, was not made a subject of BAAS lobbying of parliament until the late 1850s.<sup>43</sup> The thriving Institution of Civil Engineers (founded in 1818) might have been expected to flock to the annual meetings and welcome Section G, but its membership were disappointed with its work and orientation. In 1838, the recently-constituted Civil Engineer and Architect's Journal roundly and decisively condemned the Section as being of no practical benefit whatever.<sup>44</sup>

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The life of the statistical Section in the BAAS offers a similar story, but one made more complex by the leadership's hostility to debating political and social questions. Babbage felt that a devotion to statistical studies by the Association might be a means to 'attract the manufacturer or the retail dealer'<sup>45</sup> into the BAAS, and having met the Belgian statistician Adolphe Quetelet, the ageing Thomas Malthus and the political economist Richard Jones in Cambridge, he instigated the formation of the statistical Section at the third BAAS meeting in 1833.<sup>46</sup> The foundation of the Section was almost inevitably to prove controversial not least because it was in effect presented to the meeting as a *fait accompli* without the prior approval of the general committee of the Association.<sup>47</sup> In addition, statistics itself was evolving its own novel

and vigorous position within contemporary scientific and political culture.

By the 1830s it was becoming increasingly plain that statistics could not exist as simply as it had sought (but failed) to do in the seventeenth century as a Baconian study of number and measure.<sup>48</sup> For one thing, the reformist measures of the age, the Reform Act of 1832, the Factory Act of 1833 and the Poor Law of 1834, were based on statistical enumerations, on the collection of data serving explicitly political ends. A variety of government agencies, amongst them the Statistical Department of the Board of Trade (established in 1832), were collecting large quantities of information on the 'Condition of England' question, and it was clear that such information could not be disassociated from political economy.<sup>49</sup> For another thing, statistics itself was gradually becoming established as a scientifically creditable means of establishing regularities in the social and political world. While it laboured under a clouded reputation in the previous century in consequence of the disputes over the population of England and the disparaging remarks of Adam Smith and other political economists,<sup>50</sup> it had by 1830 come of age. Political arithmetic had ceded place to a programme inaugurated perhaps by Laplace's efforts to show the existence of regular events and constant causes in the moral sphere,<sup>51</sup> which would soon become a 'social physics' in the hands of Quetelet.<sup>52</sup>

These twin developments were the signal for the establishment of a large number of statistical societies throughout Britain in the 1830s, with the Manchester Statistical Society (founded in 1833) and the Statistical Society of London (founded 1834) prominent amongst them.<sup>53</sup> The founders of the Manchester group were drawn together and then united by a common set of political, religious and social ideologies: they were overwhelmingly Whiggish with active involvements in reform movements, and were in addition Unitarians. The major commitment of their Society was to social reform. In the first Annual Report, the founders stated they had come together owing to a strong desire 'to assist in promoting the progress of social improvement in the manufacturing population by which they are surrounded. Its members are not associated merely for the purpose of collecting facts concerning the condition of the inhabitants of this district, as its name might seem to imply, but the first resolution entered on its minutes pronounces it to be a Society for the discussion of subjects of political and social economy, and for the promotion of statistical inquiries, to the total exclusion of party politics.'<sup>54</sup>

The London Statistical Society vowed at first to exclude all 'opinion' and politics from its meetings, but like its Manchester counterpart its membership was overwhelmingly Whig; it also attracted into its ranks a large number of political economists. Its interests, in common with those of the statistical movement of the 1830s and



1840s throughout Britain, were with issues of public health and education, with poverty, living conditions and crime - issues which cut clean across its seal of objectivity: a sheaf across which was inscribed *aliis extirandum*, 'to be threshed out by all'.<sup>55</sup>

As with the engineers, one might expect the BAAS leadership to have established contacts with the statistical societies, but knowing of the scientific ideology which increasingly pervaded the Association, it is no surprise that they did not. As the membership of the London, Manchester and other statistical societies grew, so attendances at Section F declined. The President of the BAAS in 1833 pleaded before the Association's general committee 'for a bill of indemnity, for having broken the laws' since he had without its consent acquiesced in the formation of the Section.<sup>56</sup> He then refused to accept the statistical Section's proceedings and delivered to the meeting an address in which he attempted to circumscribe the kind of interests which the BAAS should properly follow. 'By science' said Sedgwick, 'I understand the consideration of all subjects, whether of a pure or mixed nature, capable of being reduced to measurement and calculation'. He then queried whether statistical inquiries could be made compatible with the objects of the BAAS, and found that, indeed, they could. But on one condition: that the Section's activities should be restricted purely to measurement without touching politics and social issues.<sup>57</sup> If they were not so delimited and touched 'the mainsprings

of passion and feeling', then the Section would be 'dissevered from the objects of the Association' and would need to be 'abandoned by it'.<sup>58</sup> 'The foul Daemon of discord' could not be allowed to 'find its way into our Eden of Philosophy'.<sup>59</sup>

So it was that the BAAS made resolution to 'exclude carefully all opinion from its transactions and publications, - to confine its attention rigorously to facts, - and, as far as it may be found possible, to facts which can be stated numerically and arranged in tables'.<sup>60</sup> This needless to say was a dangerous precedent to set, for Baconianism was being countered precisely on the basis that even the most humble servants of science needed to continuously relate their facts to theories. Faced with what was clearly a tension, and a potentially explosive one, within the ideology of the organisation, the solution adopted was an autocratic and repressive one. Statistical reports were to be commissioned and presented to the annual meetings only by those who had been selected by the gentlemen of science to do so: such enquiries by the lay membership were not called for, nor announced at the conferences, nor published in the proceedings. Manchester, the hotbed of statistical reformism, was not a venue which the BAAS leadership felt to be suitable to host the annual meetings. The fact that a thriving Statistical Society existed there was, Whewell said, the perfect reason not to stage any BAAS shows there (Liverpool was chosen instead).<sup>61</sup> In a sense, the BAAS went to great

lengths to actually *prevent* the growth of statistics and statisticians within its organisation.

This it did in purely formal and bureaucratic ways, but also by defining the field in a way which was at odds with that accepted by the statistical movement. To that movement, the statistician or 'statist', was not a researcher whose work was delimited according to methodological criteria but instead according to his or her field of potential objects. 'Statistics', the London Society maintained, 'are assuredly not the mere 'method' of stating observations and experiments', but instead a region of the social and moral world, a whole range of subjects which were amenable to its treatment, 'such as, population; physiology; religion; instruction; literature; wealth in all its forms; finance; government; and to sum up all, whatever relates to the physical, economic, moral or intellectual condition of mankind.'<sup>62</sup>

The list was a formidable one including in its range an array of topics only to be matched by those broached by the Mechanics' Institutes, the quarterlies and other periodical publications, the daily press, and organisations such as the SDUK. With one apparent exception, the list covered subjects which were explicitly excluded from the area delimited by the BAAS. That exception was physiology, which first appeared in Section IV of the BAAS in 1832 along with zoology, botany and anatomy, and in the following year was fitted into a new section retitled

'Anatomy and Medicine'. This section existed till 1836, when it was renamed simply 'Medical Science' and continued as such through till 1845 when it reverted to 'Physiology'.

We shall return later to examine some of the positions proposed on specific issues within the medical and physiological sections; here it should be simply noted that while the BAAS began life with a considerable proportion of medically qualified men, within less than a decade the section which should have been an appropriate vehicle for their interests had been almost totally ignored by the BAAS leadership. It was only as a result of considerable external pressure that a suitable section was founded at all and, once established, it was, like the Statistical Section, a persistent thorn in the general committee's side. There was little interest in the practice of medicine, still less in the condition of medical science in the provinces, but instead an attempt made to offer reports on medical and physiological science. Leading physicians from the metropolis who did join failed to produce Reports; William Clark, professor of anatomy at Cambridge, was entrusted to produce a Report on physiology but eventually unloaded most of it to William Charles Henry one of the few provincial members with an interest in medicine. The medical men in the BAAS lacked power in the committee and received few funds; they felt themselves quite rightly to be mere 'humble providers' for Section A.<sup>63</sup> In 1839, a small handful of papers on physiology and medicine were offered at the annual gathering, two years later the first

couple of days of the proceedings of the 'Medical Science' section saw no papers presented at all. By 1843 it had become totally ignored by leading medical figures, to be absorbed in 1844 into a physiology section and four years afterwards returned to its initial status in a section alongside zoology and botany.<sup>64</sup>

