

# THOMAS BROWN

LECTURES ON THE  
PHILOSOPHY OF THE  
HUMAN MIND (VOL. 1  
OF 3)

Thomas Brown

**Lectures on the Philosophy of  
the Human Mind (Vol. 1 of 3)**

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# Thomas Brown

## Lectures on the Philosophy of the Human Mind (Vol. 1 of 3)

### LECTURE I. – (Introduction.)

Gentlemen,

The subject on which we are about to enter, and which is to engage, I trust, a considerable portion of your attention for many months, is *the Philosophy of the Human Mind*, – not that *speculative* and *passive* philosophy only, which inquires into the nature of our intellectual part, and the mysterious connexion of this with the body which it animates, but that *practical* science, which relates to the duties, and the hopes, and the great destiny of man, and which, even in analyzing the powers of his understanding, and tracing all the various modifications of which it is individually susceptible, views it chiefly as a general instrument of good – an instrument by which he may have the dignity of co-operating with his beneficent Creator, by spreading to others the knowledge, and virtue, and happiness, which he is qualified at once to enjoy, and to diffuse.

“Philosophy,” says Seneca, “is not formed for artificial show or delight. It has a higher office than to free idleness of its languor, and wear away and amuse the long hours of a day. It is that which forms and fashions the soul, which gives to life its disposition and order, which points out what it is our duty to do, what it is our duty to omit. It sits at the helm, and in a sea of peril, directs the course of those who are wandering through the waves.” “Non est philosophia populare artificium, nec ostentationi paratum; non in verbis sed in rebus est. Nec in hoc adhibetur ut aliqua oblectatione consumatur dies, ut dematur otio nausea. Animum format et fabricat, vitam disponit, actiones regit, agenda et omittenda demonstrat, sedit ad gubernaculum, et per ancipitia fluctuantium dirigit cursum.” Ep. 16.

Such, unquestionably, is the great practical object of all philosophy. If it increase the happiness and virtue of human kind, it must be allowed to have fulfilled, to human beings, the noblest of earthly ends. The greatness of this primary object, however, perhaps fixed too exclusively the attention of the moral inquirers of antiquity, who, in considering man as capable of virtue and happiness, and in forming nice and subtle distinctions as to his supreme good, and the means by which he might attain it, seem almost to have neglected the consideration of his intellectual nature, as an object of mere physical science. Hence it happens, that, while the systems of ancient philosophy exhibit, in many instances, a dignity of moral sentiment as high, or almost as high, as the unassisted reason of man could be supposed to reach, and the defects of which we perhaps discover only by the aid of that purer light, which was not indulged to them, they can scarcely be said to have left us a single analysis of complex phenomena of thought and feeling. By some of them, indeed, especially by the Peripatetics and Stoics, much dialectic subtilty was employed in distinctions, that may seem at first to involve such an analysis; but even these distinctions were verbal, or little more than verbal. The *analytical investigation* of the mind, in all its complexity of perceptions, and thoughts, and emotions, was reserved to form almost a new science in the comprehensive philosophy of far later years.

If, however, during the flourishing periods of Greek and Roman letters, this intellectual analysis was little cultivated, the department of the philosophy of the mind, which relates to practical ethics, was enriched, as I have said, by moral speculations the most splendid and sublime. In those ages, indeed, and in countries in which no revealed will of heaven had pointed out and sanctioned one unerring rule of right, it is not to be wondered at, that, to those who were occupied in endeavouring to trace and ascertain such a rule in the moral nature of man, all other mental inquiries should have

seemed comparatively insignificant. It is even pleasing thus to find the most important of all inquiries regarded as truly the most important, and minds of the highest genius, in reflecting on their own constitution, so richly diversified and adorned with an almost infinite variety of forms of thought, discovering nothing, in all this splendid variety, so worthy of investigation, as the conduct which it is fitting for man to pursue.

But another period was soon to follow, a period in which ages of long and dreary ignorance were to be followed by ages of futile labour, as long and dreary. No beautiful moral speculations were then to compensate the poverty of intellectual science. But morality, and even religion itself, were to be degraded, as little more than technical terms of a cold and unmeaning logic. The knowledge of our mental frame was then, indeed, professedly cultivated with most assiduous zeal; and if much technical phraseology, and much contention, were sufficient to constitute an elaborate science, that assiduous zeal might well deserve to have been rewarded with so honourable a name. But what reasonable hope of a progress truly scientific could be formed, when to treat of the philosophy of mind was to treat of every thing but of the mind and its affections; when some of the most important questions, with respect to it, were, Whether its essence were distinct from its existence? whether its essence therefore might subsist, when it had no actual existence? and what were all the qualities inherent in it as a nonentity? In morals, whether ethics were an art or a science? whether, if the mind had freedom of choice, this independent *will* be an entity or a quiddity? and whether we should say, with a dozen schoolmen, that virtue is good, because it has intrinsic goodness, or, with a dozen more, that it has this intrinsic goodness, because it is good?

In natural theology, questions of equal moment were contested with equal keenness and subtilty; but they related less to the Deity, of whose nature, transcendent as it is, the whole universe may be considered as in some degree a faint revelation, than to those spiritual ministers of his power, of whose very existence nature affords no evidence, and of whom revelation itself may be said to teach us little but the mere existence. Whether angels pass from one point of space to another, without passing through the intermediate points? whether they can visually discern objects in the dark? whether more than one can exist at the same moment in the same physical point? whether they can exist in a perfect vacuum, with any relation to the absolute incorporeal void? and whether if an angel were in vacuo, the void could still truly be termed *perfect*? – such, or similar to these were the great inquiries in that department of Natural Theology, to which, as to a separate science, was given the name of *Angelography*: and of the same kind were the principal inquiries with respect to the Deity himself, not so much an examination of the evidence which nature affords of his self-existence, and power, and wisdom, and goodness, those sublime qualities which even our weakness cannot contemplate without deriving some additional dignity from the very greatness which it adores, as a solution of more subtile points, whether he exist in imaginary space as much as in the space that is real? whether he can cause a mode to exist without a substance? whether, in knowing all things, he know universals, or only things singular? and whether he love a possible unexisting angel better than an actually existing insect?

“Indignandum de isto, non disputandum est.” – “Sed non debuit hoc nobis esse propositum arguta disserere,<sup>1</sup> et philosophiam in has angustias ex sua majestate detrahere. Quanto satius est, ire aperta via et recta, quam sibi ipsi flexus disponere, quos cum magna molestia debeas relegere?”<sup>2</sup>— “Why waste ourselves,” says the same eloquent moralist; “why torture and waste ourselves in questions, which there is more real subtilty in despising than in solving?” —

“Quid te troques et maceras, in ea quæstione quam subtilius est contempsisse quam solve?”<sup>3</sup>

From the necessity of such inquiries we are now fortunately freed. The frivolous solemnities of argument, which, in the disputations of Scotists and Thomists, and the long controversy of the

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<sup>1</sup> Argutias serere. Lect. var.

<sup>2</sup> Seneca, Ep. 102.

<sup>3</sup> Ibid, 49.

believers and rejectors of the universal *a parti rei*, rendered human ignorance so very proud of its temporary triumphs over human ignorance, at length are hushed forever; and, so precarious is all that glory, of which men are the dispensers, that the most subtle works, which for ages conferred on their authors a reverence more than praise, and almost worship, would now scarcely find a philosophic adventurer, so bold, as to avow them for his own.

The progress of intellectual philosophy may indeed, as yet, have been less considerable than was to be hoped under its present better auspices. But it is not a little, to have escaped from a labyrinth, so very intricate, and so very dark, even though we should have done nothing more than advance into sunshine and an open path, with a long journey of discovery still before us. We have at last arrived at the important truth, which now seems so very obvious a one, that the mind is to be known best by observation of the series of changes which it presents, and of all the circumstances which precede and follow these; that, in attempting to explain its phenomena, therefore, we should know what those phenomena are; and that we might as well attempt to discover, by logic, unaided by observation or experiment, the various coloured rays that enter into the composition of a sunbeam, as to discover, by dialectic subtilties, *a priori*, the various feelings that enter into the composition of a single thought or passion.

The mind, it is evident, may, like the body to which it is united, or the material objects which surround it, be considered simply as a substance possessing certain qualities, susceptible of various affections or modifications, which, existing successively as momentary states of the mind, constitute all the phenomena of thought and feeling. The general circumstances in which these changes of state succeed each other, or, in other words, the laws of their succession, may be pointed out, and the phenomena arranged in various classes, according as they may resemble each other, in the circumstances that precede or follow them, or in other circumstances of obvious analogy. There is, in short, a science that may be termed *mental physiology*, as there is another science relating to the structure and offices of our corporeal frame, to which the term *physiology* is more commonly applied; and as, by observation and experiment, we endeavour to trace those series of changes which are constantly taking place in our material part, from the first moment of animation to the moment of death; so, by observation, and in some measure also by experiment, we endeavour to trace the series of changes that take place in the mind, fugitive as these successions are, and rendered doubly perplexing by the reciprocal combinations into which they flow. The innumerable changes, corporeal and mental, we reduce, by generalizing, to a few classes; and we speak, in reference to the mind, of its faculties or functions of perception, memory, reason, as we speak, in reference to the body, of its functions of respiration, circulation, nutrition. This mental physiology, in which the mind is considered simply as a substance endowed with certain susceptibilities, and variously affected or modified in consequence, will demand of course our first inquiry; and I trust that the intellectual analyses, into which we shall be led by it, will afford results that will repay the labour of persevering attention, which they may often require from you.

In one very important respect, however, the inquiries, relating to the physiology of mind, differ from those which relate to the physiology of our animal frame. If we could render ourselves acquainted with the intimate structure of our bodily organs, and all the changes which take place, in the exercise of their various functions, our labour, with respect to them, might be said to terminate. But though our intellectual analysis were perfect, so that we could distinguish, in our most complex thought or emotion, its constituent elements, and trace with exactness the series of simpler thoughts which have progressively given rise to them, other inquiries, equally, or still more important, would remain. We do not know all which is to be known of the mind, when we know all its phenomena, as we know all which can be known of matter, when we know the appearances which it presents, in every situation in which it is possible to place it, and the manner in which it then acts or is acted upon by other bodies. When we know that man has certain affections and passions, there still remains the great inquiry, as to the propriety or impropriety of those passions, and of the conduct to which they

lead. We have to consider, not merely how he is capable of acting, but also, whether, acting in the manner supposed, he would be fulfilling a duty or perpetrating a crime. Every enjoyment which man can confer on man, and every evil, which he can reciprocally inflict or suffer, thus become objects of two sciences – first of that intellectual analysis which traces the happiness and misery, in their various forms and sequence, as mere phenomena or states of the substance *mind*; – and secondly, of that ethereal judgment, which measures our approbation and disapprobation, estimating, with more than judicial scrutiny, not merely what is done, but what is scarcely thought in secrecy and silence, and discriminating some element of moral good or evil, in all the physical good and evil, which it is in our feeble power to execute, or in our still frailer heart, to conceive and desire.

To this second department of inquiry belong the doctrines of general *ethics*.

But, though man were truly impressed with the great doctrine of moral obligation, and truly desirous, in conformity with it, of increasing, as far as his individual influence may extend, the sum of general happiness, he may still err in the selection of the means which he employs for this benevolent purpose. So essential is knowledge, if not to virtue, at least to all the ends of virtue, that, without it, benevolence itself, when accompanied with power, may be as destructive and desolating as intentional tyranny; and notwithstanding the great principles of progression in human affairs, the whole native vigour of a state may be kept down for ages, and the comfort, and prosperity, and active industry of unexisting millions be blasted by regulations, which, in the intention of their generous projectors, were to stimulate those very energies which they repressed, and to relieve that very misery which they rendered irremediable. It therefore becomes an inquiry of paramount importance, what are the means best calculated for producing the greatest amount of social good? By what ordinances would public prosperity, and all the virtues which not merely adorn that prosperity, but produce it, be most powerfully excited and maintained? This political department of our science, which is in truth only a subdivision, though a very important one, of general practical ethics, comprehends, of course, the inquiries as to the relative advantages of different forms of government, and the expediency of the various contrivances which legislative wisdom may have established, or may be supposed to establish, for the happiness and defence of nations.

The inquiries, to which I have as yet alluded, relate to the mind, considered simply as an object of physiological investigation; or to man, considered in his moral relations to a community, capable of deriving benefit from his virtues and knowledge, or of suffering by his errors and his crimes. But there is another more important relation in which the mind is still to be viewed, – that relation which connects it with the Almighty Being to whom it owes its existence. Is man, whose frail generations begin and pass away, but one of the links of an infinite chain of beings like himself, uncaused, and co-eternal with that self-existing world of which he is the feeble tenant? or, Is he the offspring of an all-creating Power, that adapted him to nature, and nature to him, formed together with the magnificent scene of things around him, to enjoy its blessings, and to adore, with the gratitude of happiness, the wisdom and goodness from which they flow? What attributes, of a Being so transcendent, may human reason presume to explore? and, What homage will be most suitable to his immensity, and our nothingness? Is it only for an existence of a few moments, in this passing scene, that he has formed us? or, Is there something within us, over which death has no power, – something, that prolongs and identifies the consciousness of all which we have done on earth, and that, after the mortality of the body, may yet be a subject of the moral government of God? When compared with these questions, even the sublimest physical inquiries are comparatively insignificant. They seem to differ, as it has been said, in their relative importance and dignity, almost as philosophy itself differs from the mechanical arts that are subservient to it. “Quantum inter philosophiam interest, – et cæteras artes; tantum interesse existimo in ipsa philosophia, inter illam partem quæ ad homines et hanc quæ ad Deos spectat. Altior est hæc et animosior: multum permisit sibi; non fuit oculis contenta. Majus esse

quiddam suspicata est, ac pulchrius, quod extra conspectum natura posuisset.”<sup>4</sup> It is when ascending to these sublimer objects, that the mind seems to expand, as if already shaking off its earthly fetters, and returning to its source; and it is scarcely too much to say, that the delight which it thus takes in things divine is an internal evidence of its own divinity. “Cum illa tetigit, alitur, crescit: ac velut vinculis liberatus, in originem redit. Et hoc habet argumentum divinitatis suæ, quod illum divina delectant.”

I have thus briefly sketched the various important inquiries, which the philosophy of mind, in its most extensive sense, may be said to comprehend. The nature of our spiritual being, as displayed in all the phenomena of feeling and thought – the ties which bind us to our fellow-men, and to our Creator – and the prospect of that unfading existence, of which life is but the first dawning gleam; such are the great objects to which in the department of your studies committed to my charge, it will be my office to guide your attention and curiosity. The short period of the few months to which my course is necessarily limited, will not, indeed, allow me to prosecute, with such full investigation as I should wish, every subject that may present itself in so various a range of inquiry. But even these few months, I flatter myself, will be sufficient to introduce you to all which is most important for you to know in the science, and to give such lights as may enable you, in other hours, to explore, with success, the prospects that here, perhaps, may only have opened on your view. It is not, I trust, with the labours of a single season that such inquiries, on your part, are to terminate. Amid the varied occupations and varied pleasures of your future years, – in the privacy of domestic enjoyment, as much as in the busier scenes of active exertion, – the studies on which you are about to enter must often rise to you again with something more than mere remembrance; because there is nothing that can give you interest, in any period or situation of your life, to which they are not related. The science of mind, is the science of yourselves; of all who surround you; of every thing which you enjoy or suffer, or hope or fear: so truly the science of your very being, that it will be impossible for you to look back on the feelings of a single hour, without constantly retracing phenomena that have been here, to a certain extent, the subjects of your analysis and arrangement. The thoughts and faculties of your own intellectual frame, and all which you admire as wonderful in the genius of others, – the moral obligation, which, as obeyed or violated, is ever felt by you with delight or with remorse, – the virtues, of which you think as often as you think of those whom you love; and the vices, which you view with abhorrence, or with pity, – the traces of divine goodness, which never can be absent from your view, because there is no object in nature which does not exhibit them, – the feeling of your dependence on the gracious Power that formed you, – and the anticipation of a state of existence more lasting than that which is measured by the few beatings of a feeble pulse, – these in their perpetual recurrence, must often recal to you the inquiries that, in this place, engaged your early attention. It will be almost as little possible for you to abandon wholly such speculations, as to look on the familiar faces of your home with a forgetfulness of every hour which they have made delightful, or to lose all remembrance of the very language of your infancy, that is every moment sounding in your ears.