Women also came to pose a problem for the BAAS leadership and to define the organization's role, work and structure. The Association's attitudes to female scientists and members was not however particularly extreme or reactionary, for in the 1830s and 1840s the question of women's role in scientific research, like that of their access to education, had not yet become an important one in the social and political arena. This may seem surprising since it is conventional to date modern feminism from the publication in 1792 of Mary Wollstonecraft's Vindication of the Rights of Woman.<sup>65</sup> It is true that at the time of its appearance, the book caused something of a stir, but nothing approaching a true debate was started in the journals of the time and no books appeared to support or refute its arguments.<sup>66</sup> Hence unlike the controversy which followed the publication of Malthus's Essay on the Principle of Population (1798) and which took the form of a debate over the effect of population growth on a rationally planned society, Wollstonecraft's little treatise on the status of women was all but ignored. Moreover, even the feminist responses to Malthus's work which supported the use of contraception and argued that women were not

physiologically incapacitated from engaging in civil life, were almost wholly confined to the radical press and to socialist and anarchist circles.<sup>67</sup>

The Vindication in any case may well, as one scholar has suggested, have had the aim 'of making women better mothers', for its rambling sociological analysis did not tackle the question of female rights as such. This deficiency was to some degree repaired over thirty years later when William Thompson issued his Appeal of One Half of the Human Race (1825), which was an elaborate argument for female suffrage founded on a theory of human rights.<sup>68</sup> By the late 1820s, Macaulay was able to claim that the question of votes for women had 'often been asked in parliamentary debate' without ever receiving a 'plausible answer',<sup>69</sup> and as utilitarianism gained increasing attention this was certainly true, as Thompson himself acknowledged.<sup>70</sup> Nonetheless, this question was only to occupy the centre of political attention from the 1850s onwards.<sup>71</sup>

It was also from the mid-century that a vigorous campaign was launched in favour of middle-class female access to higher education and this was to gather steam in the subsequent decades.<sup>72</sup> Before this, as far as one can tell, the advocates of 'a woman's place is in the home' seem to have occupied a hegemonic position in the political, social, cultural - and scientific arenas.<sup>73</sup> As Mrs Ellis argued the case in the 1830s and 1840s, education could only stunt woman's most characteristic feature, her

'disinterested kindness',<sup>74</sup> though a general knowledge of natural history, of flowers, butterflies, and plants would render her more companionable to men.<sup>75</sup> Whilst a number of articles advocating female higher education and the opening of the professions to women did appear sporadically in the press in the early decades of the century, *scientific* education and the careers of the scientist - or rather those of the physician, the nurse and the midwife - were first proposed as possibilities for women in the 1860s.<sup>76</sup>

The result of a search for earlier female scientists would reveal a number of 'naturalists of the boudoir', of the kind described by Charles Kingsley in his Glaucus (1855): 'the young London beauty, amid all the excitement and temptation of luxury and flattery, with her heart pure and her mind occupied in a boudoir full of shells and fossils, flowers and sea-weeds; keeping herself unspotted from the world, by considering the lilies of the field, how they grow'.<sup>77</sup> Naturalists like Sarah Bowdich Lee, Jane Loudon and Maria Gray were well-known as entertaining and not untalented popular scientific authors,<sup>78</sup> while others like Margaret Gatty not only fuelled popular naturalist crazes like fern-folly and the mania for aquariums, but managed to inculcate pleasing moral lessons in her Parables from Nature (1855-71).<sup>79</sup> There were in addition the wives of eminent scientists, like Charlotte Murchison, Mary Morland Buckland, and Mary Elizabeth Lyell who dutifully followed their menfolk around Britain and

Europe collecting specimens, taking notes and making illustrations; and far better established in the scientific community Caroline Herschel, sister of the famous astronomer Sir William, and Mary Somerville herself.<sup>80</sup>

Somerville's obvious skills and knowledge of the physical sciences coupled with her sex gave many reviewers cause to pause, reflect and admire;<sup>81</sup> none however suggested that the 'scientific lady' might have been a product of the Scientific Revolution, or felt required to recall that a century earlier educated women had been caught up in the excitement of the 'new science' and been avid readers of Newtonianism for the Ladies (1737), Sir Isaac Newton's Philosophy Explain'd for the Use of the Ladies (1739) and other similar works.<sup>82</sup> Women had for some while been amongst the audiences at the Royal Institution and at itinerant scientific lectures, and had been admitted to fellowships of the Horticultural Society in London.<sup>83</sup> But it would have been unusual for them to have been invited to the first meeting of the BAAS at York in their own right—unthinkable even, had not ladies formed such a large portion of the 1828 Berlin meeting of the Association's purported counterpart, the *Deutscher Naturforscher*.<sup>84</sup> No woman signed the York Meeting Book, though some were present to attend the evening conversazione.<sup>85</sup>

When the President-elect, William Buckland, came to prepare arrangements for the following meeting of the BAAS in Oxford he was more than a little worried about the



presence of ladies there. There had lately been a major fracas over the attendance of women at Lyell's geological lectures at the recently opened King's College, London. As its first professor of geology, Charles Lyell had scheduled his inaugural lectures to start from May 1832. In January he had published the second volume of his Principles of Geology and its great success not only heightened interest in the forthcoming addresses, but also persuaded Lyell to abandon his chair as soon as possible to devote his full time to writing and geologizing. As news of his intentions spread, a number of women appealed directly to the Officer at King's College for admission to the talks. Lyell himself was consulted and rejected the notion on the grounds that women in the classroom would be 'unacademical'.<sup>86</sup> A day after his first lecture, when the Geological Society met, there were, as he noted in his journal, 'grand disputes... about the propriety of admitting ladies to my lectures'.<sup>87</sup> Nevertheless, two days after, more than three hundred attended the meeting at King's, amongst them Mrs Murchison, Mrs Somerville and her two daughters, and a host of other women.<sup>88</sup> Lyell himself seems to have become amenable to the change and then urged Somerville and several other scientific ladies to continue attendance.<sup>89</sup> Geology however was not deemed a subject 'fit for the ladies', except perhaps for those scientifically-trained enough to appreciate its innocuous benefits. As the Times reported in June, the geologists often forgot they were in the presence of sensitive spirits; they could, it was said, 'do as much harm by the

*freedom of their language*, as they do good by the display of their knowledge'.<sup>90</sup> In the same month, the traditionalists at Lyell's college induced the Council to forbid the future admission of women, lest the attentions of young students, all male, be diverted.<sup>91</sup>

Contemplating the arrangements for the forthcoming BAAS meeting, Buckland was faced with a contemporary controversy, with the peculiarity of women scientists, with the fact that they might divert attention from the sapient proceedings on stage, and with the suggestion mooted by the Times that certain forms of learning might be unladylike. Might not the Latin and Greek terms now flooding into the scientific lexicon have been a means to prevent the harm done by the 'freedom' of the scientists' language? The classics themselves, it is true, were always potentially subversive of morals. In Byron's Don Juan (1819-24), the hero's mother had found the whole business of the classics horribly puzzling, and the boy's tutors had had a hard time to justify the study of indecent authors and an immoral mythology. At Harrow, the poet himself had been amused to be given an expurgated version of Martial in which the objectionable epigrams were removed from the main text and printed together in the back; so that the smutty schoolboy was spared the trouble of reading the whole volume.<sup>92</sup> George Eliot's Lydgate had to read the school classics for indecencies while the medical texts he was given 'left his imagination quite unbiased'.<sup>93</sup> Still, authors, especially scientific and medical ones,

made use of classical quotations and Latin and Greek terms throughout the nineteenth century for two very obvious reasons. The person who could be reckoned to recognize them was first of all bound to be a member of the ruling classes (as Thackeray's Colonel Newcome remarked: 'There is nothing like a knowledge of the classics to give a man good breeding').<sup>94</sup> And secondly, the person would be a gentleman - women, and girls, as Tom Tulliver boasted, 'never learn such things. They're too silly'.<sup>95</sup> Latin and Greek were 'provinces of masculine knowledge... not capable of explanation to a woman's reason'.<sup>96</sup> Even French, the tongue of the land of Laplace and Lagrange, was not without its dangers; as Henry Ward Beecher declaimed in 1860: 'French (is the) dialect of refined sensualism and of licentious literature, the language of a land where taste and learning and art wait upon the altars of impurity'.<sup>97</sup>

Women then had to be protected from certain forms of scientific discourse, firstly by restricting their access to such discourse, and secondly by translating its language into a form which would make it inaccessible to any but the most educated and genteel. Buckland speculated pruriently (and of course privately, man-to-man) to Murchison about the 1831 meeting: 'not the least curious of the communications must have been John Dalton's experiments on the quantity of food taken by a person in health compared with the quantity of secretion and insensible perspiration - the experiments performed on himself - this

must have been charmingly edifying to the ladies and would form an admirable sequel to a lecture on coprology'.<sup>98</sup>

Murchison was quick to set the record straight: 'I must correct you as to old John Dalton's secretions - all such like effusions were read to the *men* of science only and in the *morning*; the ladies were never treated with a peep into the cloaca, which *you alone* would know how to render sweet in the sense of females, and therefore I hold you bound at the Oxford *gala* to enable them inwardly to digest all such matters.'<sup>99</sup>

Buckland however was not swayed. In the following year, as President-elect and with the preparations for the Oxford meeting of the BAAS underway, he wrote again to Murchison:

'I was most anxious to see you to talk over the proposed meeting of the British Association at Oxford in June. Everybody whom I spoke to on the subject agreed that, if the meeting is to be of scientific utility, ladies ought not to attend the reading of papers - especially in a place like Oxford - as it would at once turn the thing into a sort of Albemarle-dilettanti-meeting (referring to the lectures at the Royal Institution), instead of a serious philosophical union of working men.'<sup>100</sup>

The success of Somerville's work however, along with the relationship other well-known female scientists had with BAAS men, made a distinction necessary between the academically serious and well-placed, and the droves of wandering ladies who sought a refuge from the dreariness of the home in geologizing, botanizing and philosophizing. Somerville herself was approached for her views on the matter, and she more than co-operated with Buckland. Not only did

she feel that her own presence would 'encourage less capable representatives of her sex', but she tactfully had her husband convey her opinions to the geologist.<sup>101</sup> Nevertheless, as happened at York and at King's College, female enthusiasm could not easily be abated so places were reserved for women in the Sheldonian Theatre in Oxford, and ladies were also permitted the luxury of attending the odd evening recital.