Though I shall endeavour, therefore, to give as full a view as my limits will permit of all the objects of inquiry which are to come before us, it will be my chief wish to awake in you, or to cherish, a love of these sublime inquiries themselves. There is a philosophic spirit which is far more valuable than any limited acquirements of philosophy; and the cultivation of which, therefore, is the most precious advantage that can be derived from the lessons and studies of many academic years: – a spirit, which is quick to pursue whatever is within the reach of human intellect; but which is not less quick to discern the bounds that limit every human inquiry, and which, therefore, in seeking much, seeks only what man may learn: – which knows how to distinguish what is just in itself from what is merely accredited by illustrious names; adopting a truth which no one has sanctioned, and rejecting an error of which all approve, with the same calmness as if no judgment were opposed to its own: – but which, at the same time, alive, with congenial feeling, to every intellectual excellence, and candid to

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<sup>4</sup> Seneca Nat. Quæst. Lib. 1. Præf.

the weakness from which no excellence is wholly privileged, can dissent and confute without triumph, as it admires without envy; applauding gladly whatever is worthy of applause in a rival system, and venerating the very genius which it demonstrates to have erred.

Such is that philosophic temper to which, in the various discussions that are to occupy us, it will be my principal ambition to form your minds; with a view not so much to what you are at present, as to what you are afterwards to become. You are now, indeed, only entering on a science, of which, by many of you, perhaps, the very elements have never once been regarded as subjects of speculative inquiry. You have much, therefore, to learn, even in learning only what others have thought. But I should be unwilling to regard you as the passive receivers of a system of opinions, content merely to remember whatever mixture of truths and errors may have obtained your easy assent. I cannot but look to you in your maturer character, as yourselves the philosophers of other years; as those who are, perhaps, to add to science many of its richest truths, which as yet are latent to every mind, and to free it from many errors, in which no one has yet suspected even the possibility of illusion. The spirit which is itself to become productive in you, is therefore, the spirit which I wish to cultivate; and happy, as I shall always be, if I succeed in conveying to you that instruction which it is my duty to communicate, I shall have still more happiness if I can flatter myself, that, in this very instruction, I have trained you to habits of thought, which may enable you to enrich, with your own splendid discoveries, the age in which you live, and to be yourselves the instructors of all the generations that are to follow you.

## LECTURE II

# RELATION OF THE PHILOSOPHY OF MIND TO THE SCIENCES IN GENERAL

In my former Lecture, Gentlemen, I gave you a slight sketch of the departments into which the Philosophy of Mind divides itself, comprehending, in the *first* place, The physiology of the mind, considered as a substance capable of the various modifications, or states, which constitute, as they succeed each other, the phenomena of thought and feeling; *secondly*, The doctrines of general ethics, as to the obligation, under which man lies, to increase and extend, as widely as possible, the happiness of all that live; *thirdly*, The political doctrines, as to the means which enable him, in society with his fellow men, to furthestmost successfully, and with the least risk of future evil, that happiness of all, which it is the duty of each individually to wish and to promote; and, *fourthly*, The doctrines of natural theology, as to the existence and attributes of that greatest of Beings, under whose moral government we live, and the foundations of our confidence that death is only a change of scene, which, with respect to our mortality indeed, may be said to be its close; but which, with respect to the soul itself, is only one of the events of a life that is everlasting.

Of these great divisions of our subject, the *Physiology of the Mind*, or the consideration of the regular series of phenomena which it presents, simply as states or affections of the mind, is that to which we are first to turn our attention. But, before entering on it, it may be useful to employ a few Lectures in illustrating the *advantages*, which the study of the mind affords, and the *principles of philosophizing*, in their peculiar application to it – subjects, which, though of a general kind, will, I trust, leave an influence that will be felt in all the particular inquiries in which we are to be engaged; preparing you, both for appreciating better the importance of those inquiries, and for prosecuting them with greater success.

One very obvious distinction of the physical investigations of mind and matter, is, that, in intellectual science, the *materials* on which we operate, the *instruments* with which we operate, and the *operating agent*, are the same. It is the mind, endowed with the faculties of perception and judgment, observing, comparing, and classifying the phenomena of the mind. In the physics of matter, it is, indeed, the mind which observes, compares, and arranges; but the phenomena are those of a world, which, though connected with the mind by many wonderful relations of reciprocal agency, still exists independently of it – a world that presents its phenomena only in circumstances, over most of which we have no controul, and over others a controul that is partial and limited. The comparative facility, as to all external circumstances, attending the study of the mental phenomena, is unquestionably an advantage of no small moment. In every situation in which man can be placed, as long as his intellectual faculties are unimpaired, it is impossible that he should be deprived of opportunities of carrying on this intellectual study; because, in every situation in which he can be placed, he must still have with him that universe of thought, which is the true home and empire of the mind. No costly apparatus is requisite – no tedious waiting for seasons of observation. He has but to look within himself to find the elements which he has to put together, or the compounds which he has to analyze, and the instruments that are to perform the analysis or composition.

It was not, however, to point out to you the advantage which arises to the study of our mental frame, from the comparative facility as to the circumstances attending it, that I have led your attention to the difference, in this respect, of the physics of mind and matter. It was to show, – what is of much more importance, – how essential a right view of the science of mind is to every other science, even to those sciences, which superficial thinkers might conceive to have no connexion with it; and how vain it would be to expect, that any branch of the physics of mere matter could be cultivated to its highest degree of accuracy and perfection, without a due acquaintance with the nature of that intellectual

medium, through which alone the phenomena of matter become visible to us, and of those intellectual instruments, by which the objects of every science, and of every science alike, are measured, and divided, and arranged. We might almost as well expect to form an accurate judgment, as to the figure, and distance, and colour of an object, at which we look through an optical glass, without paying any regard to the colour and refractory power of the line itself. The distinction of the sciences and arts, in the sense in which these words are commonly understood, is as just as it is familiar; but it may be truly said, that, in relation to our power of discovery, science is itself an art, or the result of an art. Whether, in this most beautiful of processes, we regard the mind as the instrument or the artist, it is equally that by which all the wonders of speculative, or practical knowledge, are evolved. It is an agent operating in the production of new results, and employing for this purpose the known laws of thought, in the same manner as, on other occasions, it employs the known laws of matter. The objects, to which it may apply itself, are indeed various, and, as such, give to the sciences their different names. But, though the objects vary, the observer and the instrument are continually the same. The limits of the powers of this mental instrument, are not the limits of its powers alone; they are also the only real limits, within which every science is comprehended. To the extent which it allows, all those sciences, physical or mathematical, and all the arts which depend on them, may be improved; but, beyond this point, it would be vain to expect them to pass; or rather, to speak more accurately, the very supposition of any progress beyond this point would imply the grossest absurdity; since human science can be nothing more than the result of the direction of human faculties to particular objects. To the astronomer, the faculty by which he calculates the disturbing forces that operate on a satellite of Jupiter, in its revolution round its primary planet, is as much an instrument of his art, as the telescope by which he distinguishes that almost invisible orb; and it is as important, and surely as interesting, to know the real power of the intellectual instrument, which he uses, not for calculations of this kind only, but for all the speculative and moral purposes of life, as it can be to know the exact power of that subordinate instrument, which he uses only for his occasional survey of the heavens.

To the philosophy of mind, then, every speculation, in every science, may be said to have relation as to a common centre. The knowledge of the quality of matter, in the whole wide range of physics, is not itself a phenomenon of matter, more than the knowledge of any of our intellectual or moral affections; it is truly, in all its stages of conjecture, comparison, doubt, belief, a phenomenon of mind; or, in other words, it is only the mind itself existing in a certain state. The inanimate bodies around us might, indeed, exhibit the same changes as at present, though no mind had been created. But science is not the existence of these inanimate bodies; it is the principle of thought itself variously modified by them, which, as it exists in certain states, constitutes that knowledge which we term *Astronomy*; in certain other states, that knowledge which we term *Chemistry*; in other states our *Physiology*, corporeal or mental, and all the other divisions and subdivisions of science. It would surely be absurd to suppose, that the mixture of acids and alkalis constitutes *Chemistry*, or that *Astronomy* is formed by the revolution of planets round a sun. Such phenomena, the mere objects of science, are only the occasions on which *Astronomy* and *Chemistry* arise in the mind of the inquirer, Man. It is the mind which perceives bodies, which reasons on their apparent relations, which joins them in thought as similar, however distant they may be in sphere, or separates them in thought as dissimilar, though apparently contiguous. These perceptions, reasonings, and classifications of the mind must, of course be regulated by the laws of mind, which mingle in their joint result with the laws of matter. It is the object indeed which affects the mind when sentient; but it is the original susceptibility of the mind itself, which determines and modifies the particular affection, very nearly, if I may illustrate what is mental by so coarse an image, as the impression which a seal leaves on melted wax depends, not on the qualities of the wax alone, or of the seal alone, but on the softness of the one, and the form of the other. Change the external object which affects the mind in any case, and we all know, that the affection of the mind will be different. It would not be less so, if, without any change of object, there could be a change in the mere feeling, whatever it might be, which would result from

that different susceptibility becoming instantly as different, as if not the mind had been altered, but the object which it perceived. There is no physical science, therefore, in which the laws of mind are not to be considered together with the laws of matter; and a change in either set of laws would equally produce a change in the nature of the science itself.

If, to take one of the simplest of examples, the mind had been formed susceptible of all the modifications which it admits at present, with the single exception of those which it receives on the presence of light, of how many objects and powers in nature, which we are now capable of distinguishing, must we have remained in absolute ignorance! But would this comparative ignorance of many objects be the only effect of such a change of the laws of mind, as I have supposed? Or rather, is it not equally certain, that this simple change alone would be sufficient to alter the very nature of the limited science of which the mind would still be capable, as much as it narrowed its extent? Science is the classification of relations; varying, too, in every case, as the relations observed are different; and how very differently should we, in such circumstances, have classed the few powers of the few objects, which might still have become known to us, since we could no longer have classed them according to any of those visual relations, which are always the most obvious and prominent. It is even, perhaps, an extravagant supposition, that a race of the blind, unless endowed with some other sense to compensate the defect of sight, could have acquired so much command of the common arts of life, or so much science of any sort, as to preserve themselves in existence. But though all this, by a very strong license of *supposition*, were taken for granted, it must surely be admitted, that the knowledge which man could in those circumstances acquire, would be not merely less in degree, but would be as truly different from that which his powers at present have reached, as if the objects of his science, or the laws which regulate them, had themselves been changed to an extent, at least as great as the supposed change in the laws of mind. The *astronomy* of the blind, if the word might still be used to express a science so very different from the present, would, in truth, be a sort of *chemistry*. Day and night, the magnificent and harmonious revolution of season after season, would be nothing more than periodical changes of temperature in the objects around; and that great Dispenser of the seasons, the Source of light, and beauty, and almost of animation, at whose approach nature seems not merely to awake, but to rise again, as it was at first, from the darkness of its original chaos, if its separate existence could be at all inferred, would probably be classed as something similar, though inferior in power, to that unknown source of heat, which, by a perilous and almost unknown process, was fearfully piled and kindled on the household hearth.

So accustomed are we, however, to consider the nature and limits of the different sciences, as depending on the objects themselves, and not on the laws of the mind, which classes their relations, that it may be difficult for you at first to admit the influence of these mere laws of mind, as modifying general physics, at least to the extent which I have now stated. But, that a change in the laws of human thought, whatever influence it might have in altering the very nature and limits of the physical sciences, would at least affect greatly the state of their progress, must be immediately evident to those who consider for a moment on what discovery depends; the progress of science being obviously nothing more than a series of individual discoveries, and the number of discoveries varying with the powers of the individual intellect. The same phenomena which were present to the mind of Newton, had been present, innumerable times before, not to the understandings of philosophers only, but to the very senses of the vulgar. Every thing was the same to him and to them, except the observing and reasoning mind. To him alone, however, they suggested those striking analogies, by which on a comparison of all the known circumstances in both, he ventured to class the force which retains the planets in their orbits, with that which occasions the fall of a pebble to the earth.

“Have ye not listen'd, while he bound the suns  
And planets to their spheres! the unequal task  
Of human kind till then. Oft had they roll'd

O'er erring man the year, and oft disgraced  
The pride of schools.  
– He took his ardent flight  
Through the blue infinite; and every star  
Which the clear concave of a winter's night  
Pours on the eye, or astronomic tube,  
Far-stretching, snatches from the dark abyss,  
Or such as farther in successive skies  
To fancy shine alone, at his approach  
Blazed into suns, the living centre each  
Of an harmonious system; all combined,  
And ruled unerring by that single power,  
Which draws the stone projected to the ground.”<sup>5</sup>

It is recorded of this almost superhuman Genius, whose powers and attainments at once make us proud of our common nature, and humble us with our disparity, that, in acquiring the Elements of Geometry, he was able, in a very large proportion of cases, to pass immediately from Theorem to Theorem, by reading the mere enunciation of each, perceiving, as it were intuitively, that latent evidence, which others are obliged slowly to trace through a long series of Propositions. When the same Theorem was enunciated, or the same simple phenomenon observed, the successions of thought, in his mind, were thus obviously different from the successions of thought in other minds; but it is easy to conceive the original susceptibilities of all minds such, as exactly to have corresponded with those of the mind of Newton. And if the minds of all men, from the creation of the world, had been similar to the mind of Newton, is it possible to conceive, that the state of any science would have been, at this moment, what it now is, or in any respect similar to what it now is, though the laws which regulate the physical changes in the material universe, had continued unaltered, and no change occurred, but in the simple original susceptibilities of the mind itself?

The laws of the observing and comparing mind, then, it must be admitted, have modified, and must always continue to modify, every science, as truly as the laws of that particular department of nature of which the phenomena are observed and compared. But, it may be said, we are Chemists, we are Astronomers, without studying the philosophy of mind. And true it certainly is, that there are excellent Astronomers, and excellent Chemists, who have never paid any particular attention to intellectual philosophy. The general principles of philosophizing, which a more accurate intellectual philosophy had introduced, have become familiar to them, without study. But those general principles are not less the effect of that improved philosophy of mind, any more than astronomy and chemistry themselves have now a less title to be considered as sciences, – because, from the general diffusion of knowledge in society, those who have never professedly studied either science, are acquainted with many of their most striking truths. It is gradually, and almost insensibly, that truths diffuse themselves – at first admired and adopted by a few, who are able to compare the present with the past, and who gladly own them, as additions to former knowledge, – from them communicated to a wider circle, who receive them, without discussion, as if familiar and long known; and at length, in this widening progress, becoming so nearly universal, as almost to seem effects of a natural instinctive law of human thought: – like the light, which we readily ascribe to the sun, as it first flows directly from him, and forces his image on our sight; but which, when reflected from object to object, soon ceases to remind us of its origin, and seems almost to be a part of the very atmosphere which we breathe.

I am aware, that it is not to improvements in the mere philosophy of mind, that the great reformation in our principles of physical inquiry is commonly ascribed. Yet it is to this source

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<sup>5</sup> Thomson's Poem on the Death of Sir Isaac Newton.

– certainly at least to this source chiefly, that I would refer the origin of those better plans of philosophical investigation which have distinguished with so many glorious discoveries the age in which we live, and the ages immediately preceding. When we think of the great genius of Lord Bacon, and of the influence of his admirable works, we are too apt to forget the sort of difficulties which his genius must have had to overcome, and to look back to his rules of philosophizing, as a sort of ultimate truths, discoverable by the mere perspicacity of his superior mind, without referring them to those simple views of nature in relation to our faculties of discovery, from which they were derived. The rules which he gives us, are rules of physical investigation; and it is very natural for us, therefore, in estimating their value, to think of the erroneous physical opinions which preceded them, without paying sufficient attention to the false theories of intellect, which had led to those very physical absurdities. Lord Bacon, if he was not the first who discovered that we were in some degree idolaters, to use his own metaphor, in our intellectual worship, was certainly the first who discovered the extent of our idolatry. But we must not forget, that the temple which he purified, was not the temple of external nature, but the temple of the mind, – that in its inmost sanctuaries were all the idols which he overthrew, – and that it was not till these were removed, and the intellect prepared for the presence of a nobler divinity, that Truth would deign to unveil herself to adoration; – as in the mysteries of those Eastern religions, in which the first ceremony for admission to the worship of the God is the purification of the worshipper.

In the course of our analysis of the intellectual phenomena, we shall have frequent opportunities of remarking the influence, which errors with respect to these mere phenomena of mind must have had, on the contemporary systems of general physics, and on the spirit of the prevailing plans of inquiry. It may be enough to remark at present the influence of one fundamental error, which, as long as it retained its hold of the understanding, must have rendered all its energies ineffectual, by wasting them in the search of objects, which it never could attain, because in truth they had no real existence, – to the neglect of objects that would have produced the very advantage which was sought. I allude to the belief of the schools, in the separate existence, or entity as they technically termed it, of the various orders of universals, and the mode in which they conceived every acquisition of knowledge in reasoning, to take place, by the intervention of certain intelligible forms or species, existing separately in the intellect, as the direct objects of thought, – in the same manner as they ascribed simple perception to the action of species of another order, which they termed sensible species, – the images of things derived indeed from objects without, but when thus derived, existing independently of them. When we amuse ourselves with inquiring into the history of human folly – that most comprehensive of all histories – which includes, at least for many ages, the whole history of philosophy; or rather, to use a word more appropriate than amusement, – when we read with regret the melancholy annals of genius aspiring to be pre-eminently frivolous, and industry labouring to be ignorant, we often discover absurdities of the grossest kind, which almost cease to be absurdities, on account of other absurdities, probably as gross, which accompany them; and this is truly the case, in the grave extravagance of the logic of the schools. The scholastic mode of philosophizing, ridiculous as it now seems, was far from absurd, when taken in connection with the scholastic philosophy. It was indeed the only mode of procedure, which that philosophy could consistently admit. To those who believed that singular objects could afford no real knowledge, *singularium nullam dari scientiam*: and that this was to be obtained only from what they termed *intelligible species*, existing not in external things, but in the intellect itself, it must have seemed as absurd to wander, in quest of knowledge, out of that region in which alone they supposed it to exist, and to seek it among things singular, as it would now, to us, seem hopeless and absurd, to found a system of physical truths on the contemplation and comparison of universals. While this false theory of the mental phenomena prevailed, was it possible, that the phenomena of matter should have been studied on sounder principles of investigation, when any better plan must have been absolutely inconsistent with the very theory of thought? It was in mind that the student of general nature was to seek his guiding light, without which all then was

darkness. The intellectual philosopher, if any such had then arisen, to analyze simply the phenomena of thought, without any reference to general physics, would in truth have done more in that dark age, for the benefit of every physical science, than if he had discovered a thousand properties of as many different substances.

Let us suppose, for a moment, that an accurate view of the intellectual process of abstraction could have been communicated to a veteran sage of the schools, at the very moment when he was intently contemplating the tree of Porphyry, in all its branches of species and genera, between the individual and the *summum genus*; and when he was preparing perhaps, by this contemplation of a few universals, to unfold all the philosophy of colours, or of the planetary movements, would the benefit which he received from this clearer view of a single process of thought have terminated in the mere science of mind – or would not rather his new views of mind have extended with a most important influence to his whole wide views of matter? – He must immediately have learned, that, in the whole tree of genera and species, the individual at the bottom of his scale was the only real independent existence, and that all the rest, the result of certain comparisons of agreement or disagreement, were simple modifications of his own mind, not produced by any thing existing in his intellect but by the very constitution of his intellect itself; the consideration of a number of individuals as of one species being nothing more than the feeling of their agreement in certain respects, and the feeling of this agreement being as simple a result of the observation of them together, as the perception of each, individually, was of its individual presence. It would surely have been impossible for him, with this new and important light, to return to his transcendental inquiries, into entities, and quiddities, and substantial forms; and the simple discovery of a better theory of abstraction, as a process of the mind, would thus have supplied the place of many rules of philosophizing.

The philosophy of mind then, we must admit, did, in former ages at least, exercise an important influence on general science: – and are we to suppose that it has now no influence?

Even though no other advantage were to be obtained from our present juster views of mind, than the protection which they give, from those gross errors of inquiry to which the philosophers of so long a series of ages were exposed, this alone would surely be no slight gain. But, great as this advantage is, are we certain, that it is all which the nicest mental analysis can afford, – or rather, is it not possible at least, that we may still, in our plans of physical investigation, be suffering under the influence of errors from which we should be saved, by still juster views of the faculties employed in every physical inquiry?

That we are not aware of any such influence, argues nothing; for to suppose us aware of it, would be to suppose us acquainted with the very errors which mislead us. Aquinas and Scotus, it is to be presumed, and all their contentious followers, conceived themselves as truly in the right path of physical investigation, as we do at this moment; and, though we are free from their gross mistakes, there may yet be others of which we are less likely to divest ourselves, from not having as yet the slightest suspicion of their existence. The question is not, Whether our method of inquiry be juster than theirs? – for, of our superiority in this respect, if any evidence of fact were necessary, the noble discoveries of these later years are too magnificent a proof to allow us to have any doubt, – but, Whether our plan of inquiry may not still be susceptible of improvements, of which we have now as little foresight, as the Scotists and Aquinists of the advantages which philosophy has received from the general prosecution of the inductive method? There is, indeed, no reason now to fear, that the observation of particular objects, with a view to general science, will be despised as incapable of giving any direct knowledge, and all real science be confined to universals. “*Singularium datur scientia.*” But, though a sounder view of one intellectual process may have banished from philosophy much idle contention, and directed inquiry to fitter objects, it surely does not therefore follow, that subsequent improvements in the philosophy of mind are to be absolutely unavailing. On the contrary, the presumption unquestionably is, that if by understanding better the simple process of abstraction, we have freed ourselves from many errors in our plans of inquiry, a still clearer view of the nature

and limits of all the intellectual processes concerned in the discovery of truth, may lead to still juster views of philosophizing.

Even at present, I cannot but think that we may trace, in no inconsiderable degree, the influence of false notions, as to some of the phenomena of the mind, in misdirecting the spirit of our general philosophy. I allude in particular, to one very important intellectual process, – that by which we acquire our knowledge of the relation on which all physics may be said to be founded. He must have paid little attention to the history of philosophy, and even to the philosophy of his own time, who does not perceive, how much the vague and obscure notions entertained of that intermediate tie, which is supposed to connect phenomena with each other, have tended to favour the invention and ready admission of physical hypotheses, which otherwise could not have been entertained for a moment; – hypotheses, which attempt to explain what is known by the introduction of what is unknown; as if successions of phenomena were rendered easier to be understood merely by being rendered more complicated. This very unphilosophic passion for complexity, (which, unphilosophic as it is, is yet the passion of many philosophers,) seems, to me, to arise, in a great measure, from a mysterious and false view of causation; as involving always, in every series of changes, the intervention of something unobserved, between the observed antecedent and the observed effect; – a view which may very naturally be supposed to lead the mind, when it has observed no actual intervention, to imagine any thing which is not absolutely absurd, that it may flatter itself with the pleasure of having discovered a cause. It is unnecessary, however, to enlarge at present on this subject, as it must again come before us; when you will perhaps see more clearly, how much the general diffusion of juster views, as to the nature and origin of our notion of the connection of events, would tend to the simplification, not of our theories of mind only, but, in a still higher degree, of our theories of matter.

The observations already made, I trust, have shown how important, to the perfection of every science, is an accurate acquaintance with that intellectual medium, through which alone the objects of every science become known to us, and with those intellectual instruments, by which, alike in every science, truth is to be detected and evolved. On this influence, which the philosophy of mind must always exercise on general philosophy, I have dwelt the longer, because, important as the relation is, it is one which we are peculiarly apt to forget; and the more apt to forget it, on account of that very excellence of the physical sciences, to which it has itself essentially contributed. The discoveries, which reward our inquiry into the properties of matter, as now carried on, on principles better suited to the nature and limits of our powers of investigation, are too splendid to allow us to look back to the circumstances which prepared them at a distance; and we avail ourselves of rules, that are the result of logical analysis, without reflecting, and almost without knowing, that they are the result of any analysis whatever. We are, in this respect, like navigators on the great ocean, who perform their voyage successfully by the results of observations, of which they are altogether ignorant; who look, with perfect confidence, to their compass and chart, and think of the stars as useful only in those early ages, when the pilot, if he ventured from shore, had no other directors of his course. It is only some more skilful mariner who is still aware of their guidance; and who knows, how much he is indebted to the satellites of Jupiter for the accuracy of that very chart, by which the crowds around him are mechanically directing their course.

The chief reason, however, for my dwelling so long on this central and governing relation, which the philosophy of intellect bears to all other philosophy, is, that I am anxious to impress their relation strongly on your minds; not so much with a view to the importance which it may seem to give to the particular science that is to engage us together, as with a view to those other sciences in which you may already have been engaged, or which may yet await you in the course of your studies. The consideration of mind, as universally present and presiding, – at once the medium of all the knowledge which can be acquired, and the subject of all the truths of which that knowledge consists, – gives, by its own unity, a sort of unity and additional dignity to the sciences, of which their scattered experiments and observations would otherwise be unsusceptible. It is an unfortunate

effect of physical inquiry, when exclusively devoted to the properties of external things, to render the mind, in our imagination, subordinate to the objects on which it is directed; the faculties are nothing, the objects every thing. The very nature of such inquiry leads us perpetually without to observe and arrange, and nothing brings us back to the observer and arranger within; or, if we do occasionally cast an inquisitive glance on the phenomena of our thought, we bring back with us what Bacon, in his strong language, calls “the smoke and tarnish of the furnace;” – the mind seems, to us, to be broken down to the littleness of the objects which it has, been habitually contemplating; and we regard the faculties that measure earth and heaven, and that add infinity to infinity, with a curiosity of no greater interest, than that with which we inquire into the angles of a crystal, or the fructification of a moss. “Ludit istis animus,” says one of the most eloquent of the ancients, – “Ludit istis animus, non proficit; et philosophiam a fastigio deducit in planum.” To rest in researches of this minute kind, indeed, if we were absolutely to REST in them, without any higher and profounder views, would truly be, as he says, to drag down philosophy from that pure eminence on which she sits, to the very dust of the plain on which we tread. To the inquirer, however, whose mind has been previously embued with this first philosophy, and who has learned to trace, in the wonders of every science, the wonders of his own intellectual frame, there is no physical research, however minute its object, which does not at once elevate the mind, and derive elevation from it. Nothing is truly humble, which can exercise faculties that are themselves sublime.

– Search, undismayed the dark profound,  
Where Nature works in secret; view the beds  
Of mineral treasure, and the eternal vault  
That bounds the hoary ocean; trace the forms  
Of atoms, moving with incessant change,  
Their elemental round; behold the seeds  
Of being, and the energy of life,  
Kindling the mass with ever active flame;  
Then to the secrets of the working mind  
Attentive turn; from dim oblivion call  
Her fleet ideal band; and bid them go  
Break through time's barrier, and o'ertake the hour  
That saw the heavens created; then declare,  
If ought were found in these external scenes  
To move thy wonder now.<sup>6</sup>

In the physics of the material universe, there is, it must be owned, much that is truly worthy of our philosophic admiration, and of the sublimest exertions of philosophic genius. But even that material world will appear more admirable, to him who contemplates it, as it were, from the height of his own mind, and who measures its infinity with the range of his own limited but aspiring faculties. He is unquestionably the philosopher most worthy of the name, who unites to the most accurate knowledge of mind, the most accurate knowledge of all the physical objects amid which he is placed; who makes each science, to each, reciprocally a source of additional illumination; and who learns, from both, the noblest of all the lessons which they can give, – the knowledge and adoration of that divine Being, who has alike created, and adapted to each other, with an order so harmonious, the universe of matter, and the universe of thought.

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<sup>6</sup> Akenside's Pleasures of Imagination, Book I. v. 512–526.

### LECTURE III

## RELATION OF THE PHILOSOPHY OF MIND TO THE SCIENCES AND ARTS MORE STRICTLY INTELLECTUAL

In my last Lecture, Gentlemen, I illustrated, at great length, the relation which the Philosophy of Mind bears to all the other sciences, as the common centre of each. These sciences I represented, as, in their relation to the powers of discovery, that are exercised in them, truly arts, in all the various intellectual processes of which, the artist is the same, and the instruments the same; and as to the perfection of any of the mechanical arts, it is essential, that we know the powers of the instruments employed in it, so, in the inventive processes of science of every kind, it seems essential to the perfection of the process, that we should know, as exactly as possible, the powers and the limits of these intellectual instruments, which are exercised alike in all, – that we may not waste our industry, in attempting to accomplish with them what is impossible to be accomplished, and at the same time may not despair of achieving with them any of the wonders to which they are truly adequate, if skilfully and perseveringly exerted; though we should have to overcome many of those difficulties which present themselves, as obstacles to every great effort, but which are insurmountable, only to those who despair of surmounting them.

It was to a consideration of this kind, as to the primary importance of knowing the questions to which our faculties are competent, that we are indebted for one of the most valuable works in our science, a work, which none can read even now, without being impressed with reverence for the great talents of its author; but of which it is impossible to feel the whole value, without an acquaintance with the verbal trifling, and barren controversies, that still perplexed and obscured intellectual science at the period when it was written.