There were those who believed that *ladies* ought to be able to attend, irrespective of their scientific qualifications; men like Babbage who asked Daubeny to 'remember the dark eyes and fair faces you saw at York and pray remember that we absent philosophers sigh over the eloquent descriptions we have heard of their enchanting smiles'.<sup>102</sup>

It was this distinction which played on the minds of the BAAS gentlemen of science as they pondered their own 'Woman Question': there were ladies and scientifically qualified women on the one hand, and on the other women whose lack of beauty, brains or social culturation made them less than desirable at BAAS meetings. Somerville neither attended the Oxford nor the subsequent Cambridge meeting, despite pleas from Whewell, Buckland and others, and as the poet William Sotheby offered his classical Lines Suggested by the Third Meeting of the British Association (1834), it was clear that she was classed among her male scientific peers:

'But - thou, in whom we love alike to trace,  
The force of reason, and each female grace,  
Why wert thou absent? Thou, whose cultured mind,  
Smoothing the path of knowledge to mankind,

Adorn'st thy page deep stored with thought profound  
 With many a flowret cull'd from class ground;  
 While Cambridge glorying in her Newton's fame,  
 Records with his, they woman's honoured name.  
 High gifted SOMERVILLE? -. '103

Formally, women were in fact admitted by purchased ticket only in 1843, and the first female member of the BAAS entered ten years later. Until the mid-1830s, women were debarred from sectional meetings of the Association, and tickets for them continued to be restricted at the gatherings in Bristol, Dublin and Liverpool. It was in 1838 however that most tickets were apportioned to women, some 1100 in all, and here they dominated the audience in general assemblies. In 1838, they were for the first time formally admitted to a majority of Sections - A, B, C, and G.<sup>104</sup> A year later, they were allowed into all Sections provided they were preassigned separate places in the halls so as to avoid physical proximity, and hence promiscuity to or with men. From then onwards, they were permitted to attend on a separate basis with separate tickets. From 1834, as Brewster said, the demand for ladies' tickets had been so strong that it would have been impossible to prevent them attending annual meetings, whatever the BAAS gentlemen of science thought of the propriety of them so doing.<sup>105</sup> Even the continued protestations of Murchison that 'men of intellect can employ themselves better than in teaching women how to begin science' proved of no avail.<sup>106</sup>

The admittance of women in large numbers at the Newcastle meeting gave the BAAS an unusual image in the public mind,

and one its leadership were, one would have thought, none too eager to maintain. 1838 was judged by many to have been a turning point in the BAAS's fortunes. Attendances reached a peak (they almost halved in the following year, and then continued a gradual but inexorable decline to 1850), and many judged the Newcastle meeting to have been, in Herschel's words, 'by far the most brilliant meeting of the Association.'<sup>107</sup> But perhaps 'lavish' would be a more appropriate description, for with all its obvious utility as a common-meeting ground, the annual show was coming increasingly to be judged almost on any terms except scientific merit. J.D. Hooker returned from Newcastle admitting that there the 'scientific department fell far behind the amusement and eating'<sup>108</sup> - nine years later he termed the Oxford meeting his 'week's holiday and idleness'.<sup>109</sup> With the scientific interest apparently not wholly gripping, even the most committed in the audience fell to musing on more attractive subjects, as Herschel noted in 1838 in what one imagines to have been a rather tactless letter to his wife:

'Sedgwick, in his talk on Saturday, said the ladies present were so numerous and so beautiful that it seemed to him as if every sunbeam that had entered the windows in the roof (it is all windows) had deposited there an angel. Babbage, who was sitting next to me, began counting the panes, but, his calculations failing, he asked me for an estimate of the numbers. 'I can't guess' was my answer, 'but, if what Sedgwick says be true, you will admit that for every little pane there is a great pleasure.'<sup>110</sup>

An aspect of the BAAS's annual meetings which had earlier attracted comment had been their festive atmosphere and

showiness. Reporting on the Association's launch, one of its strongest supporters warned that there were elements within the organization who appeared to want to 'turn philosophy into sport'.<sup>111</sup> A report in the Times the following year acknowledged that the notion of such an organization was 'expedient, or even necessary', but in similar vein cautioned that the 'dignity of science' would be degraded by a 'mere unexplained display of philosophical toys'.<sup>112</sup> On the whole, however, criticism of the Association and its operations was light and infrequent - Forbes's rejoinder to the effect that philosophers should be able to enjoy their labours and partake of the ordinary sociabilities of life seemed to be an adequate response.<sup>113</sup>

By the mid-1830s, the tide of opinion reflected in the most important periodicals and daily papers seemed to be gradually turning against the BAAS. In some publications, the reports of the scientific proceedings at the Dublin meeting were little more than appendages to what was to be the major attraction: the sumptuous entertainments, beginning with a free passage provided by Sir John Tobin from Liverpool to the Irish coast, then transport laid on to the capital, and ending, so it seemed, with a veritable orgy of eating, drinking, partying and socialising.<sup>114</sup> So lavish were the festivities in Dublin that to one reporter, the following year's meeting in Bristol seemed nothing short of a disappointment. The BAAS had, so it appeared, taken a turn for the worse - towards seriousness: 'chivalry and science are excellent things', noted the



Athenaeum, 'but venison and champagne had their charms'.<sup>115</sup>

Not to worry though, for the next year saw things pick up again with food, fireworks, and festivities from morning till night.<sup>116</sup>

Strangely enough, even the most determined opponent of casual and amateur natural philosophizing, David Brewster, seems to have been seduced by the BAAS's popular turn in the middle of the 1830s. Having savaged what he termed 'more an *imposing show* than a truly valuable and working institution', Brewster then went on to see that the numbers being drawn into the BAAS would prove an invaluable support for attracting government sponsorship. The Association had failed to establish any clear and systematic set of methodological rules with which to regiment its membership, he said, but 'pageantry is its power' - 'it is the brawny arm with which the intellectual giant is to provide his food, and to smite his enemies, and to extend his domain'.<sup>117</sup> Having laboured to exclude, or make to feel unwelcome, the Sections devoted to physiology, medicine and statistics, having laid down stipulations regulating the admission of women, and having made increasingly sharp differentiations amongst the population of scientific practitioners, cultivators and enthusiasts - having, in short, done as much as possible to *restrict* entrance into the BAAS - its leadership seemed intent on subduing competition and maintaining hegemony by an appeal to the extra-scientific. If organizational means could serve to repel certain factions within the scientific

community - could indeed identify and demarcate that community - so similar methods should be deployed to maintain life within the BAAS.