The work to which I allude is the *Essay on the Human Understanding*, to the composition of which Mr Locke, in his preface, states himself to have been led by an accidental conversation with some friends who had met at his chamber. In the course of a discussion, which had no immediate relation to the subject of the Essay, they found themselves unexpectedly embarrassed by difficulties that appeared to rise on every side, when after many vain attempts to extricate themselves from the doubts which perplexed them, it occurred to Mr Locke, that they had taken a wrong course, – that the inquiry in which they were engaged was probably one which was beyond the reach of human faculties, and, that their *first* inquiry should have been, into the nature of the understanding itself, to ascertain what subjects it was fit to explore and comprehend.

“When we know our own strength,” he remarks, “we shall the better know what to undertake with hopes of success: and when we have well surveyed the powers of our own minds, and made some estimate what we may expect from them, we shall not be inclined either to sit still, and not set our thoughts on work at all, in despair of knowing anything; or, on the other side, question every thing, and disclaim all knowledge, because some things are not to be understood. It is of great use to the sailor, to know the length of his line, though he cannot with it fathom all the depths of the ocean. It is well he knows, that it is long enough to reach the bottom, at such places as are necessary to direct his voyage, and caution him against running upon shoals that may ruin him. – This was that which gave the first rise to this essay concerning the understanding. For I thought, that the first step towards satisfying several inquiries, the mind of man was very apt to run into, was to take a survey of our own understandings, examine our own powers, and see to what things they were adapted. Till that was done, I suspected we began at the wrong end, and in vain sought for satisfaction in a quiet and sure possession of truths that most concerned us, while we let loose our thoughts into the

vast ocean of being, as if all that boundless extent were the natural and undoubted possession of our understandings. – Thus men, extending their inquiries beyond their capacities, and letting their thoughts wander into those depths, where they can find no sure footing, it is no wonder that they raise questions and multiply disputes, which, never coming to any clear resolution, are proper only to continue and increase their doubts, and to confirm them, at last, in perfect scepticism; whereas, were the capacities of our understanding well considered, the extent of our knowledge once discovered, and the horizon found, which sets the bounds between the enlightened and dark parts of things, between what is and what is not comprehensible by us, men would perhaps, with less scruple, acquiesce in the avowed ignorance of the one, and employ their thoughts and discourse, with more advantage and satisfaction in the other.”<sup>7</sup>

These observations of Mr Locke illustrate, very happily, the importance of a right view of the limits of our understanding, for directing our inquiries to the objects that are truly within our reach. It is not the waste of intellect, as it lies torpid in the great multitude of our race, that is alone to be regretted in relation to science, which in better circumstances, it might improve and adorn. It is in many cases, the very industry of intellect, busily exerted, but exerted in labours that must be profitless, because the objects, to which the labour is directed, are beyond the reach of man. If half the zeal, and, I may add, even half the genius, which, during so many ages, were employed in attempting things impossible, had been given to investigations, on which the transcendental inquirers of those times would certainly have looked down with contempt, there are many names that are now mentioned only with ridicule or pity, for which we should certainly have felt the same deep veneration, which our hearts so readily offer to the names of Bacon and Newton; or perhaps even the great names of Bacon and Newton might, in comparison with them, have been only of secondary dignity. It was not by idleness that this high rank of instructors and benefactors of the world was lost, but by a blind activity more hurtful than idleness itself. To those who never could have thought of numbering the population of our own little globe, it seemed an easy matter to number, with precise arithmetical accuracy, the tribes of angels, and to assign to each order of spiritual beings its separate duties, and separate dignities, with the exactness of some heraldic pomp; and, amid all those visible demonstrations of the Divinity which surround us wherever we turn our view, there were minds that could think in relation to him, of every thing but his wisdom and goodness; as if He who created us, and placed around us this magnificent system of things, were an object scarcely worthy of our reverence, till we had fixed his precise station in our logical categories, and had determined, not the majestic relations which he bears to the universe, as created and sustained by his bounty, but all the frivolous relations which he can be imagined to bear to impossibilities and nonentities.

O, son of earth! attempt ye still to rise,  
By mountains pil'd on mountains, to the skies!  
Heaven still, with laughter, the vain toil surveys,  
And buries madmen in the heaps they raise.<sup>8</sup>

It is, indeed, then, to borrow Mr Locke's metaphor, of no slight importance to know the length of our line, though we cannot, with it, fathom all the depths of the ocean. With the knowledge, that, to a certain depth at least, we may safely confide in it, we shall not be corrupted, by our fear, to coast along the shore, with such cautious timidity as to lose all the treasures which might be obtained by a more adventurous voyage; nor tempted in the rashness of ignorance or despair, to trust ourselves wildly to every wind, though our course should be amidst rocks and quicksands.

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<sup>7</sup> Essay on the Human Understanding. – Introd. sect. 6, 7.

<sup>8</sup> Pope's Essay on Man, Ep. iv. v. 73–76.

The study of the natural limits of the faculties of the mind, has, indeed, sometimes been misrepresented, as favouring a tendency to vague and unlimited doubt on all subjects, even on those most important to individual and social happiness; as if the great names, to which we have long given our admiration, for the light which they have thrown on the powers and weaknesses of the human understanding, were not also the very names which we have been accustomed, not to admire merely, but to venerate, for excellence of a still nobler kind. Far from leading to general scepticism, it is, on the contrary, a sound study of the principles of our intellectual and moral nature, which alone can free from the danger of it. If the sceptical philosophy be false, as the assertors of this objection will allow that it most assuredly is, it can be overcome and destroyed only by a philosophy that is true; and the more deeply, and the more early, the mind is imbued with the principles of truth, the more confidently may we rely on its rejection of the errors that are opposed to them. It is impossible for one, who is not absolutely born to labour, to pass through life without forming, in his own mind, occasionally, some imperfect reflections on the faculties by which he perceives and reasons; or without catching, from those with whom he may associate, some of those vague notions, of a vague philosophy, which pass unexamined from mind to mind, and become current in the very colloquial language of the day. The alternatives, therefore, (if we can, indeed, think of any other alternative when truth is one,) are not those of knowledge and absolute ignorance of the mental phenomena, but of knowledge more or less accurate; because absolute ignorance, even though it were a state to be wished, is beyond our power to preserve, in one who enjoys, in any respects, the benefit of education and liberal society. We might, with much greater prospect of success, attempt, by merely keeping from his view all professed treatises on Astronomy, to prevent him from acquiring that slight and common acquaintance with the system of the heavenly bodies, which is necessary for knowing that the sun does not go round the earth, than we could hope to prevent him from forming, or receiving, some notions, accurate or inaccurate, as to the nature of mind; and we surely cannot suppose, that the juster those opinions are, as to the nature and force of the principles of belief, the feebler must the principles of belief appear. It is not so, that nature has abandoned us, with principles which we must fear to examine, and with truths and illusions which we must never dare to separate. In teaching us what our powers are incapable of attaining, she has at the same time, taught us what truths they may attain; and within this boundary, we have the satisfaction of knowing, that she has placed all the truths that are important for our virtue and happiness. He, whose eyes are the clearest to distinguish the bounding circle, cannot surely, be the dullest to perceive the truths that are within. To know only to doubt, is but the first step in philosophy; and to rest at this first step, is either imbecility or idleness. It is not there that Wisdom sees, and compares, and pronounces; it is Ignorance, that, with dazzled eyes, just opening from the darkness of the night, perceives that she has been dreaming, without being able to distinguish, in the sunshine, what objects really existing are around. He alone is the philosopher truly awake, who knows both how to doubt, and how to believe; believing what is evident on the very same principles, which lead him to doubt, with various degrees of uncertainty, where the evidence is less sure. To conceive, that inquiry must lead to scepticism, is itself a species of scepticism, as to the power and evidence of the principles to which we have given our assent, more degrading, because still more irrational, than that open and consistent scepticism which it dreads. It would, indeed, be an unworthy homage to truths, which we profess to venerate, to suppose, that adoration can be paid to them only while we are ignorant of their nature; and that to approach their altars would be to discover, that the majestic forms, which seem animated at a distance, are only lifeless idols, as insensible as the incense which we have offered to them.

The study of the powers and limits of the understanding, and of the sources of evidence in external nature and ourselves, instead of either forming or favouring a tendency to scepticism, is then, it appears, the surest, or rather the only mode, of removing the danger of such a tendency. That mind may soon doubt even of the most important truths, which has never learned to distinguish the doubtful

from the true. But to know well the irresistible evidence on which truth is founded, is to believe in it, and to believe in it forever.

Nor is it from the danger of scepticism only, that a just view of the principles of his intellectual constitution tends to preserve the philosophic inquirer. It saves him, also, from that presumptuous and haughty dogmatism, which, though free from doubt, is not, therefore, necessarily free from error; and which is, indeed, much more likely to be fixed in error than in truth, where the inquiry, that precedes conviction, has been casual and incomplete. A just view of our nature as intelligent beings, at the same time that it teaches us enough of our strength to allow us to rest with confidence on the great principles, physical, moral, and religious, in which alone it is of importance for us to confide, teaches us also enough of our weakness, to render us indulgent to the weakness of others. We cease to be astonished that multitudes should differ from us; because we know well, that while nature has made a provision for the universal assent of mankind to those fundamental physical truths, which are essential to their very existence, and those *fundamental truths* of another kind, which are equally essential to their existence as subjects of moral government, she has left them, together with principles of improvement that ensure their intellectual progress, a susceptibility of error, without which there could be no progression; and while we almost trace back the circumstances which have modified our own individual belief, we cannot but be aware, at the same time, how many sources there are of prejudice, and, consequently, of difference of opinion, in the various situations in which the multitudes, that differ from us, have been placed. To feel anger at human error, says an ancient philosopher, is the same thing as if we were to be angry with those who stumble in the dark, – with the deaf for not obeying our command, – with the sick, – with the aged, – with the weary. That very dulness of discernment, which excites at once our wonder and our wrath, is but a part of the general frailty of mortality; and the love of our errors is not less inherent in our constitution than error itself. It is this general constitution which is to be studied by us, that we may know with what mistakes and weaknesses we must have to deal, when we have to deal with our fellow-men; and the true art, therefore, of learning to forgive *individuals*, is to learn first how much we have to forgive *to the whole human race*. “*Illud potius cogitabis, non esse irascendum erroribus. Quid enim, si quis irascatur in tenebris parum vestigia certa ponentibus? Quid si quis surdis, imperia non exaudientibus? Quid si pueris, quod neglecto dispectu officiorum, ad lusus et ineptos æqualium jocos spectent? Quid si illis irasci velis, qui ægrotant, senescunt, fatigantur? Inter cætera mortalitatis incommoda, et hæc est, caligo mentium: nec tantum necessitas errandi, sed errorum amor. Ne singulis irascaris, universis ignoscendum: generi humano venia tribuenda est.*”<sup>9</sup>

How much of the fury of the persecuting spirit of darker ages would have been softened and turned into moderation, by juster views of the nature of man, and of all the circumstances on which belief depends! It appears to us so very easy to believe what we consider as true, – or, rather, it appears to us so impossible to disbelieve it, – that, if we judge from our own momentary feelings only, without any knowledge of the general nature of belief, and of all the principles in our mental constitution by which it is diversified, we very naturally look on the dissent of others as a sort of wilful and obstinate contrariety, and almost as an insulting denial of a right of approbation, which we consider ourselves, in these circumstances, as very justly entitled to claim. The transition from this supposed culpability to the associated ideas of pains and penalties, is a very natural one; and there is, therefore a sufficient fund of persecution in mere ignorance, though the spirit of it were not, as it usually is, aggravated by degrading notions of the divine Being, and false impressions of religious duty. Very different are the sentiments which the science of mind produces and cherishes. It makes us tolerant, not merely by showing the absurdity of endeavouring to overcome, by punishment, a belief which does not depend on suffering; but which may remain, and even gather additional strength, in imprisonment, in exile, under the axe, and at the stake. The absurdity of every attempt of this kind it shews indeed; but it

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<sup>9</sup> Seneca, de Ira, lib. ii. cap. 9.

makes us feel, still more intimately, that injustice of it, which is worse than absurdity, – by shewing our common nature, in all the principles of truth and error, with those whom we would oppress; all having faculties that may lead to truth, and tendencies of various kinds which may mislead to error, and the mere accidental and temporary difference of power being, if not the greatest, at least the most obvious circumstance, which, in all ages, has distinguished the *persecutor* from the *persecuted*.

Let not this weak, unknowing hand,  
Presume thy bolts to throw;  
Or deal damnation round the land,  
On all I judge thy foe!

If I am right, – thy grace impart,  
Still in the right to stay;  
If I am wrong, – O, teach my heart,  
To find the better way.<sup>10</sup>

Such is the language of devout philosophy. No proud assertion of individual infallibility, – no triumph over the consequences in others, of a fallible nature, which ourselves partake in common, – but the expression of feelings more suited to earthly weakness, – of a modest joy of belief, which is not less delightful for the humility that tempers it; and of a modest sorrow for the seeming errors of others, to which the consciousness of our own nature gives a sympathy of warmer interest. The more important the subject of difference, the *greater*, not the *less*, will be the indulgence of him who has learned to trace the sources of human error, – of error, that has its origin not in our weakness and imperfection merely, but often in the most virtuous affections of the heart, – in that respect for age, and admiration of virtue, and gratitude for kindness received, which make the opinions of those whom we love and honour seem to us, in our early years, as little questionable, as the virtues which we love to contemplate, or the very kindness which we feel at every moment beaming on our heart, in the tender protection that surrounds us. That the subjects on which we may differ from others, are *important to happiness*, of course implies, that it is no slight misfortune *to have erred*; and that the mere error, therefore, must be already too great an evil to require any addition from our individual contempt or indignation, far less from the vengeance of public authority, – that *may* be right, in the opinions which it conceives to be insulted by partial dissent; but which *must* be wrong, in the means which it takes to avenge them. To be sincerely thankful for truths received, is, by the very nature of the feeling, to be sensible how great a blessing those have lost who are deprived of the same enjoyment; and to look down, then, with insolent disdain, on the unfortunate victim of error, is, indeed to render contemptible, (as far as it is in our feeble power to render it contemptible,) not the error which we despise, but the truth which allows us to despise it.

The remarks which I have as yet made, on the effects of acquaintance with the Philosophy of Mind, relate to its influence on the general spirit of philosophical inquiry; the advantages which must be derived, in every science, from a knowledge of the extent of the power of the intellectual instruments which we use for the discovery of truth; the skill which we thence acquire in distinguishing the questions in which we may justly hope to discover truth, from those questions of idle and endless controversy, the decision of which is altogether beyond the reach of our faculties; and the consequent moderation in the temper, with which we look both to our own possible attainments, and to the errors of others.

But beside these general advantages, which the Philosophy of Mind extends to all the inquiries of which human genius is capable, there are some advantages more peculiarly felt in certain

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<sup>10</sup> Pope's Universal Prayer, v. 25–32.

departments of science or art. It is not merely *with* the mind that we operate; the subject of our operations is also often the *mind itself*. In education, in criticism, in poetry, in eloquence, the mind has to act upon mind, to produce in it either emotions that are *temporary*, or affections and opinions that are *permanent*. We have to instruct it, – to convince it, – to persuade it, – to delight it, – to soften it with pity, – to agitate it with terror or indignation; – and all these effects, when other circumstances of genius are the same, we shall surely be able to produce more readily, if we know the natural laws of thought and emotion; the feelings which are followed by other feelings; and the thoughts, which, expanding into other thoughts, almost of themselves produce the very passion, or conviction, which we wish to excite.

“One considerable advantage,” says Mr Hume, “which results from the accurate and abstract philosophy, is its subserviency to the easy and humane; which, without the former, can never attain a sufficient degree of exactness in its sentiments, precepts, or reasonings. All polite letters are nothing but pictures of human life in various attitudes and situations; and inspire us with different sentiments of praise or blame, admiration or ridicule, according to the qualities of the object which they set before us. An artist must be better qualified to succeed in this undertaking; who, besides a delicate taste and quick apprehension, possesses an accurate knowledge of the internal fabric, the operations of the understanding, the workings of the passions, and the various species of sentiment which discriminate vice and virtue. However painful this inward search or inquiry may appear, it becomes, in some measure, requisite to those who would describe with success the obvious and outward appearances of life and manners. The anatomist presents to the eye the most hideous and disagreeable objects; but his science is highly useful to the painter in delineating even a Venus or an Helen. While the latter employs all the richest colours of his art, and gives his figures the most graceful and engaging airs, he must still carry his attention to the inward structure of the human body, the position of the muscles, the fabric of the bones, and the use and figure of every part or organ. Accuracy is, in every case, advantageous to beauty, and just reasoning to delicacy of sentiment; – in vain would we exalt the one by depreciating the other.”<sup>11</sup>

There is a most striking passage to the same purport, in that beautiful dialogue on ancient oratory, which has been ascribed, without any very satisfactory evidence, to various authors, particularly to Quintilian, the younger Pliny, and Tacitus, and which is not unworthy of the most eminent of the names to which it has been ascribed. After dwelling on the universal science and erudition of the great master of Roman eloquence, the chief speaker in the dialogue proceeds to show the peculiar advantage which oratory must derive from *moral and intellectual science*, to the neglect of which fundamental study, as superseded by the frivolous disputations of the rhetorical schools, he ascribes the decay of eloquence in the age of which he speaks.

“Ita enim est, optimi viri, ita, ex multa eruditione, ex pluribus artibus, et omnium rerum scientia, exundat et exuberat illa admirabilis eloquentia. Neque oratoris vis et facultas, sicut ceterarum rerum, angustis et brevibus terminis eluditur; sed is est orator, qui de omni quæstione pulchre, et ornate, et ad persuadendum apte dicere, pro dignitate rerum ad utilitatem temporum, cum voluptate audientium, possit. Hæc sibi illi veteres persuadebant. Ad hæc efficienda intelligebant opus esse, non ut Rhetorum scholis declamarent, – sed ut his artibus pectus impleant, in quibus de bonis ac malis, de honesto ac turpi, de justo et injusto disputatur; – de quibus copiose, et varie, et ornate, nemo dicere potest, nisi qui cognovit naturam humanam. – Ex his fontibus etiam illa profluunt, ut facilius iram iudicis vel instiget, vel leniat, qui scit quid ira, promptius ad miserationem impellat qui scit quid sit misericordia, et quibus animi motibus concitetur. In his artibus exercitationibusque versatus orator, sive apud infestos, sive apud cupidos, sive apud invidentes, sive apud tristes, sive apud timentes dicendum habuerit, tenebit

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<sup>11</sup> Inquiry concerning the Human Understanding, sec. I.

habenas animorum, et prout cujusque natura postulabit, adhibebit manum et temperabit orationem, parato omni instrumento, et ad usum reposito.”<sup>12</sup>

What is the whole art of criticism, in its most important applications, but the knowledge of the most natural successions of thought and feeling in the mind? We judge of the perspicuity and order of a discourse, by knowing the progress in which the mind, by the development of truth after truth, may be made at last to see the full meaning of the most complex proposition. We judge of the beauty of impassioned poetry or eloquence, by knowing whether the figures, the images, the very feelings described, be such as, from our observation of the laws that regulate the internal series of changes in the mind, we know to be consistent with that state of emotion, in which a mind must exist that has been placed in the situation supposed. If all other circumstances be equal, he will undoubtedly be the best critic, who knows best the phenomena of human thought and feeling; and, without this knowledge, criticism can be nothing but a measurement of words, or a repetition of the ever repeated and endless common places of rhetoric. The knowledge of *nature*, – of the necessity of which critics speak so much, and so justly, and which is as essential to the critic himself, as to the writer on whom he sits in judgment, – is only another name for the knowledge of the successive transitions of feeling of the mind, in all the innumerable diversities in which it is capable of being modified, by the variety of circumstances in which it maybe placed. It is for this reason, that, with so great an abundance of the mere art, or rather of the mere technical phrases of criticism, we have so very little of the *science* of it; because the science of criticism implies an acquaintance with the philosophy of thought and passion, which few can be expected to possess; and though nothing can be easier than to deliver opinions, such as pass current in the drawing-room, and even in the literary circle, which the frivolous may admire as profound, and the ignorant as erudite, and which many voices may be proud to repeat; though even the dull and pedantic are as able as the wise to say, in fluent language, that one passage of a work of genius is beautiful, and another the reverse, – because one of them is in accordance with some technical rules, or because Homer and Milton have passages similar to the one, and not to the other: it is far from being equally easy to show, how the one passage is beautiful, from its truth of character, and the other, though perhaps rich in harmony of rhythm and rhetorical ornament, is yet faulty, by its violation of the more important harmony of thought and emotion, – a harmony which nature observes as faithfully, in the progress of those vehement passions that appear most wild and irregular, as in the calmest successions of feeling of the most tranquil hours. It would indeed, be too much to say, as in the well known couplet of Pope,

“Let such teach others who themselves excel,  
And censure freely, who have written well;”<sup>13</sup>

for the critic requires only *one* of the two great talents, which in the poet, ought to exist together, but which may yet exist separately. In the poet, there must be, in the first place, an inventive fancy to bring together thoughts and images which have never been combined before; and with this inventive fancy, a discriminating judgment, which is to measure, by the standard of nature, the products of invention; and to retain them, only if they appear such, as though perhaps never before combined, might yet, in conformity with the natural laws of thought, have occurred to a mind, in the circumstances represented, as truly, as the other thoughts or images, which the works of other poets have rendered more familiar. This latter talent, – the judgment which determines the intrinsic beauty and fidelity to general nature, – is all which is absolutely requisite to the *critic*, who is not, therefore, under the necessity of being himself “the great sublime” which he draws. Yet, though all the elements of excellence in the artist are not absolutely requisite for the judgment of the sage and

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<sup>12</sup> Tacitus, edit. Lipsii, p. 484, 5.

<sup>13</sup> Essay on Criticism, v. 15, 16.

discriminating admirer of the noble works which that excellence may have produced, some of these elements unquestionably are requisite, – elements, for which the critic may search in vain in all the rules of rhetoricians, and even in the perusal of all the masterpieces of ancient and modern times, unless, to an acquaintance with these, he add an accurate acquaintance with that *intellectual and moral nature of man*, the beautiful conformity to which was the essential charm of all the pathos, and all the eloquence, which he has admired.

There is another art, however, to which knowledge of the intellectual and moral nature of man is still more important – that noble art, which has the charge of training the ignorance and imbecility of infancy into all the virtue, and power, and wisdom of maturer manhood – of forming, of a creature, the frailest and feeblest perhaps which heaven has made, the intelligent and fearless sovereign of the whole animated creation, the interpreter, and adorer, and almost the representative of the Divinity. The art, which performs a transformation so wondrous, cannot but be admirable itself; and it is from observation of the laws of mind, that all which is most admirable in it is derived. These laws we must follow indeed, since they exist not by our contrivance, but by the contrivance of that nobler wisdom, from which the very existence of the mind has flowed; yet, if we know them well, we can *lead* them, in a great measure, even while we *follow* them. And, while the helpless subject of this great moral art is every moment requiring our aid, – with an understanding that may rise, from truth to truth, to the sublimest discoveries, or may remain sunk forever in ignorance, and with susceptibilities of vice that may be repressed, and of virtue that may be cherished, – can we know too well the means of checking what is evil, and of fostering what is good? It is too late to lie by, in indolent indulgence of affection, till vice be already formed in the little being whom we love, and to labour then to remove it, and to substitute the virtue that is opposite to it. Vice already formed, is almost beyond our power. It is only in the state of latent propensity, that we can with much reason expect to overcome it by the moral motives which we are capable of presenting; and to distinguish this propensity before it has expanded itself, and even before it is known to the very mind in which it exists, – to tame those passions which are never to rage, and to prepare, at a distance, the virtues of other years, – implies a knowledge of the mental constitution, which can be acquired only by a diligent study of the nature, and progress, and successive transformations of feeling. It is easy to know, that praise or censure, reward or punishment, may increase or lessen, the tendency to the repetition of any particular action; and this, together with the means of elementary instruction, is all which is commonly termed *education*. But the true science of education is something far more than this. It implies a skilful observation of the past, and that long foresight of the future, which experience and judgment united afford. It is the art of seeing, not the *immediate effect* only, but the *series of effects* which may follow any particular thought or feeling, in the infinite variety of possible combinations – the art often of drawing virtue from apparent evil, and of averting evil that may rise from apparent good. It is, in short, the philosophy of the human mind applied practically to the human mind, – enriching it, indeed, with all that is useful or ornamental in knowledge, but at the same time giving its chief regard to objects of yet greater moment – averting evil, which all the sciences together could not compensate, or producing good, compared with which all the sciences together are as nothing.

### **Footnotes**

## LECTURE IV

# RELATION OF THE PHILOSOPHY OF MIND TO THE CULTIVATION OF MORAL FEELING

We have already, Gentlemen, considered the relation which the *Philosophy of Mind* bears to the *Sciences in general*, and its particular application to those sciences and arts, in which the mind is not merely the instrument with which we carry on our intellectual operations, but the very subject on which we operate, as in the great arts of reasoning, and persuading, of delighting with all the charms of poetry and eloquence, of judging of the degrees of excellence that have been attained in these delightful arts; and, still more, its application to the noblest, though, in proportion to its value, the least studied of all the arts, the art of *education*. It remains still, to point out some moral effects which the study of the Science of Mind produces in the *inquirer himself*, effects which may not be obvious at first sight, but which result from it, as truly as the intellectual advantages already pointed out.

One very powerful and salutary influence of moral science arises directly from the mere contemplation of the objects with which it is conversant – the benevolent affections, the pleasure which attends these, the sacrifices that are made by generous virtue, and all the sublime admiration which they excite – the sordid and malevolent, and joyless passions of the selfish – the fear and shame that attend the guilty in society, and the horrors that, with a certainty of constant return more dreadful than their very presence, await them in their solitary hours. It is good to have these often before us, and to trace and contrast all the immediate, and all the remote effects of vice and virtue, even though we should form, at the time, no direct reference to our own past or future conduct. Without any such reference to ourselves, we must still be sensible of the pleasure and serene confidence which attend the one, and of the insecurity and remorse which forever hang over the other; and the remaining impressions of love and disgust, will have an influence on our future conduct, of which we may probably be altogether unconscious at the time. It is, in truth, like the influence of the example of those with whom we habitually associate, which no one perceives at any particular moment, though all are every moment subject to it; and to meditate often on virtue and happiness, is thus almost to dwell in a sort of social communion with the virtuous and happy. The influence of moral conceptions has, in this respect, been compared to that of *light*, which it is impossible to approach, without deriving from it some faint colouring, even though we should not sit in the very sunshine, – or to that of *precious odours*, amid which we cannot long remain, without bearing away with us some portion of the fragrance. “Ea enim philosophiæ vis est, ut non solum studentes, sed etiam conversantes juvet. Qui in solem venit, licet non in hoc venerit, colorabitur: qui in unguentaria taberna resederunt, et paulo diutius commorati sunt, odorem secum loci ferunt: et qui apud philosophiam fuerunt, traxerint aliquid necesse est, quod prodesset etiam negligentibus.”<sup>14</sup>

The nature of the process, by which this moral benefit arises from the mere contemplation of moral objects, frequently repeated, is far from obscure, though it depends on a cause to which you may perhaps as yet have paid little attention, but which, in an after part of the course, I shall have an opportunity of illustrating at length, – the influence of the associating principle in the mind, – of that principle, by which ideas and other feelings, that have often co-existed, acquire, forever after, an almost indissoluble union. It is not merely, therefore, by having traced, more accurately than others, the consequences of vice and virtue, as affecting the general character, that the lover of moral science strengthens his admiration of virtue, and his abhorrence of vice. But, by the frequent consideration of virtue, together with the happiness which it affords, and of vice, together with its consequent misery, the notions of these become so permanently, and so deeply associated, that future virtue appears

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<sup>14</sup> Seneca, Ep. 108.

almost like happiness about to be enjoyed, and future vice like approaching misery. The dread of misery, and the love of happiness, which are essential principles of our very physical existence, are thus transformed into principles of *moral conduct*, that operate, before reflection, with the rapidity, and almost with the energy of instincts, – and that, after reflection, add to our virtuous resolutions a force and stability, which, as results of mere reasoning, they could not possess.

It is, besides, no small advantage of the abstract consideration of virtue, as opposed to the miseries of vice, that, in considering these philosophically, we regard them as stripped of every thing that can blind or seduce us; and we behold them, therefore, truly as they are. It is not in the madness of intemperate enjoyment, that we see drunkenness in the goblet, and disease in the feast. Under the actual seduction of a passion, we see dimly, if we see at all, any of the evils to which it leads; and if the feelings, of which we are then conscious, were those which were forever after to be associated with the remembrance of the passion, it would appear to us an object, not of disgust or abhorrence, but of delight and choice, and almost of a sort of moral approbation. It is of importance, then, that we should consider the passion, at other moments than these, that the images associated with it may be not of that brief and illusive pleasure, which stupifies its unfortunate victim, but of its true inherent character, of deformity, and of the contempt and hatred which it excites in others. Such is the advantage of the point of view, in which it is seen by the *moral inquirer*, to whom it presents itself, not under its momentary character of pleasure, but under its lasting character of pain and disgust. By habituating himself to consider the *remote*, as well as the immediate results of all the affections and passions, he learns to regard virtue, not merely as good in itself, at the moment in which it is called into exercise, but as an inexhaustible source of good which is continually increasing; and vice not merely as a temporary evil in itself, but as a source of permanent and yet deeper misery and degradation. Every generous principle, which nature has given him, is thus continually deriving new strength, from the very contemplation of the good which it affords; and if, in the frailty of mortality, he should still be subject to the occasional influence of those very passions, which, in cooler moments, he detests, he yet does not fall, thoroughly and hopelessly. There are lingering associations of moral beauty and happiness in his mind, which may save him still, – associations that must render it, in some degree at least, more difficult for him than for others, to yield to seductions, of which he has long known the vanity, and which perhaps even may, in some happier hour, lead him back to that virtue, of which he has never wholly forgotten the charms.

The charms of virtue, indeed, it is scarcely possible, for him who has felt them, wholly to forget. There may be eyes that can look unmoved on the external beauty which once delighted them. But who is there that has ever been alive to its better influence, who can think of moral loveliness without a feeling of more than admiration, – without a conscious enjoyment, in the possession of what is so truly admirable, or a sigh at having lost the privilege of dwelling on it with delight, and at being obliged to shrink from the very thought of what it once appeared?