To some degree, as we have indicated, this strategy was pursued at the culinary level. Towns vied with one another to lay on the best spread of local fare. Liverpool stood out as particularly gastronomic a venue, as Murchison reported back to his wife, 'The preparations here are excellent. *Turtle daily* at the ordinary, so what is to become of the poor savans when they go back to country quarters? We dine with the Mayor to-morrow, whose lady had a grand soirée in the evening, and thus begin our frolics...'.<sup>118</sup> Poor Murchison - five years later he wrote from the Belfast meeting that he had been over-'*travaillé...* by dinners, speeches, etc., particularly in beginning with an awful feast to the Lord-Lieutenant, at which the Major provided - twenty-two toasts, and a sederunt from six till one!'.<sup>119</sup> If Belfast was a little too tiring, it was in Newcastle that all agreed the balance between the demands of the belly and the brain had been rightly struck. With excellent venison provided by a local squire, wine flowing freely, and the very minimum of local politicians-on-the-make to rehearse their welcoming refrains, here everyone was 'fêted and feasted on the most approved English principles, whatever they may reap from the fields of science; and, after all, *gastronomy* beats *astronomy*, at least, by an initial letter'.<sup>120</sup>

But the feasting, it should be emphasized, was undertaken by the privileged contributors to the meetings (as well as by the reporters). The gentlemen of science ate and drank. The laymen and women enjoyed the spectacle of them eating and drinking. Here, as throughout the BAAS, the ideology of 'sheep and goats' held strong. In a blazing editorial the Times -no less- attacked the organizers of the Newcastle gathering for indulging in 'luxurious feasting and *aristocratic* fêting' which, it thundered, 'precluded at once all but the wealthy classes'.<sup>121</sup> Likewise the Examiner reported on the 'quack philosophers of what is called the British Association', which it said had only been sustained in 1838 by the gift of four fine bucks from Lord Prudhoe's park in Yorkshire.<sup>122</sup> The fact that the price of lodgings in Newcastle rose steeply just before the participants arrived seemed another indication that a class of the rich and the privileged was being catered for by the BAAS.<sup>123</sup>

The 1838 Newcastle meeting was also the first to provide 'popular' lectures to large working-class crowds outside the main arena of the conference floor. What had thus far been an underlying strain of theatricality in the performance of science became an exotic, comical and at times absurd exhibition. The town and marketplace were festooned with lamps and decorated with flowers from the four corners of the globe, and as the public spaces filled with people ready to pay homage to the scientific gentlemen from Oxford and Cambridge, all business came to a halt and

the church bells rang out.<sup>124</sup> At length, the Ocean steamer arrived with the 'learned and ingenious gentlemen' on board.<sup>125</sup> Sedgwick hadn't baptized a baby on the vessel as he had done on the William Penn on his way to Dublin three years before,<sup>126</sup> but he had a far better performance planned. On the 7 August 1838, as Herschel recounted to his wife:

'Sedgwick wound up... with a burst of eloquence (something in the way of a sermon) of astonishing beauty and grandeur. But this, I am told, was nothing compared to an out-of-doors speech, address, or lecture, which he read on the sea-beach at Tynemouth to some 3000 or 4000 colliers and rabble (mixed with a sprinkling of their employers), which has produced a sensation such as is not likely to lie for many years. I am told by ear and eye witnesses that it is impossible to conceive the sublimity of the scene, as he stood on the point of a rock a little raised, to which he rushed as if by a sudden impulse, and led them on from the scene around them to the wonders of the coal-industry below them, thence to the economy of a coal-field, then to their relations to the coal owners and capitalists, then to the great principles of morality and happiness, and last to their relation to God, and their own future prospects.'<sup>127</sup>

Buckland had previously delighted his BAAS audiences with paleaontological performances, and in 1834 the Literary Gazette reported that Whewell had 'blended astronomy and humour so curiously together that we hardly knew whether he was in earnest or in jest';<sup>128</sup> now however such theatricals and pantomimes were being rendered in public. This was an important, if rather baffling, turn for the BAAS to have made. Philosophy was now connected 'with bustle and publicity, with fashion and display'.<sup>129</sup> The Times now refused to carry any accounts of the BAAS meetings at all and would only take paid advertisements.<sup>130</sup> Some of the

Association's supporters thought the paper's hostility may have helped the organisation's image by martyring it;<sup>131</sup> others were advised to ignore its censures - as Lord Palmeston, himself a frequent victim of the thunderer's attacks, said to a worried Murchison: 'Pooh, pooh! Never mind them; a man who is not Times-proof cannot succeed in life'.<sup>132</sup> Nevertheless, the influence of the daily paper was such as to contribute substantially to the decline in paid attenders after 1838. The Times which had begun in 1831 by raising certain doubts about an organisation it still felt to be necessary, had then for two or three years simply reported its meetings, now dismissed it entirely. The BAAS meeting looming on the horizon in 1839, it warned, 'menaces Birmingham with its presence in the August of the present year'.<sup>133</sup> It continued: 'if we ask the question, whether they have done any good, the answer must be simply and unconditionally in the negative: they have done no good whatever; they have tended to no good; they have opened no new field of discovery; they have carried on no new scientific inquiry beyond its previous bound; and were we inhabitants of the town where they are to take their next appearance, we would afford them no shelter or asylum, but would at once drive them back to the place whence they came.'<sup>134</sup>

This was the harshest possible verdict of the BAAS's first decade's history. Yet the Times was patently wrong in at least one judgement; the BAAS meeting in Birmingham was not its last. It survived the ridicule, to become a

forum, particularly in the mid- to late-nineteenth century for an impressive range of scientific debates and discoveries, signalled by the names of Agassiz, Joule, Huxley, Tyndall and Crookes.

The annual meetings of the BAAS along with the Reports which resulted from them continued to serve as a measure of the role and interests of scientific culture in the 1830s, 1840s and 1850s. But, as we have seen, that culture in the first decade of the Association's life was neither unitary, nor uniform, nor uncontested. Because the BAAS failed to provide a coherent, consistent and authoritative ideology of science, it would be wrong to accept its claims as the Association for the Advancement of Science. Far from it being the life and soul of scientific culture during this period, the BAAS was faced with other organisations and other scientific ideologies which scored notable successes in harnessing together bodies of men and women for scientific research, and in drawing together the methods of scientific analysis and the demands of social and political reforms. The phrenological movement was only one such organisation, and we shall turn to examine its relations with the BAAS and that Association's ideology in the next section.

While the BAAS failed in its object of providing an ideological leadership in science, its importance derived from the impressive line-up of patrons and scientific gentlemen which it offered to government in a series of

lobbies and to the public at its annual meetings. From a perceived state of decline in the period before its inception, science had in the hands of the BAAS become vibrant, powerful, assertive and visible. Like other scientific groupings, the BAAS rose in influence and membership in the 1830s and fell in power and prestige in the 1840s. By 1840, the BAAS presented an identifiable image to the public of the scientist. He (for the scientist was overwhelmingly conceived as being male) was trained to handle complex mathematical operations. Having a wide grasp of a variety of different fields of scientific knowledge, he nevertheless made his mark as a specialist in one. The most rigorous and successful science was physical astronomy; a science which was highly technical and of little utilitarian benefit. More crucially, the operations in which the physical astronomer engaged did not involve the importation or the intrusion of non-scientific categories: his objects were matter, motion, force, number. His methods, those of analysis applied by an individual, not induction growing by collective participation. The guarantee of impartiality and objectivity lay partly in the successes of the science, partly in the anonymity of its methodological procedures, but not insignificantly in the status of the inquirer. That the physical astronomer was a trained, well-educated scientific gentleman with the stamp of approval granted by the line of aristocrats the BAAS succeeded in establishing in the office of President effectively placed him upon a pedestal, beyond the reach of the mere cultivators of science, and above the pull

and push of social and political forces. To better understand the world, the scientist had to stand above it. This, as we have seen, was a conclusion standing in total contrast to that reached by the Society for the Diffusion of Useful Knowledge, but this grouping never sought, as the BAAS did, to *advance* science - rather to promulgate it through the labouring classes.



NOTES: PART TWO, CHAPTER SEVEN

1. See Richard D. Altick's excellent The English Common Reader, Chicago, 1957, esp. chapter nine.
2. Henry Brougham, Practical Observations on the Education of the People Addressed to the Working Classes and their Employers (1825), 12. This pamphlet went through twenty editions in its first year of publication.
3. This is reproduced in Harold Smith, The Society for the Diffusion of Useful Knowledge 1826-1846. A Social and Bibliographical Evaluation (Dalhousie University Libraries and Dalhousie University School of Library Service Occasional Paper 8), Halifax, 1974, 56-63.
4. Henry Brougham, Discourse on the Objects, Advantages, and Pleasures of Science (1827) in Rhetorical and Literary Dissertations and Addresses, 1856, 292-370, 370. On the strong Utilitarian strains in the early SDUK, see Hays, 'Brougham', 227-29.
5. See C.W. New, The Life of Henry Brougham to 1830 (1961) for a sympathetic treatment, and A. Aspinall, Lord Brougham and the Whig Party (1939) for a more critical assessment.
6. Quoted in Charles Knight, Passages from a Working Life during Half a Century; with a Prelude of Early Reminiscences, 3 vols, 1864-65, II, 310. The second volume of this excellent, but infrequently reissued work, carries a great deal of information on the SDUK. Knight himself did his bit for the

preservation of the social order, bringing out under the auspices of the Society, his Address to the Labourers, on the Subject of Destroying Machinery and The Rights of Industry: addressed to the Working-Men of the United Kingdom, both in 1830.

7. See E.J. Hobsbawn and G. Rudé, Captain Swing, 1969; and J.L. and Barbara Hammond, The Village Labourer 1760-1832 (1913); The Skilled Labourer 1760-1832 (1919); and The Town Labourer 1760-1832 (1917).
8. See F. Hawes, Henry Brougham, 1957, 250 and passim; and for the Westminster Review's criticisms, J.W. Hudson, The History of Adult Education, 1969, 166-67.
9. William Cobbett, Rural Rides (1830, enlarged ed. 1853), Harmondsworth, 1979, 508, 266. See also James Sambrook, William Cobbett, 1973, 130, 174. Cobbett himself was not opposed to the spread of education amongst the labouring classes, and actually carried advertisements for the SDUK's less politically-contentious tracts in his own Political Register (see M.C. Pearl, William Cobbett. A Bibliographical Account of his Life and Times, 1953, 175).
10. E.P. Thompson, The Making of the English Working Class, New York, 1963, 744.
11. J.H. Wiener, The War of the Unstamped: the Movement to Repeal the British Newspaper Tax, 1830-1836, 1969, 40. The multitude of radical papers and pamphlets such as Tom Paine's Rights of Man (which allegedly sold one million in part numbers), Wooler's Black Dwarf, Hone's Register, and Cob-

bett's own Political Register appeared in defiance of the 1819 Stamp Act which sought to limit such publications. An excellent short study of the popular press in the 1830s is J.L. Hammond and Barbara Hammond. The Age of the Chartists 1832-1854, 1930, 314-34.

12. Quoted in P. Hollis, The Pauper Press: a Study of Working-class Radicalism of the 1830s, 1970, 143-44.
13. This was a re-issue of John Hoppus, Account of Lord Bacon, in 1827, priced at one shilling.
14. The presentation of such reports on the progress and current situation of the sciences was judged by Whewell to be one of the BAAS's most important functions; see his letter to Harcourt, 1 September 1831, in Todhunter, William Whewell, II, 126-28. The use of such reports had already been made by Berzelius in Sweden from 1821 and Cuvier in France from 1808 (see Whewell, 'Modern Science', 375-76n, and Merz, History, I, 42-43).
15. Brougham quoted in Aspinall, Lord Brougham, 299.
16. See Henry Brougham, 'Diffusion of Knowledge', Edinburgh Review, XLV, 1827, 189-99, 198; and 'Society for the Diffusion of Useful Knowledge', Edinburgh Review, XLVI, 1827, 225-44, 238.
17. See Knight, Passages, II, 64.
18. See note 16 above; also for examples, John Bowring, 'Education of the People: Library of Useful Knowledge', Westminster Review, VII, 1827, 269-317; and anon., 'Diffusion of Useful Knowledge', Monthly Review, n.s. V, 1827, 103-09.

19. See Robert K. Webb, The British Working Class Reader, 1790-1848: Literacy and Social Tension, 1955, 69.
20. Knight, Passages, II, 332.
21. 11 members of the general committee of the SDUK were also on the council of London University, and many other links between the two organizations were established, as the Athenaeum was quick to remark upon (Athenaeum, 278, 1833, 121-22). On the connections, see F.A. Cavenagh, 'Lord Brougham and the Society for the Diffusion of Useful Knowledge', Journal of Adult Education, IV, 1, 1929, 3-37, 6-10; and Berman, Social Change, 112. The membership of the SDUK's general committee is given in Smith, Society, 46-47 and in Cavenagh, 'Brougham', 24. On the BAAS, see for details Morrell and Thackray, Gentlemen of Science, 24 and passim.
22. See Walter F. Cannon, 'Scientists and Broad Churchmen: an Early Victorian Intellectual Network', Journal of British Studies, 4, 1964, 65-88, and Science in Culture, chapter two.
23. See the SDUK's Prospectus in Cavenagh, 'Brougham', 23.
24. On this see Hays, 'Science and Brougham', 230-31.
25. Henry Brougham, Natural Theology, 1856 (written according to the author on page 4, from 1830-34).
26. Brougham, 'Pleasures of Science', Rhetorical and Literary Dissertations, 296.

27. Henry Brougham, Discourse of the Objects, Pleasures, and Advantages of Political Science (1830), in Rhetorical and Literary Dissertations, 373-418, 374.
28. The separate tracts were later bound in volumes under the title 'Library of Useful Knowledge: Natural Philosophy' (LUK:NP). B.H. Malkin, Astronomy, LUK:NP, III, 1834, 1.
29. Brougham, 'Political Science', Rhetorical and Literary Dissertations, 376.
30. J.F. Daniell, Chemistry, LUK:NP, IV, 1838, 1.
31. T.S. Smith, Animal Physiology, LUK:NP, IV, 1838, 128.
32. See Muriel Jaeger, Before Victoria; Harmondsworth, 1967, 98.
33. D. Brewster, Double Refraction and Polarisation of Light, LUK:NP, I, 1829.
34. For the complete list, see Cavenagh, 'Brougham', 57-59.
35. Geikie, Roderick Murchison, I, 187.
36. ibid., I, 204.
37. The information presented here is given in Morrell and Thackray, Gentlemen of Science, 453-54.
38. BAAS Report, Oxford, 1832, 107.
39. Babbage, Decline of Science, 6.

40. See Hyman, Charles Babbage, 122. J.A. Schumpeter shows the later impact of Babbage's work on figures like J.S. Mill and Marx (History of Economic Analysis, 1955, 541).
41. Babbage, Exposition, 18-19.
42. BAAS Report, Cambridge, 1833, xxvff. In his Philosophy, Whewell later suggested that the maxim 'Knowledge is Power' was correct, but that his interests lay not in the power of knowledge but in the knowledge itself (Philosophy, II, 576; see also History, I, 13; 'Modern Science', 404-05).
43. See Morrell and Thackray, Gentlemen of Science, 265.
44. See ibid., 262.
45. Charles Babbage, Passages from the Life of a Philosopher, 1864, 432; Exposition of 1851, 16.
46. See M.J. Cullen, The Statistical Movement in Early Victorian Britain, Hassocks, 1975, 79-85; and Victor L. Hilts, 'Aliis extendum, or, the Origins of the Statistical Society of London', Isis, 69, 1978, 21-43, 32-35.
47. Morrell and Thackray, Gentlemen of Science, 291.
48. See Cullen, Statistical Movement, 1-16; and Lancelot Hogben, Dangerous Thoughts, 1939, chapter 5.
49. See Cullen, Statistical Movement, chapters one and two.

50. On the debates over the population in England, its number and whether it had grown or shrunk, see David Victor Glass, 'The Population Controversy in Eighteenth Century England. Part I: the Background', Population Studies, 6, 1953, 69-91. On Smith's remarks and those of other eighteenth-century philosophers and political economists, see Henry Thomas Buckle, History of Civilization in England (1857-61), 3 vols, 1902, III, 339ff.
51. See C.C. Gillispie, 'Laplace, Pierre-Simon, Marquis de. Section 26', in DSB, 15, 367-76; and Karl Pearson, The History of Statistics in the 17th and 18th Centuries (ed. E.S. Pearson), 1978, 637-734. Laplace's work was the Essai philosophique sur les probabilités (Paris, 1814).
52. The first major work which established Alphonse Quetelet's reputation throughout Europe was his Sur l'homme et le développement de ses facultés, essai d'une physique sociale (Paris, 1835). On him, F.H. Hankins's Adolphe Quetelet as Statistician (New York, 1908) is still useful, and George Sarton ('Adolphe Quetelet', Isis, 23, 1935, 6-24) bears on his relations with Laplace. For a contemporary assessment, see Herschel, 'Quetelet on Probabilities' (1850), in Essays, 365-465.
53. See Cullen, Statistical Movement, chapters 6-9; and Philip Abrams, The Origins of British Sociology 1834-1914, Chicago, 1968, 13-30.
54. Quoted in T.S. Ashton, Economic and Social Investigations in Manchester, 1833-1933, 1934, 13; see also David Elesh, 'The Manchester Statistical Society: A Case Study of a Discontinuity in the

- History of Empirical Research Part I', Journal of the History of the Behavioural Sciences, VIII, 1972, 280-301, 281.
55. See Hilts, 'Aliis exteendum', 22; and for a better treatment, Cullen, Statistical Movement, 91-104.
56. Quoted in Morrell and Thackray, Gentlemen of Science, 291.
57. BAAS Report, Cambridge 1833, xxviii.
58. ibid., xxix.
59. ibid.
60. ibid., 492.
61. See Geikie, Murchison, I, 234.
62. Quoted in Hilts, 'Aliis exteendum', 37.
63. Morrell and Thackray, quoting from the London Medical Gazette, 1838-39, in Gentlemen of Science, 509.
64. See Morrell and Thackray, Gentlemen of Science, 287-90 for a concise account of the life of the sections for physiology and medicine.
65. See for example, J. Langdon-Davis, A Short History of Women, 1938, 231, 244; R. Strachey, The Cause: a Short History of the Women's Movement in Great Britain, 1928, 12; J. Dunbar, The Early Victorian Woman, 1953, 169; Margaret Walters, 'The Rights and Wrongs of Women: Mary Wollstone-