“For what can strive  
With virtue? which of nature's regions vast  
Can in so many forms produce to sight  
Such powerful beauty? – Beauty, which the eye  
Of hatred cannot look upon secure;  
Which Envy's self contemplates, and is turn'd  
Ere long to tenderness, to infant smiles,  
Or tears of humblest love. Is ought so fair,  
In all the dewy landscapes of the Spring,  
The Summer's noontide groves, the purple eve  
At harvest-home, or in the frosty moon  
Glittering on some smooth sea, is aught so fair

As virtuous friendship? As the honour'd roof,  
Whither, from highest heaven, immortal love,  
His torch ethereal, and his golden bow,  
Propitious brings, and there a temple holds,  
To whose unspotted service gladly vow'd,  
The social bond of parent, brother, child,  
With smiles, and sweet discourse, and gentle deeds,  
Adore his power? What gift of richest clime  
E'er drew such eager eyes, or prompted such  
Deep wishes, as the zeal, that snatcheth back  
From Slander's poisonous tooth a *foe's* renown,  
Or crosseth Danger in his lion-walk,  
A rival's life to rescue?"

The study of moral science, then, we have seen, has a direct tendency to strengthen our attachment to the virtues which we habitually contemplate. *Another* most important advantage derived from it, relates to us in our higher character of beings *capable of religion*, increasing our devotion and gratitude to the Divinity, by the clearest manifestation which it gives us of his provident goodness in the constitution and government of the moral world.

The *external universe*, indeed, though our study were confined to the laws which regulate its phenomena, would afford, in itself, abundant proof of the power and wisdom by which it was created. But power and wisdom *alone* excite admiration only, not love; which, though it may be feigned in the homage that is universally paid to power, is yet, as an offering of the heart, paid to it only when it is combined with benevolence. It is the splendid benevolence, therefore, of the Supreme Being, which is the object of our grateful adoration; and, to discover this benevolence, we must look to creatures that have not existence *merely*, like inanimate things, but a capacity of enjoyment, and means of enjoyment. It is in man, – or in beings capable of knowledge and happiness, like man, – that we find the solution of the wonders of the creation; which would otherwise, with all its regularity and beauty, be but a solitary waste, like the barren magnificence of rocks and deserts. God, says Epictetus, has introduced man into the world, to be the spectator of his works, and of their divine Author; and not to be the spectator only, but to be the announcer and interpreter of the wonders which he sees and adores. Ὁ Θεός – τὸν ἄνθρωπον θεατὴν εἰσήγαγεν αὐτοῦ τε καὶ τῶν ἔργων τῶν αὐτοῦ· καὶ οὐ μόνον θεατὴν ἀλλὰ καὶ ἐξηγητὴν αὐτῶν.<sup>15</sup> “Hæc qui contemplatur,” says another ancient Stoic, with a little of the bold extravagance of his school, – “Hæc qui contemplatur, quid Deo præstat? Ne tanta ejus opera sine teste sint.” – “Curiosum nobis natura ingenium dedit; et artis sibi ac pulchritudinis suae conscia, spectatores nos tantis rerum spectaculis genuit, perditura fructum sui, si tam magna, tam clara, tam subtiliter ducta, tam nitida, et non uno genere formosa solitudini ostenderet.”<sup>16</sup>

In the study of what might be considered as the very defects of our moral nature, how pleasing is it, to the philosophic inquirer, to discover that provident arrangement of a higher Power, which has rendered many of the most striking of the apparent evils of life subservient to the production of a general utility, that had never entered into the contemplation of its remote authors. He who has never studied the consequences of human actions, perceives, in the great concourse of mankind, only a multitude of beings consulting each his own peculiar interest, or the interest of the very small circle immediately around him, with little, if any, apparent attention to the interests of others. But he who has truly studied human actions and their consequences, sees, in the prosecution of all these separate interests, that universal interest which is their great result; and the very principle of self-regard thus

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<sup>15</sup> Dissertat. ab Arrian, collect, lib. i. c. 6. – p. 35. Edit. Upton.

<sup>16</sup> Seneca de otio Sapient. c. 32.

contributing to social happiness, – unconsciously indeed, but almost as surely as the principle of benevolence itself.

Each individual seeks a several goal,  
But Heaven's great view is *one*, and that the whole.  
That counterworks each folly and caprice;  
That disappoints the effect of every vice; —  
All Virtue's ends from Vanity's can raise;  
Which seeks no interest, no reward but praise;  
And build on wants, and on defects of mind,  
The joy, the peace, the glory of mankind.<sup>17</sup>

I have already,<sup>18</sup> – when treating of the influence of just views of the extent and limits of our faculties, in fixing the proper tone of inquiry, and lessening equally the tendency to the opposite extremes of dogmatism and scepticism, – stated some important moral advantages that arise from this very moderation of the tone of inquiry, particularly with respect to the temper with which it prepares us to receive dissent from our opinions without anger, or insolent disdain, or even astonishment. So much of the intercourse of human society consists in the reciprocal communication of opinions which must often be opposed to each other, that this preparation of the temper, whether for amicable and equal discussion, or for mutual silent forbearance, is not to be lightly appreciated as an element in the sum of human happiness. On this point, however, and on its relation to the still greater advantages, or still greater evils, of national or legislative tolerance or intolerance, I before offered some remarks, and therefore merely allude to it at present.

The tolerance with which we receive the opinions of others is a part, and an indispensable part, of that general refinement of manners to which we give the name of *politeness*. But politeness itself, in all its most important respects, – indeed in every respect, in which it is to be separated from the mere fluctuating and arbitrary forms and ceremonies of the month or year, – is nothing more than *knowledge of the human mind directing general benevolence*. It is the art of producing the greatest happiness, which, in the mere external courtesies of life, can be produced, by raising such ideas or other feelings in the minds of those with whom we are conversant, as will afford the most pleasure, and averting, as much as possible, every idea which may lead to pain. It implies, therefore, when perfect, a fine knowledge of the natural series of thoughts, so as to distinguish, not merely the thought which will be the immediate or near effect of what is said or done, but those which may arise still more remotely; and he is the most successful in this art of giving happiness, who sees the future at the greatest distance. It is this foresight acquired by attentive observation of the various characters of mankind in a long intercourse with society, which is the true knowledge of the world; for the knowledge of the mere *forms* and *ceremonies* of the world, which is of far easier acquisition, is scarcely worthy of being called a part of it. The essential, and the only valuable part of politeness then, is as truly the result of study of the human mind, as if its minutest rules had formed a regular part of our systems of intellectual and moral philosophy. It is the philosophy indeed of those, who scarcely know that they are philosophizing; because *philosophy*, to them, implies something which has no other ornaments than *diagrams* and frightful *algebraic characters*, laid down in systems, or taught in schools and universities, with the methodical tediousness of rules of grammar; and they are conscious, that all, or the greatest part of what they know, has been the result of their own observation, and acquired in the very midst of the amusements of life. But he, who knows the world, must have studied the mind of man, or at least – for it is only a partial view of the mind which is thus formed –

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<sup>17</sup> Pope's Essay on Man, Ep. ii. v. 237–240, and 245–248.

<sup>18</sup> [Lect. III.](#)

must have studied it in some of its most striking aspects. He is a *practical* philosopher, and, therefore, a *speculative* one also, since he must have founded his rules of action on certain principles, the results of his own observation and reflection. These results are, indeed, usually lost to all but to the individual: and the loss is not to be considered as slight, merely because the knowledge, which thus perishes, has been usually applied by its possessor to frivolous purposes, and sometimes perhaps to purposes still more unworthy. When we read the maxims of La Rochefoucauld, which, false as they would be, if they had been intended to give us a faithful universal picture of the moral nature of man, were unfortunately too faithful a delineation of the passions and principles that immediately surrounded their author, and met his daily view, in the splendid scenes of vanity and ambitious intrigue to which his observation was confined, – it is impossible not to feel, that, acute and subtle as they are, many of these maxims must have been only the expression of principles, which were floating, without being fixed in words, in the minds of many of his fellow courtiers; and the instruction, which might be received from those who have been long conversant with mankind, in situations favourable to observation, if, by any possibility, it could be collected and arranged, would probably furnish one of the most important additions which could be made to moral science.

How much politeness consists in knowledge of the natural succession of thoughts and feelings, and a consequent ready foresight of the series of thoughts, which it is in our power indirectly to excite or avert, must have presented itself in a very striking manner to every one, whose professional duties, or other circumstances, have led him to pay attention to the lower orders of society. The most benevolent of the poor, in situations too in which their benevolence is most strongly excited, as in the sickness of their relations or friends, and in which they exert themselves to relieve obvious pain, with an assiduity of watching and fatigue, after all the ordinary fatigues of the day, that is truly honourable to their tenderness, have yet little foresight of the mere pains of thought; and while in the same situation, the rich and better educated, with equal, or perhaps even with less benevolence of intention, carefully avoid the introduction of any subject, which might suggest, indirectly to the sufferer the melancholy images of parting life, the conversation of the poor, around the bed of their sick friend, is such as can scarcely fail to present to him every moment, not the probability merely, but almost the certainty of approaching death. It is impossible to be present, in these two situations, without remarking the benefit of a little knowledge of the human mind, without which, far from fulfilling its real wishes, benevolence itself may be the most cruel of torturers.

The same species of foresight which is essential to the refinements of social intercourse, is equally essential in the active occupations of life, to that knowledge of times and circumstances, which is so important to success; and though this knowledge may be too often abused, to unworthy purposes, by the sordid and the servile, it is not the less necessary to those who pursue only honourable plans, and who avail themselves only of honourable means. Such is the nature of society, that the most generous and patriotic designs still require some *conduct* to procure for them authority; and, at least in the public situations of life, without a knowledge of the nature both of those who are to govern, and of those who are to be governed, though it may be very easy to *wish well to society*, the hardest of all tasks will be the task of *doing it good*.

May I not add, as another salutary moral effect of the Science of Mind, the tendency which the study of the general properties of our common nature has to lessen that undue veneration, which, in civilized society, must always attend the adventitious circumstances of fortune, and to bring this down, at least some degrees, nearer to that due respect which is indispensable for the tranquillity and good order of a state, and which no wise and patriotic moralist, therefore, would wish to see diminished. It is only in the tumultuous phrenzy of a revolution, however, or in periods of great and general discontent, that the respect of the multitude for those who are elevated above them, in rank and fortune, is likely to fall beneath this salutary point. So many of the strongest principles of our nature, favour the *excess* of it, that, in the ordinary circumstances of society, it must always pass far beyond the point of calm respect; so far beyond it, indeed, that the lesson which the people require most frequently to be taught,

is, not to venerate the very guilt and folly of the rich and powerful, because they are the guilt and folly of the rich and powerful. It is to the objects of the idolatry themselves, however, that the study of a science, which considers them as stripped of every adventitious distinction, and possessing only the common virtues and talents of mankind, must be especially salutary. In the ordinary circumstances of a luxurious age, it is scarcely possible for the great to consider themselves as what they truly are; and though, if questioned as to their belief of their common origin with the rest of mankind, they would no doubt think the question an absurd one, and readily own their descent from the same original parentage; there can be as little doubt, that in the silence of their own mind, and in those hours of vanity and ambition, which, to many of them, are almost the whole hours of life, this tie of common nature is rarely, if ever felt. It is impossible indeed, that it should be often felt, because, in the circumstances in which they are placed, there is every thing to remind them of a *superiority*, of which their passions themselves are sufficiently ready to remind them, and very little to remind them of an *equality*, from the contemplation of which all their passions are as ready to turn away. There are, however, some circumstances which are too strong for all these passions to overcome, and which force in spite of them, upon the mind that self-knowledge, which in other situations, it is easy to avoid. In pain and sickness, notwithstanding all the vain magnificence which the pride of grandeur spreads around the couch, and the profusion of untasted delicacies, with which officious tenderness strives to solicit an appetite that loathes them, he who lies upon the couch within, begins to learn his own nature, and sees through the splendour that seems to surround him, as it were, without touching him, how truly foreign it is to that existence, of which before it seemed to form a part. The feeling that he is but a *man*, in the true sense of that word, as a frail and dependant being like those around him, is one of the first feelings, and perhaps not one of the least painful, which arise in such a situation. The impression, however, of this common nature, is, while it lasts, a most salutary one; and it is to be regretted only, that health cannot return without bringing back with it all those flattering circumstances which offer the same seductions as before to his haughty superiority.

The sight of death, or of the great home of the dead, in like manner, seldom fails to bring before us our common and equal nature. In spite of all the little distinctions which a churchyard exhibits, in mimic imitation, and almost in mockery, of the great distinctions of life, the turf, the stone with its petty sculptures, and all the columns and images of the marble monument; as we read the inscription, or walk over the sod, we think only of *what lies beneath in undistinguishable equality*. There is scarcely any one on whom these two great equalizing objects, sickness and the sight of death, have not produced, for a short time, at least, some salutary moral impression. But these are objects which cannot often occur, and which are accompanied with too many distressing circumstances, to render it desirable that they should be of very frequent occurrence. The study of the *mind*, of our common moral and intellectual nature, and of those common hopes which await us, as immortal beings, seems in some degree to afford the advantage, without the mixture of evil: for, though in such speculative inquiries, the impression may be less striking than when accompanied with painful circumstances, it is more permanent, because, from the absence of those powerful circumstances, it is more frequently and willingly renewed. In the philosophy of mind, all those heraldic differences which have converted mere human vanity into a science, are as nothing. It is *man* that is the object of investigation, and man with no distinctions that are adventitious. The feelings, the faculties, which we consider, are endowments of the rich and powerful indeed; but they are endowments also of the meanest of those on whom they look with disdain. It is something, then, for those whose thoughts are continually directed by external circumstances, to that perilous elevation on which they are placed, to be led occasionally, as in such inquiries they must be, to measure themselves and others without regard to the accidental differences of the heights on which they stand, and to see what it is in which they truly *differ*, and what it is in which they truly *agree*.

In the remarks already made, on the study of the Science of Mind, we have considered its effects on the progress of the other sciences, and on the moral dispositions. But, though the study

had no effects of this kind, moral or intellectual, is not the mind itself a part of nature, and *as a mere physical object*, deserving of our profoundest and most intent investigation? or shall it be said, that while we strive, not merely to measure the whole earth, and to follow in our thought the revolutions of these great orbs, whose majesty may almost be said to force from us this homage of admiration, but to arrange, in distinct tribes, those animalcular atoms, whose very existence we learn only from the glass through which we view them; the observing and calculating mind itself is less an object of universal science, than the antennae of an insect, or the filaments of a weed? Would it be no reproach to man, even though he knew all things besides, that he yet knew far less accurately than he might know, his own internal nature, – like voyagers who delight in visiting every coast of the most distant country, without the slightest acquaintance, perhaps, with the interior of their own?

Qui terræ pelagique vias, mundique per omnes  
Articulos spatiat ovans, metasque suorum  
Herculeas audet supra posuisse laborum,  
Neglectus jacet usque sibi, dumque omnia quærit,  
Ipse sui quæsit abest; incognita tellus  
Solut nauta latet, propiorque ignotior orbis.

Would the lines which follow these, if indeed there were any one to whom they were applicable in their full extent, convey praise less high than that which might be given to the observer of some small nerve or membrane, that had never been observed before, or the discoverer of a new species of earth, in some pebble before unanalyzed?

Tu melior Tiphys, spreto jam Phasidis auro,  
In te vela paras, animatos detegis orbis,  
Humanasque aperis ausis ingentibus oras.  
Jamque novos laxari sinus, animæque latentis  
Arcanas reserare vias, cœlosque recessus  
Fas aperire tibi, totamque secludere mentem.