- craft, Harriet Martineau, Simone de Beauvoir', in Juliet Mitchell and Ann Oakley (eds.), The Rights and Wrongs of Women, Harmondsworth, 1977, 304-78, 304, 307-29.
66. See W. Godwin, Memoirs of the Author of 'A Vindication of the Rights of Woman', 1798, 81; C.K. Paul, William Godwin: his Friends and Contemporaries, 2 vols, 1867, I, 205; E. Rauschenbusch-Clough, A Study of Mary Wollstonecraft and the Rights of Woman, 1898, 40-42.
67. See Barbara Taylor, Eve and the New Jerusalem, 1983; F. Barry Smith, 'Sexuality in Britain, 1800-1900', in Martha Vicinus (ed.), A Widening Sphere. Changing Roles of Victorian Women, 1980, 182-98; Jeffrey Weeks, Sex, Politics and Society. The Regulation of Sexuality since 1800, 1981, esp. 1-80; Peter Fryer, The Birth Controllers, 1965, chapters 4-10; Norman E. Himes, Medical History of Contraception, New York, 1970; John Peel, 'Birth Control and the Working Class Movement', Society for the Study of Labour History Bulletin, 7, 1963, 16-22; Harold A. Boner, Hungry Generations: The Nineteenth Century Case against Malthusianism, New York, 1954; and Angus McLaren, Birth Control in Nineteenth-Century England, 1978, chapter 3. For later family planning amongst the Victorian middle classes, see J.A. Banks, Prosperity and Parenthood, 1954. The influence of Malthus is treated in K. Smith, The Malthusian Controversy (1951), and D.V. Glass (ed.), Introduction to Malthus (1953).
68. Rauschenbusch-Clough, Mary Wollstonecraft, 157; see also for the same point, Sheila Rowbotham, Hidden from History, 1974, 22; William Thompson,

Appeal of One Half of the Human Race, Women, Against the Pretensions of the Other Half, Men, To Retain Them in Political, and Thence in Civil and Domestic slavery (1825), 1983, see esp. 25-26, 107-08, 172-82. For a background to the book and its authors (in the 'Introductory Letter to Mrs. Wheeler' which opens the book, Thompson declares that its arguments were conceived and developed by both of them), see R.K.P. Pankhurst, William Thompson, 1775-1833, Britain's Pioneer Socialist, Feminist and Co-operator, 1954.

69. T.B. Macaulay, 'Mill's Essay on Government', Edinburgh Review, XLIX, 1829, 159-89, 177.
70. Thompson, Appeal, xxiii-xxvi and passim.
71. See Roger Fulford, Votes for Women, 1958; Constance Rover, Women's Suffrage and Party Politics in Britain, 1866-1914, 1967; Marian Ramelson, The Petticoat Rebellion: a Century of Struggle for Women's Rights, 1967; Hannah Mitchell, The Hard Way Up, 1970. The rise of the movement for women's suffrage can be traced from contemporary debates in all the leading periodicals. In the Westminster Review, the first article on the issue was, I believe, H.T. Mill, 'The Enfranchisement of Women', Westminster Review, LX, 1851, 289-301; and following this 'The Claims of Women to the Franchise', Westminster Review, LXXXVII, 1867, 63-79; then 'Political Disabilities of Women', Westminster Review, XCVII, 1872, 50-60. In the Contemporary Review, the earliest piece was L.E. Becker's 'Female Suffrage', Contemporary Review, IV, 1867, 307-16; then E. Pfeiffer, 'Woman's Claim', Contemporary Review, XXXIX, 1881, 265-77; in the Fortnightly Review, the first suffrage

piece was R.M. Pankhurst, 'Right to Suffrage of Woman Under the Reform Act of 1867', Fortnightly Review, X, 1868, 250-54; followed by A. Arnold, 'Political Enfranchisement of Women', Fortnightly Review, XVII, 1872, 204-14; and 'Woman Suffrage', Fortnightly Review, LII, 1889, 123-39.

72. See Joan N. Burstyn, Victorian Education and the Ideal of Womanhood, 1980; Patricia Branca, Silent Sisterhood. Middle-Class Women in the Victorian Home, 1975, 45-47; Josephine Kamm, Hope Deferred. Girl's Education in English History, 1965; Joyce Senders Pedersen, 'The Reform of Women's Secondary and Higher Education: Institutional Change and Social Values in Mid- and Late-Victorian England', History of Education Quarterly, 19, 1, 1979, 61-91. In an interesting study Rita McWilliams-Tullberg has shown that 'Oxford admitted its women students to degrees and university membership in 1920. Cambridge, after several bitterly fought votes, gave women the titles of degrees and allowed them to take university posts, but it was not until 1948 that women were admitted to university membership' (120), 'Women and Degrees at Cambridge University, 1862-1897' in Vicinus (ed.), Widening Sphere, 117-45. See also Michael Sanderson (ed.), The Universities in the Nineteenth Century, 1975, 171-80.
73. Excellent studies are Walter E. Houghton, The Victorian Frame of Mind, New Haven, 1957; Lorna Duffin, 'The Conspicuous Consumptive: Woman as an Invalid', in Sara Delamont and Lorna Duffin (eds.), The Nineteenth-Century Woman. Her Cultural and Physical World, 1978, 26-56; Barbara Ehrenreich and Deirdre English, For Her Own Good. 150 Years of the Experts' Advice to Women, 1979; and Ronald

Pearsall, The Worm in the Bud. The World of Victorian Sexuality, Harmondsworth, 1983. Useful though these accounts are, they suffer like many others, from a chronology which is accepted without question. What is offered is a treatment of nineteenth-century history which begins in 1837 and which is contrasted to the Enlightenment.

74. Sarah Stickney Ellis, The Women of England, their Social Duties, and Domestic Habits, 1839, 61.
75. Sarah Stickney Ellis, The Daughters of England, their Position in Society, Character and Responsibilities, 1842, 68-80. The physical sciences are here considered 'as far too elaborate and masculine a study' (ibid., 70).
76. To my knowledge there are no studies of female and feminist demands for access to higher education in the first three and four decades of the nineteenth century; yet the more one looks, the more one discovers material which demands investigation. To cite only a few examples: J. Neal, 'Men and Women', Blackwood's Edinburgh Magazine, XVI, 1824, 387-94; J.G. Phillimore, 'Woman's Rights and Duties', ibid., LIV, 1843, 373-97; Sydney Smith, 'Female Education', Edinburgh Review, XV, 1810, 299-315; E.G.E. Bulwer-Lytton, 'Spirit of Society', ibid., LII, 1831, 374-87; T.H. Lister, 'Rights and Conditions of Women', ibid., LXXIII, 1841, 189-209; anon., 'The Female Character', Fraser's Magazine, VII, 1833, 591-601; anon., 'Woman and the Social System', Fraser's Magazine, XXI, 1840, 689-702; Harriet Martineau, 'Criticism of Women', Westminster Review, XXXII, 1838-39, 454-75; M. Mylne, 'Woman and her Social Position', Westminster Review, XXXV, 1841,

24-52; W.B. Adams, 'On the Condition of Women in England', Monthly Repository, VII, 1833, 217-31; and anon., 'An Outline of the Grievances of Women', Metropolitan Magazine, XXII, 1838, 16-27.

There have been a fair number of studies on the struggles of Victorian women to break into the orthodox medical profession; amongst them, E. Moberly Bell, Storming the Citadel. The Rise of the Woman Doctor, 1953; Martha Wollstein, History of Women in Medicine, 1908; Edythe Lutzker, Women Gain a Place in Medicine, 1969; and Joyce Leeson and Judith Gray, Women and Medicine, 1978; but contemporary sources, biographies and autobiographies continue to provide the best accounts - see, e.g. Elizabeth Blackwell, Pioneer Work in Opening the Medical Profession to Women, 1895; Isabel Thorne, Sketch of the London School of Medicine for Women, 1905; Sophia Jex-Blake, Medical Women: A Thesis and a History, Edinburgh, 1886; and Louisa Garrett Anderson, Elizabeth Garrett Anderson, 1836-1917, 1939. On midwives, see contemporary sources such as James H. Aveling, English Midwives, Their History and Prospects, 1872; and Francis Harvey Chamneys, Midwives in England, Especially in Relation to the Medical Profession, 1865; a recent study is J. Donnison, Midwives and Medical Men. A History of Inter-Professional Rivalries and Women's Rights, 1977. In the cases of medicine, midwifery and nursing, the majority of secondary sources adopt an unduly biographical, and hence internalist, approach, neglecting the impact of the patient on the doctor, social conditions, and lay attitudes; an attempt to remedy this is therefore especially welcome - see Brian Harrison, 'Women's Health and the Women's Movement in Britain: 1840-1940' in

Charles Webster (ed.), Biology, Medicine and Society 1840-1940, Cambridge, 1981, 15-71.

There exist to my knowledge no full-length studies of British women as scientists, or of British women and scientific education, in the nineteenth century. The earliest references to be found in the periodical press to demands for greater access for women to science and scientific education occur in the 1860s, e.g. W.E. Aytoun, 'The Rights of Woman', Blackwood's Edinburgh Magazine, XCII, 1862, 183-201, 186-88 (which used in support the success of the BAAS which the author claimed had allowed from its inception all persons who presented themselves to be enrolled); T. Markby, 'The Education of Women', Contemporary Review, I, 1866, 369-414; L. Becker, 'On the Study of Science by Women', Contemporary Review, X, 1869, 386-404; M.G. Fawcett, 'Medical and General Education of Women', Fortnightly Review, X, 1868, 554-71; J. Davies, 'Female Education', Quarterly Review, CXIX, 1866, 499-515; M. Burrows, 'Female Education', Quarterly Review, CXXVI, 1869, 448-79; E. and E. Blackwell, 'Medicine as a Profession for Women', English Woman's Journal, V, 1860, 145-61; S. Gregory, 'Female Physicians', English Woman's Journal, IX, 1862, 1-11; I.M.S. Tod, 'Advanced Education for Girls of the Upper and Middle Classes', Transactions of the National Association for the Promotion of Social Science, 1868, 368-79. Lastly, and better known is Herbert Spencer's 1859 Westminster Review article, 'What Education is of Most Worth?' which suggested that for all persons, the answer was scientific education (see Herbert Spencer, Education, Intellectual, Moral and Physical, 1861, esp. 53). It was a view regarded, as Spencer revealed later, 'by nine out

of ten cultivated people as simply monstrous' (An Autobiography, 2 vols, 1904, II, 36).

77. Charles Kingsley, Glaucus or the Wonders of the Shore (1855), 1890, 55-56. The results of not educating the female mind were frighteningly described by Kingsley in his 'Nausicaa in London: or, the Lower Education of Woman', in Health and Education, 1879, 69-88. Kingsley himself was a staunch, and early, supporter of women's entry into the medical profession, though he was equivocal on the campaign of the suffragists (see Frances E. Kingsley (ed.), Charles Kingsley: His Letters and Memories of His Life, 2 vols, 1877, II, 326-30).
78. See Lynn Barber, The Heyday of Natural History 1820-1870, 1980, 125-38.
79. David Elliston Allen, The Naturalist in Britain, Harmondsworth, 1980, 131-32, and 28-30.
80. Patterson treats Somerville's female scientific circle of friends briefly in Somerville, 146-47 (the circle included Murchison, Buckland, and Lyell). On Caroline Herschel, see Agnes M. Clerke, The Herschels and Modern Astronomy, 1895, 115-41.
81. See Herschel, Essays, 42, 47; Whewell, 'Connexion of the Sciences', 65. Brewster in his review refrains however from labouing Somerville's sex ('Mrs Somerville').
82. On women's learning, see Myra Reynolds, The Learned Lady in England, 1650-1760, Boston, 1920; Gerald Dennis Meyer, The Scientific Lady in England 1650-1760, Berkeley, 1955; and Carolyn Merchant, The

- Death of Nature, San Francisco, 1980, 268-74.
83. See Morrell and Thackray, Gentlemen of Science, 149n.; Patterson, Somerville, 92; and for a rare survey of the subject, G.E. Fussell, 'Some Lady Botanists of the 19th Century', Gardener's Chronicle, 128, 1950, 130-31, 238-39; 130, 1951, 63-64.
84. See L. Kellner, Alexander von Humboldt, 1963, 117 for contemporary views.
85. See Morrell and Thackray, Gentlemen of Science, 149-57 for an excellent short account of the BAAS's relations with the ladies.
86. Wilson, Lyell, 353.
87. Lyell, Life, Letters and Journals, I, 381.
88. ibid., I, 382.
89. ibid., I, 383.
90. Times, 28 June 1832 (my emphasis).
91. Lyell, Life, Letters and Journals, I, 379.
92. See Richard Jenkyns, The Victorians and Ancient Greece, Oxford, 1980, 280. Also Phyllis Grosskurth, John Addington Symonds, 1964, 267-79 for Symonds's warnings to Jowett about translating the Symposium and Phaedrus.
93. George Eliot, Middlemarch (1871-72), Harmondsworth, 1965, 173.



94. Quoted in Jenkyns, The Victorians, 63.
95. George Eliot, The Mill on the Floss (1860), Oxford, 1983, 145.
96. Eliot, Middlemarch, 88-89. On aspects of the use of Latin in medicine and science throughout the century, see Peter Fryer's excellent, Mrs. Grundy, 1965, esp. 181-85, but also the introductory discussions in Part I. How long prudery lasted may be gathered from the care with which the German sexologist Krafft-Ebing approached the subject of sexuality in his Psychopathia Sexualis (1886). Not only did he take great care that only the medical profession would read the work, but having learnt that the general public evinced a great interest in his findings on abnormal sexuality, he translated all the most specific descriptions into Latin. Even this did not save him in the eyes of the English medical profession; the influential British Medical Journal editorialized in 1893: 'We have considered at length whether we should notice this book or not, but we deem the importance of the subject and the position of the author make it necessary to refer to it in consideration of the feelings with which it has been discussed by the public. We have questioned whether it should have been translated into English at all. Those concerned could have gone to the original. Better if it had been written entirely in Latin, and thus veiled in the decent obscurity of a dead language' (quoted in Vern L. Bullough, Sexual Variance in Society and History, Chicago, 1976, 643). My 1965 American edition of the work is boasted by the publishers to present all the Latin and French texts translated for the first time (Richard von Krafft-

Ebing, Psychopathia Sexualis (1886), New York, 1965, viii). Other aspects of the touchy sensibilities of the medical profession are dealt with in John Peel, 'The Manufacture and Retailing of Contraceptives in England', Population Studies, XVII, 1963-64, 113-25, esp. 114; George Melly, 'Let the Thoughtless Man Here Pause', New Statesman, 1 March 1963, 317-18 (on anatomical museums); and in general studies such as Vern Bullough and Bonnie Bullough, Sin, Sickness and Sanity, New York, 1977; Richard Lewinson, A History of Sexual Customs, 1958, chapters 15-19; and Steven Marcus's elegant The Other Victorians, 1966. The corollary of prudery was ignorance: not only were subjects such as human sexuality not taught in medical schools, but as Marie Stopes later showed to such devastating effect, what was hinted at was in important and basic ways disastrously wrong (see Ruth Hall, Marie Stopes. A Biography, 1978, esp. 164ff., 190).

97. Henry Ward Beecher, Twelve Lectures to Young Men, on Various Important Subjects (American ed., 1860), 1873, 124.
98. Buckland to Murchison, 4 October 1831, in Morrell and Thackray, Gentlemen of Science, 149-50.
99. Murchison to Buckland, 12 October 1831, in ibid., 150.
100. Gordon, David Brewster, 123; also Howarth, British Association, 16.
101. Gordon, David Brewster, 123.
102. Babbage to Daubeny, 28 April 1832, quoted in Mor-

- rell and Thackray, Gentlemen of Science, 151.
103. Quoted in Patterson, Somerville, 117.
104. See Times 23 August 1838, and 24 August 1838.
105. Brewster, 'Review of the Meetings', 376.
106. Murchison in 1854 - see Geikie, Murchison, II, 174.
107. Quoted in Clark and Hughes, Sedgwick, I, 515n.
108. Leonard Huxley, Life and Letters of Sir Joseph Dalton Hooker, 2 vols, 1918, I, 34.
109. ibid., I, 219.
110. Quoted in Clark and Hughes, Sedgwick, I, 516n.
111. Johnston, 'Scientific Meeting at York', 7.
112. Times, 28 June 1832.
113. J.D. Forbes, 'Scientific Association', Literary Gazette, 899, 1834, 622.
114. See, for example, the reports in the Literary Gazette in 1835, 969, 513-22; 970, 529-37; 971, 552-56; 972, 570-71; 973, 585-88; and 980, 696-97.
115. Athenaeum, 460, 1836, 587.
116. Athenaeum, 517, 1837, 697; Athenaeum, 519, 1837, 755.
117. Brewster, 'Review of the Meetings', 388-89.