To the *mind*, considered as a mere object of physical inquiry, there is one circumstance of interest, that is peculiar. It is the part of our mixed nature which we have especially in view as often as we think of *self*, – that by which we began to exist, and continue to exist, by which in every moment of our being, we have rejoiced, and hoped, and feared, and loved; or rather, it is that which has been itself, in all our emotions, the rejoicer, the hoper, the fearer. To inquire into the history of the mind, therefore, is in truth to look back, as far as it is permitted to us to look back, on the whole history of our life. It is to think of those many pleasing emotions which delighted us when present, or of those sadder feelings, which when considered as past, become delightful, almost like the feelings that were in themselves originally pleasing, and in many cases, are reviewed with still greater interest. We cannot attempt to think of the origin of our knowledge, without bringing before us scenes and persons most tenderly familiar; and though the effect of such remembrances is perhaps less powerful, when the mind is prepared for philosophical investigation, than in moments in which it is more passive, still the influence is not wholly lost. He must be a very cold philosopher indeed, who, even in intellectual analysis, can retrace the early impressions of his youth, with as little interest as that with which he looks back on the common occurrences of the past day.

But it is not any slight interest which it may receive from such peculiar remembrances, that can be said to give value to the philosophy of mind. It furnishes, in itself, the sublimest of all speculations, because it is the philosophy of the sublimest of all created things. “There is but one object,” says St. Augustine, “greater than the soul, and that one is its Creator.” “Nihil est potentius illa creatura

quæ mens dicitur rationalis, nihil est sublimius. *Quicquid supra illam est jam Creator est.*” When we consider the powers of his mind, even without reference to the wonders which he has produced on earth, what room does man afford for astonishment and admiration! His senses, his memory, his reason, the past, the present, the future, the whole universe, and, if the universe have any limits, even more than the whole universe, comprised in a single thought; and, amid all these changes of feelings that succeed each other, in rapid and endless variety, a permanent and unchangeable duration, compared with which, the duration of external things is but the existence of a moment.

“O what a patrimony this! a being  
Of such inherent strength and majesty,  
Not worlds possest can raise it; worlds destroy'd  
Not injure;<sup>19</sup> which holds on its glorious course,  
When thine, O Nature, ends!”<sup>20</sup>

Such, in dignity and grandeur, is the mind considered, even abstractedly. But when, instead of considering the mind itself, we look to the wonders which it has performed – the cities, the cultivated plains, and all the varieties of that splendid scene to which the art of man has transformed the deserts, and forests, and rocks of original nature; when we behold him, not limiting the operations of his art to that earth to which he seemed confined, but bursting through the very elements, that appeared to encircle him as an insurmountable barrier – traversing the waves – struggling with the winds, and making their very opposition subservient to his course; when we look to the still greater transformations which he has wrought in the *moral scene*, and compare with the miseries of barbarous life, the tranquillity and security of a well ordered state; when we see, under the influence of legislative wisdom, insurmountable multitudes obeying, in opposition to their strongest passions, the restraints of a power which they scarcely perceive, and the crimes of a single individual marked and punished, at the distance of half the earth; is it possible for us to observe all these wonders, and yet not to feel some curiosity to examine the faculties by which they have been wrought, some interest in a being so noble, that leads us to speculate on the future wonders which he may yet perform, and on the final destiny which awaits him? This interest we should feel, though no common tie connected us with the object of our admiration; and we cannot surely admit that the object of our admiration is less interesting to us, or less sublime in nature, because the faculties which we admire are those which ourselves possess, and the wonders such as we are capable of achieving and surpassing.

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<sup>19</sup> Can't injure. *Orig.*

<sup>20</sup> Young's Night Thoughts, VI. v. 535–539.

## LECTURE V

# ON THE NATURE OF PHYSICAL INQUIRY IN GENERAL

The preceding Lectures, Gentlemen, have, I trust, sufficiently convinced you of the *importance* of the science on which we are to enter, – if, indeed, many of the advantages which we have considered were not of themselves so obvious, as readily to have occurred to your own reflection, or at least to require less illustration, than, – in my desire to interest not your attention merely, but your zealous ardour, in a science which appears to me so truly to deserve it, – I have thought necessary to give them. We have seen, how interesting the mind is, as an object of study, *from its own intrinsic excellence*, even though it were to be considered in no other light, than as a mere part of the universal system of things, necessary, therefore, to be comprehended with every other existing substance, *in a system of general physics*. We have seen, likewise, in how many important respects, the study of the science of Mind is favourable to the growth of virtuous sentiment, and to the refinement and happiness of society; and, above all, how essential an acquaintance with it is, to the proper conduct of our inquiries, – not merely in those sciences, the objects of which are kindred or analogous, but in every other science, the various objects of which, however independent, and even remote from it they may seem, must always be considered, not as they exist in *themselves*, but as they exist in *relation to it*; since they can be known to us only through the medium of the mental affections, or feelings, excited by them, which have laws peculiar to themselves, and analyzed and arranged only by our mental faculties, which have their own peculiar limits of extent and power.

The first great division of our course of inquiry is purely physiological. It has for its object the mind, considered as susceptible of various states or affections, and constituting, as it is thus variously affected, the whole phenomena of thought and feeling, which, though expressed by a variety of terms, of functions, or faculties, are still but the *one* mind itself existing in different states. On retracing these states, which form the whole progress of our sentient, intellectual, and moral life, we have to inquire into the properties of the substance, mind, according to the same laws of investigation, by which we inquire into the properties of external substances, – not by assuming principles, from which the phenomena may be supposed to flow, but by observing and generalizing, till we arrive at those few simple principles or laws, which, however pompous the term *laws* may seem, as if it denoted something different from the phenomena themselves, and paramount to them, are in truth, nothing more than the expression of the most general circumstances, in which the phenomena themselves have been felt by us to agree. As we say of gold, that it is that which is of a certain specific weight, yellow, ductile, fusible at a certain temperature, and capable of certain combinations, – because all these properties have been observed by ourselves or others, – so we say of the *mind*, that it is that which perceives, remembers, compares, and is susceptible of various emotions or other feelings; because of all these we have been conscious, or have observed them indirectly in others. We are not entitled to state with confidence any quality, as a property of gold, which we do not remember to have observed ourselves, or to have received on the faith of the observation of others, whose authority we have reason to consider as indubitable; and as little are we entitled to assert any quality, or general susceptibility, as belonging to the human *mind*, of which we have not been conscious ourselves in the feelings resulting from it, or for which we have not the authority of the indubitable consciousness of others. The exact coincidence, in this respect, of the physics of mind and of matter, it is important that you should have constantly before you, that you may not be led to regard the comparative indistinctness and vagueness of the mental phenomena as a warrant for greater boldness of assertion, and looseness of reasoning with respect to them. There is, on the contrary, in such a case, still greater reason to adhere rigidly to the strict rules of philosophizing; because the less definite the phenomena are, the

greater danger is there of being misled in discriminating and classing them. The laws of inquiry, those general principles of the logic of physics, which regulate our search of truth in all things, external and internal, do not vary with the name of a science, or its objects or instruments. They are not laws of *one* science, but of *every* science, whether the objects of it be mental or material, clear or obscure, definite or indefinite; and they are thus universal, because, in truth, though applicable to *many sciences*, they are only laws of *the one inquiring mind*, founded on the weakness of its powers of discernment, in relation to the complicated phenomena on which those powers are exercised. The sort of reasoning which would be false in chemistry, would be false in astronomy, would be false in the physiology of our corporeal or intellectual and moral nature, and in all, for the same reason; because the mind is the inquirer in all alike, and is limited, by the very constitution of its faculties, to a certain order of inquiry, which it must, in this case of supposed erroneous reasoning, have transgressed.

On these general laws of inquiry, as relating alike to the investigation of the properties of *matter* and of *mind*, it is my intention to dwell, for some time, with full discussion; for, though the subject may be less pleasing, and may require more severe and unremitting attention on your part, than the greater number of the inquiries which await us, it is still more important than any of these, because it is, in truth, *essential* to them all. The season of your life is not that which gathers the harvest; it is that which prepares the soil, by diligent cultivation, for the fruits which are to adorn and enrich it; – or, to speak without a metaphor, you do not come here, that you may make yourselves acquainted, in a few months, with all the phenomena of the universe, – as if it were only to look on the motions of the planets in an orrery, or to learn a few names of substances and qualities, – but that you may acquire those *philosophical principles*, which in the course of a long and honourable life, are to enable you to render yourselves more familiar every day with the works of nature, and with the sublime plans of its beneficent Author: – and if without the knowledge of a single word of fact, in matter or in mind, it were possible for you to carry away from these walls a clear notion of the objects of inquiry, and of the plan on which alone investigation can be pursued with advantage, I should conceive, that you had profited far more, than if, with confused notions of the objects and plan of investigation, you carried with you the power of talking fluently, of observations, and experiments, and hypotheses, and systems, and of using, in their proper places, all the hardest words of science.

I must remark, however, that I should not have thought it necessary, thus to direct so much of your attention to the principles of scientific inquiry in general, if I could have taken for granted, that you had already enjoyed the benefit of the instruction of my illustrious colleague in another Chair, whose Lectures on Natural Philosophy, exemplifying that soundness of inquiry, which I can only recommend, would, in that case, have enlightened you more, as to the principles of physical investigation, than any mere rules, of which it is possible to point out to you the utility and the excellence.

All physical science, whatever may be the variety of objects, mental or material, to which it is directed, is nothing more than the comparison of phenomena, and the discovery of their agreement or disagreement, or order of succession. It is on *observation*, therefore, or on consciousness, which is only another name for *internal* observation, that the whole of science is founded; because there can be no comparison, without observation of the phenomena compared, and no discovery of agreement or disagreement, without comparison. So far, then, as man has observed the phenomena of matter or of mind, so far, and no farther, may he infer, with confidence, the properties of matter and of mind; or, in the words of the great primary aphorism of Lord Bacon, which has been so often quoted, and so often quoted in vain, “Homo, naturæ minister et interpres, tantum facit et intelligit, quantum de naturæ ordine re vel mente observaverit; nec amplius scit aut potest.”<sup>21</sup>

What is it that we truly mean, however, when we say, that we are about to inquire into the nature and properties of any substance? The question is a most important one, and is far from being so

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<sup>21</sup> Nov. Org. Aph. 1.

simple as it may at first appear. From the mere misunderstanding of the import of this question, the brightest talents of a long succession of ages, – talents, which, with clearer views of *this single point*, might have anticipated all the discoveries of our own time, and introduced us, perhaps, to discoveries still more brilliant and astonishing, were wasted in inquiries as barren as the frivolous glory which attended them, – that produced indeed much contention, and more pride, but produced nothing more; and, without giving any additional knowledge, took away from ignorance only its humility, and its power of being instructed.

What is it that we truly have in view, or should have in view, when we inquire into the nature of a substance?

The material universe, and all the separate substances which compose it, may be considered in *two* lights, – either simply, as composed of parts that co-exist, and are to our feelings continuous, so as to form, of many separate and independent elements, one apparent whole; or of parts that change their relative positions, constituting, by this change of place, all the physical events of the material system of the world; and inquiry may have reference to a substance in both, or either of those points of view. What is this body? may be inquired of us, when any particular body is pointed out; and the answer which we give will be very different according to the *particular* light in which we may have viewed it, though it must always relate to it in *one* or *other* of these two aspects. Let us suppose, for example, the body, concerning which the question is put, to be a piece of glass; I select intentionally a substance which is familiar to you all, and of which many of you probably have sufficient chemical knowledge to be acquainted with the composition. It may be asked of us, then, What is the substance termed *glass*? and our answer will vary, as I have said, with the view which we take of it. If we consider it merely as a *continuous whole*, our answer will be, that it is a *compound of alkaline and siliceous matter*– meaning that particles of alkali and flint co-exist, and are apparently continuous, in that mass of which we speak.

Such is *one* of the answers which may be given to the question; and this sort of answer is one which is very commonly given to such questions. It is, you will perceive, nothing more than the enumeration of the constituent parts of the substance, and considers the substance, simply as it exists alone, without regard to any other bodies that may exist around it, or near it, and without any allusion to change of *any kind*.

This sort of view, however, may be altogether reversed; and, instead of thinking of the parts that exist together in the substance, without reference to any changes, of which it is either the agent or the subject, we may think only of such changes, without reference to its constituent parts.

In this latter point of view, we may say, in answer to the question, as to the nature of the substance termed glass, that it is a transparent substance, which, according to the general laws of refraction, bends the light that passes through it variously, according to the different density of the medium through which the rays have immediately passed before arriving at it, or of the medium, through which they are to pass after penetrating it; that it is a substance fusible at a certain temperature, not dissolved by the common powerful acids, but soluble in a particular acid termed the *fluoric acid*; that, when strongly rubbed, by certain other substances, it communicates, for a time, to various bodies, the power of attracting or repelling other bodies; and we may add to our description, in like manner, as many other qualities as there are various substances which produce in it any change, or are in any way changed by it. In all answers of this kind, you will perceive that regard is uniformly had, not to the *mere substance*, concerning which the question is put, but also to some other substance with which, in consequence of some motion of one or other of the bodies, at the time of the phenomenon of which we speak, it has changed its relative position; for, if all the objects in nature remained constantly at rest, it is very evident that we could have no notion of any property of matter whatever. In the enumeration of the qualities of glass, for example, when we speak of its properties, we suppose it to have changed, in every case, some relative position with the *light* that passes through it, the *heat* that melts it, the *fluoric acid* that dissolves it, and the various bodies

that excite in it, or conduct from it, electricity; and all these bodies, therefore, we must have in view, in our enumeration, as much as the glass itself.

As there are only these two different aspects in which matter can be viewed, all physical inquiry, with respect to matter, *must*, as I have said, have reference to one of them; and if we think that we are inquiring further concerning it, our inquiry is truly without an object, and we know not what we seek. We may consider it, simply as it exists in space, or as it exists in time. Any substance, considered as it exists in space, is the mere name which ourselves give to the co-existence of a multitude of bodies, similar in nature, or dissimilar, in apparent continuity; considered as it exists in time, it is that which is affected by the prior changes of other bodies, or which itself produces a change of some sort in other bodies. As it exists in space, therefore, we inquire into its composition, or, in other words, endeavour to discover what are the elementary bodies that co-exist in the space which it occupies, and that are all which we truly consider, when we think that we are considering the compound as one distinct body. As it exists in time, we inquire into its susceptibilities or its powers, or, in other words, endeavour to trace all the series of prior and subsequent changes, of which its presence forms an intermediate link.

*This*, then, is our meaning, when we speak of inquiring into the nature of a substance. We have one, or both of *two* objects in view, the discovery of the separate bodies that co-exist in the substance, or rather that constitute the substance, which is nothing more than the separate bodies themselves, or the discovery of that series of changes, of which the presence of this particular substance, in some new relative position with respect to other bodies, forms a part; the changes which other bodies, in consequence of this altered relative position, occasion in *it*, with the changes which it occasions in other bodies.