118. Geikie, Murchison, I, 238.
119. ibid., II, 148.
120. Literary Gazette, 1126, 1838, 524. Venison had, seemingly, been provided in York and Oxford (see BAAS Report, York, 1831, 20; BAAS Report, Oxford, 1832, 98). An anonymous reviewer in the British Critic also drew attention to the gastronomic delights in Newcastle ('First, Second, Third, Fourth, Fifth and Sixth Reports of the British Association for the Advancement of Science', British Critic, XXV, 1839, 1-48, 23).
121. Times, 24 August 1838 (my emphasis).
122. The Examiner, 1592, 1838, 491. (The Examiner had earlier carried straightforward reports of the BAAS meetings; see, e.g., 1490, 1836, 538; 1491, 1836, 548; 1492, 1836, 565).
123. Times, 18 August 1838.
124. Times, 22 August 1838; Times, 23 August 1838.
125. Examiner, 1595, 1838, 534-35; Examiner, 1596, 1838, 548.
126. See Literary Gazette, 969, 1835, 513; and Clark and Hughes, Sedgwick, I, 444.
127. Clark and Hughes, Sedgwick, I, 515-16n. Sedgwick, in a letter to his wife, more modestly sets his audience at 'several hundreds' (ibid., I, 515). Lyell, who attended the BAAS meetings in 1837, 1838 and 1839, reported Sedgwick's performance in a letter to Leonard Horner, 1 September 1838

(in Lyell, Life, Letters and Journals, II, 43). No doubt worried by the adverse publicity such antics were provoking, Lyell wrote to Darwin asking him to attend the meeting in 1839, and requesting him to ignore the notices in the Times and John Bull (see ibid., II, 45-46). See also Leonard G. Wilson, Charles Lyell. The Years to 1841: the Revolution in Geology, New Haven, 1972, 409, 489, 496, 512, and Lyell, Life, Letters and Journals, II, 474-82 for Lyell and the BAAS.

128. On Buckland, see Athenaeum, 360, 1834, 698; and 'British Association', Gentleman's Magazine, n.s. II, 1834, 409-415, 415. On Whewell, Literary Gazette, September 1834, 623.
129. Anon., British Critic, 20, 22.
130. See Hyman, Babbage, 152; Geikie, Murchison, II, 64.
131. This was the view of Edward Forbes, in George Wilson and Archibald Geikie, Memoir of Edward Forbes, F.R.S., Edinburgh, 1861, 400.
132. See Geikie, Murchison, II, 65.
133. Times, 29 March 1839.
134. ibid.

PART TWO: A BRIEF RETROSPECT

In the chapters that make up part two of this thesis I have depicted in broad terms the development and character of science and scientific culture from the early 1820s to 1840; the reason for this has been, as I explained in the conclusion to part one, because the issues which were treated in that part in artistic terms (understanding that term in the sense in which it has been used) were treated from the early 1820s to 1840 in scientific terms. The most useful way to summarize the results we have just achieved would be to begin by moving chapter by chapter through part two.

Chapter four serves to reinforce the fact that in the first two decades of the nineteenth century there did not exist any well-based, well-organized and influential scientific culture; this lack, indeed, is considered as one of the reasons why such vigorous efforts are made to bring into being a powerful scientific organisation, the BAAS, in the late 1820s. I chart in this chapter other forces contributing to the success of the BAAS in the decade following its creation, and examine in some detail its impact and early development. Having looked at some of the parameters of the BAAS and considered all the secondary literature on the subject, I have prepared the ground for a fuller assessment of the evolution of an image in Britain of science and the scientist, of a model for scientific practice, of an explanatory structure for science, and more generally of a set of criteria by which the character of a scientific culture may be explored.

In chapter five, I turn to a detailed reconstruction of two important images, models and ideologies of science: the first of which

I term variously the 'Baconian' and the 'Herschelian' and the second of which I term the 'Whewellian'. The first, derived from the work of Francis Bacon, has suffered at the hands of historians and philosophers in the twentieth century, but in the early decades of the nineteenth was a powerful spur to scientific organisation and development and an inspiration to the early founders of the BAAS and the SDUK. In this chapter I have tried not only to reinstate Baconianism as a strong current but also to specify precisely what effect it had on the image of science and the scientist; I have also tried to distinguish the interest in Bacon's works as this was evidenced in the period from the end of the eighteenth century to the early 1820s (an interest which was expressed particularly strongly by critics and philosophers in Edinburgh, the future home of what I describe in chapters nine and ten as a Baconian, populist phrenology), from the translation of this interest into practical investigation. This translation occurs at a number of levels, some of which will be studied in part three, but in chapter five the process has been conceived at the level of turning methodological proscriptions and prescriptions into a general ideology of science. The ideology itself promised a rapid increase in knowledge, in a word scientific progress where there had previously been a long period of decline. And this it promised to provide in the face of initial hostility and prejudice. Baconianism involved the method of patiently accumulating natural facts, carefully observing, describing, and assembling data. A banal and unproductive procedure one might think, but one stamped with the approval of the era's greatest scientist John Herschel, whose important philosophical work I show to be little more than a re-statement of popular Baconianism.

But Baconianism was more than a method and a promise in progress. It involved the establishment of a terrain for natural science, a terrain delimited by the fact that it stood in contrast to abstract science. This contrast was seldom explored rigorously, but this in itself ensured that the techniques and presuppositions of one would not intrude into the other. Mathematics might exist in various academic institutions or on the continent but, Baconians argued, this had little consequence for their own natural science. This discourse relied, it is true, on rules, but these were straightforward, accessible, easy to formulate, easy to demonstrate, and easy to acquire. In a sense, these rules were natural ones, and they did little more than express the natural way of acquiring knowledge; all that prevented this acquisition were a series of mental barriers (or 'idols') and of organisational deficiencies. Science will fulfil its aims of improving the common stock of knowledge and man's understanding of himself and control over the natural world by proceeding carefully, slowly, and by the patient weaving together of facts and observations into general laws. Such laws require formulation and this is the task of certain figures at the forefront of science- Herschel for example- and of certain organisations which can serve as a collection point and processing centre for such data- the BAAS for example.

The general laws once established, the members of the scientific community can further participate by corroborating or applying the law. Moreover, that law rests on corroboration such that the more support it has, the more valid it becomes, and the more valid it becomes the more widespread are its effects. Science, we have shown, according to this ideology, cannot be reduced to a process of discovery. What constitutes science is almost what



constitutes the scientific community in the sense that it will be established insofar as that community is established. Science advances as it spreads, and progresses as it is popularised. Thus an organisation like the BAAS could at its outset aim to advance science and popularise it without seeming to do the impossible.

This ideology did not, however, govern the BAAS for long after its inception even though it continued to find many supporters outside that organization. For in opposition to it there developed another method, image and ideology of science which in almost every way altered the tenets of Baconianism. This new ideology has been reconstructed by a careful and detailed reading of Whewell's work during the 1830s. I have showed the essential features of this new ideology in contrast to the old by stressing the way it sought to replace induction by deduction, fact gathering by a combination of explication and colligation, experience by reason, general participation by the role of the genius and synthesizer, experiment by inspiration, and rule-governed progress by a series of 'mysterious steps'.

This second model had decisive consequences for the character and status of scientific culture in Britain for within the BAAS and other important centres, it became dominant by the mid-1830s. One consequence of this is that it was able to establish a classification of the sciences. What the nature of this classification was is an important question, and in chapter six I am able to show that though the basis for a hegemony of a typical Whewellian science- physical astronomy- was planned, it was not established or accepted until the end of the 1830s. This demonstration has one fundamental consequence and a number of minor ones which I examine in chapter six.

The major consequence is that though Whewellianism proclaimed that physical astronomy should rule over the sciences at the head of a definite hierarchy and be in a position to set general standards of scientificity and legislate in scientific disputes, this self-same physical astronomy did not have the necessary coherence to do so at any point during the 1830s. Throughout the decade, indeed, though efforts were made to establish its position and efforts were even made to have this position accepted by the wider scientific community, for example by popularisations such as that of Mary Somerville, these efforts did not achieve success. I show in chapter seven that although the BAAS set up a hierarchy of the sciences from 1834, the fact that physical astronomy and other abstract sciences occupied the top level position had no effect whatsoever. Other 'sciences' were screened, assessed, and then unceremoniously repelled from the BAAS on other grounds than their ability to match the standards set by the sciences of Section I. Such sciences as statistics, phrenology and the medical sciences therefore set up their own institutional forums, or were welcomed by the resolutely Baconian organisations, the SDUK which is considered in chapter seven.

Another consequence of the failure of physical astronomy to become established as a standard science in Britain is that this serves to maintain an essential difference in the character of scientific culture in Britain and in France; this is a theme I have explored in chapter six and which I shall return to in chapter nine when we shall see how much the 'importation' of organology into Britain from France necessitated its translation into Baconian terms, that is, its transformation into first phrenology, and then into physiognomical phrenology.

It is with the subjects we have treated in chapters four to seven in mind that we can approach the difficult task of understanding the character, the status, and the complex development of the sciences of physiognomy and phrenology in Britain.