On these two different objects of physical investigation, the co-existing elements of bodies, and their successions of changes, it may be of advantage to dwell a little more fully in elucidation of the method which we have to pursue in our own department of physical research; for, though it may perhaps at first appear to you, that to treat of the principles of inquiry, in the physics of *matter*, is to wander from the intellectual and moral speculations which peculiarly concern us; it is in truth only as they are illustrative of inquiries which we are to pursue in the *physiology of the mind*, that I am led to make these general remarks. The principles of philosophic investigation are, as I have already said, common to all the sciences. By acquiring more precise notions of the objects of any one of them, we can scarcely fail to acquire, in some degree, more precision in our notions of every other, and each science may thus be said to profit indirectly by every additional light that is thrown upon each. It is by this diffusive tendency of its spirit, almost as much as by its own sublime truths, and the important applications of these to general physics, that the study of geometry has been of such inestimable advantage to science. Those *precise definitions* which insure to every word the same exact signification, in the mind of every one who hears it pronounced, and that lucid progress in the developement of truth after truth, which gives, even to ordinary powers, almost the same facility of comprehension with the highest genius, are unquestionably of the utmost benefit to the mathematical student, while he is prosecuting his particular study, without any contemplation of other advantages to be reaped from them. But there can be no doubt that they are, at the same time, preparing his mind for excellence in other inquiries, of which he has then no conception; that he will ever after be less ready to employ, and be more quicksighted than he would otherwise have been in detecting vague and indefinite phraseology, and loose and incoherent reasoning; and that a general spirit of exactness and perspicuity may thus at length be diffused in society, which will extend its influence, not to the sciences merely, but, in some faint degree, also to works of elegant literature, and even to the still lighter graces of conversation itself. “The spirit of geometrical inquiry,” says Fontenelle, “is not so exclusively attached to geometry, as to be incapable of being applied to other branches of knowledge. A work of morals, of politics, of criticism, or even of eloquence, will, if all other circumstances have been the same, be the more beautiful, for having come from the hand of a geometrician. The order, the clearness, the precision, which, for a considerable time, have distinguished works of excellence

on every subject, have most probably had their origin in that mathematical turn of thought, which is now more prevalent than ever, and which gradually communicates itself even to those who are ignorant of mathematics. It often happens that a single great man gives the tone to the whole age in which he lives; and we must not forget, that the individual who has the most legitimate claim to the glory of having introduced and established a new art of reasoning, was an excellent geometer.”<sup>22</sup> The philosopher to whom this improvement of the art of reasoning is ascribed, is evidently Descartes, whose claim is certainly much less legitimate than that of our own illustrious countryman; but the works of Bacon were not very extensively studied on the continent, at the time at which Fontenelle wrote; while especially in France, the splendid reputation of the great geometer, who shook, as much with his own wild hypothesis, as with the weight of his reasoning, the almost idolatrous worship of the God of the Schools, seemed to sweep before it the glory of every other reformer. The instance of Descartes, however, is a still more happy one than his ingenious countryman, who was himself a Cartesian, could have imagined it to be. It is, indeed, impossible to conceive a more striking example of that diffusive influence of the *general spirit of scientific inquiry*, which I wish to illustrate; since, in this instance, it survived the very system by which it was diffused; all that was sceptical in that mixed system of scepticism and dogmatism which constituted the philosophy of Descartes, having long continued, and even now continuing, to operate beneficially, when scarcely a doctrine of his particular philosophy retains its hold.

You will not then, I trust, take for granted, that precise notions as to the objects of inquiry, in any science, even in the department of external physics, can be so absolutely without benefit to our plans of inquiry into mind, which must be pursued on the same principles, if it be pursued with any prospect of success; and I may, therefore, safely solicit your attention to a little farther elucidation of the two objects which we have in view, in general physical inquiry, whether it be relative to *matter* or to *mind*.

To inquire into the composition of a substance, is to consider as *one*, many substances, which have not the less an independent existence, because they are in immediate proximity to each other. What we term a *body*, however minute, is a multitude of bodies, or to speak more exactly, an infinite number of bodies, which appear limited to us, indeed, but may perhaps appear, in their true character of infinity, to beings of a higher order, who may be able to distinguish as *infinite*, what our limited senses allow us to perceive only as *finite*. They are *one*, not in nature, but in our thought; as one thousand individuals, that in nature must always be one thousand, receive a sort of unity that is relative merely to our conception, when ranked by us as a single regiment, or as many regiments become *one* by forming together an army. In the energies of external matter, the innumerable separate bodies are thus regarded by us as *one*, when the space which divides them is not measurable by our imperfect vision, and as distinct or separate, when the space can be measured by us. The *unity* of the aggregate is here no absolute quality of the mass, but is truly relative to the observer's power of distinguishing the component parts; the mass being one or many, as his senses are less or better able to distinguish these. This whole globe of earth, with its oceans, and rivers, and mountains, and woods, and with all the separate multitudes of its animated inhabitants, may seem to some being of another species, only one continuous and uniform mass; as the masses, that seem to us uniform and continuous, may seem a whole world of separate and varied parts, to the insect population that swarms upon its surface. “A single leaf of a tree,” to borrow an obvious illustration from a French writer, “is a little world inhabited by invisible animals, to whose senses it appears of immense extent, who see in it mountains and abysses that are almost immeasurable, and who, from one side of the leaf to the other, hold as little communication with the opposite animalcula, who have their dwellings there, as we do with our Antipodes.”<sup>23</sup>

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<sup>22</sup> Preface aux Eloges – Œuvres, tom. v. p. 8.

<sup>23</sup> Fontenelle, Pluralité des Mondes, Conversat. 3.

Nothing can appear to our eyes more uniform than a piece of glass; yet we know, from its composition, as a product of art, that it is a congeries of bodies, which have no similarity to each other, and which truly exist separately from each other, in the compound, as they existed separately before the composition, though the lines of space which divide them have now ceased to be visible to our weak organs; and though, instead of being composed of alkaline and siliceous matter, which we know to be different in their qualities, the beautiful transparent substance, considered by us, were, as far as we know, *simple*, in the chemical sense of the term, it would still be as truly an aggregate of many bodies, not dissimilar, indeed, as in the former case, but each similar in qualities to the aggregate itself. The aggregate, in short, is, in every case, but a name invented by ourselves; and what we term the constituent elements, are all that truly exists. To inquire into the composition of a body, is, therefore, only to inquire what these separate bodies are which we have chosen to consider as *one*, or rather which are ranked by us as one, from their apparent continuity.

I have dwelt the longer on this point of the *unity* of an aggregate mass, as derived from the mind of the observer only, and not from its constituent bodies, which are truly separate and independent of each other, and must always be separate and independent, whatever changes they may seem to undergo, in the various processes of composition and decomposition, because this is one of the most simple, and, at the same time, one of the most convincing examples of a tendency of the mind, which we shall often have occasion to remark in the course of our intellectual analysis, – the tendency to ascribe to substances without, as if existing in them like permanent physical qualities, the relations which ourselves have formed, by the mere comparison of objects with objects, and which, in themselves, as relations, are nothing more than modifications of our own mind. It is very difficult for us to believe, that, when we speak of a rock, or a mountain, or, perhaps, still more, when we speak of a single leaf or blade of grass as *one*, we speak of a plurality of independent substances, which may exist apart, as they now exist together, and which have no other unity than in our conception. It is the same with every other species of relation. The tallness of a tree, the lowness of a shrub or weed, as these relative terms are used by *us* in opposition, do not express any real quality of the tree, or shrub, or weed, but only the fact that our mind has considered them together; all which they express, is the mere comparison that is in *us*, not any quality in the external objects; and yet we can scarcely bring ourselves to think, but that independently of this comparison, there is some quality, in the tree, which corresponds with our notion of tallness, and some opposite quality in the shrub or weed, which corresponds with our notion of shortness or lowness; so that the tree would deserve the name of tall, though it were the only object in existence, and the shrub or weed, in like manner, the epithet of lowly, though it alone existed, without a single object with which it could be compared. These instances, as I have said, are simple, but they will not be the less useful, in preparing your minds for considering the more important natures of relation in general, that imply, indeed, always some actual qualities in the objects themselves, the perception of which leads us afterwards to consider them as related, but no actual quality in either of the objects that primarily and directly corresponds with the notion of the relation itself, as there are qualities of objects that correspond directly with our sensations of warmth or colour, or any other of the sensations excited immediately by external things. The relation is, in every sense of the word *mental*, not merely as being a feeling of the mind, for our knowledge of the qualities of external things is, in this sense, equally mental; but, as having its cause and origin directly in the very nature of the *mind itself*, which cannot regard a number of objects, without forming some comparison, and investing them consequently with a number of relations. I have already spoken of the intellectual medium, through which external objects become known to us; and the metaphor is a just one. The medium, in this case, as truly as in the transmission of light, communicates something of its own to that which it conveys; and it is as impossible for us to perceive objects long or often together, without that comparison which instantly invests them with certain relations, as it would be for us to perceive objects, for a single moment, free from the tint of the coloured glass through which we view them. “*Omnes perceptiones,*” says Lord Bacon,

using a similar figure, “omnes perceptiones, tam sensus quam mentis, sunt ex analogia hominis, non ex analogia universi; estque intellectus humanus instar speculi inæqualis ad radios rerum, qui suam naturam naturæ rerum immiscet, eamque distorquet et inficit.”

But, whatever may be thought of relations in general, there can be no question, at least, as to the nature of that unity which we ascribe to bodies. We have seen, that the substance, which, in thought we regard as *one*, is, in truth, not *one*, but *many* substances, to which our thought alone gives unity; and that all inquiry, therefore, with respect to the nature of a substance, as it exists in space, is an inquiry into the nature of those separate bodies, that occupy the space which we assign to the imaginary aggregate.

To dissipate this imaginary aggregate of our own creation, and to show us those separate bodies which occupy its space, and are all that nature created, is the great office of the analytic art of *Chemistry*, which does for us only what the microscope does, that enables us to see the small objects which are before us at all times, without our being able to distinguish them. When a chemist tells us, that glass, which appears to us one uniform substance, is composed of different substances, he tells us, what, with livelier perceptive organs, we might have known, without a single experiment; since the siliceous matter and the alkali were present to us in every piece of glass, as much before he told us of their presence, as after it. The art of analysis, therefore, has its origin in the mere imperfection of our senses, and is truly the art of the blind, whose wants it is always striving to remedy, and always discovering sufficient proof of its inability to remedy them.

We boast, indeed, of the chemical discoveries which we have made of late, with a rapidity of progress as brilliant, as it is unexampled in the history of any other science; and we boast justly, because we have found, what the generations of inquirers that have preceded us on our globe, – far from detecting, – had not even ventured to guess. Without alluding to the agency of the *Galvanic power*, – by which all nature seems to be assuming before us a different aspect – we have seen fixed in the products of our common fires, and in the drossy rust of metals, the purest part of that ethereal fluid which we breathe, and the air itself, which was so long considered as simple, ceasing to be an element. Yet whatever unsuspected similarities and diversities of composition we may have been able to trace in bodies, all our discoveries have not created a single new particle of matter. They have only shown these to exist, where they always existed, as much before our analysis as after it, – unmarked indeed, but unmarked, only because our senses alone were not capable of making the nice discrimination. If man had been able to perceive, with his mere organs of sense, the different particles that form together the atmospheric air – if he had at all times seen the portion of these which unites with the fuel that warms him, enter into this union, as distinctly as he sees the mass of fuel itself, which he flings into his furnace, he could not have thought it a very great intellectual achievement, to state in words so common and familiar a fact, – the mere well-known change of place of a few well-known particles; and yet this is what, in the imperfect state of his perceptive organs, he so proudly terms his *Theory of Combustion*, the developement of which was hailed by a wondering world, and in these circumstances justly hailed by it, as a *scientific era*. To beings, capable of perceiving and distinguishing the different particles, that form by their aggregation, those small masses, which, after the minutest mechanical division of which we are capable, appear atoms to us, the pride which we feel, in our chemical analyses, must seem as ludicrous, as to us would seem the pride of the blind, if one, who had never enjoyed the opportunity of beholding the sun, were to boast of having discovered, by a nice comparison of the changing temperature of bodies, that, during certain hours of the day, there passed over our earth some great source of heat. The addition of one new sense to us, who have already the inestimable advantages which vision affords, might probably, in a few hours, communicate more instruction, with respect to matter, than all which is ever to repay and consummate the physical labours of mankind, – giving, perhaps, to a single glance, those slow revelations of nature, which, one by one, at intervals of many centuries, are to immortalize the future sages of our race.

“All philosophy,” says an acute foreign writer, “is founded on these two things, – that we have a great deal of curiosity, and very bad eyes. In astronomy, for example, if our eyes were better, we should then see distinctly, whether the stars really are, or are not, so many suns, illuminating worlds of their own; and if, on the other hand, we had less curiosity, we should then care a very little about this knowledge, which would come pretty nearly to the same thing. But we wish to know more than we see, and there lies the difficulty. Even if we saw *well* the little which we do see, this would at least be some small knowledge gained. But we observe it different from what it is; and thus it happens, that a true philosopher passes his life, in not believing what he sees, and in labouring to guess what is altogether beyond his sight. I cannot help figuring to myself,” continues the same lively writer, “that nature is a great public spectacle, which resembles that of the opera. From the place at which we sit in the theatre, we do not see the stage quite as it is. The scenes and machinery are arranged, so as to produce a pleasing effect at a distance; and the weights and pulleys, on which the different movements depend, are hid from us. We therefore do not trouble our heads with guessing, how this mechanical part of the performance is carried on. It is perhaps only some mechanic, concealed amid the crowd of the pit, who racks his brain about a flight through the air, which appears to him extraordinary, and who is seriously bent on discovering by what means it has been executed. This mechanic, gazing, and wondering, and tormenting himself, in the pit of the opera, is in a situation very like that of the philosopher in the theatre of the world. But what augments the difficulty to the philosopher, is, that, in the machinery which nature presents, the cords are completely concealed from him, – so completely indeed, that the constant puzzle has been to guess, what that secret contrivance is, which produces the visible motions in the frame of the universe. Let us imagine all the sages collected at an opera, – the Pythagorases, Platos, Aristotles, and all those great names, which now-a-days make so much noise in our ears. Let us suppose, that they see the flight of Phaeton, as he is represented carried off by the winds; that they cannot perceive the cords to which he is attached; and that they are quite ignorant of every thing behind the scenes. It is a *secret virtue*, says one of them, that carries off Phaeton. Phaeton, says another, is composed of certain *numbers*, which cause him to ascend. A third says, Phaeton has a certain *affection* for the top of the stage. He does not feel at his ease, when he is not there. Phaeton, says a fourth, is not formed to fly; but he likes better to *fly*, than to leave the top of the stage empty, – and a hundred other absurdities of the kind, that might have ruined the reputation of antiquity, if the reputation of antiquity, for wisdom could have been ruined. At last, come Descartes, and some other moderns, who say, Phaeton ascends, because he is drawn by cords, and because a weight, more heavy than he, is descending as a counterpoise. Accordingly, we now no longer believe, that a body will stir, unless it be drawn or impelled by some other body, or that it will ascend, or descend, unless by the operation of some spring or counterpoise; and thus to see nature, such as it really is, is to see the back of the stage at the opera.”<sup>24</sup>

In this exposition of the phenomena of the universe, and of those strange “follies of the wise,” which have been gravely propounded in the systems of philosophers concerning them, there is much truth, as well as happy pleasantry. As far, at least, as relates to matter, considered merely as existing in space, – the first of the two lights in which it may be physically viewed, – there can be no question, that philosophy is nothing more than an endeavour to repair, by art, the badness of our eyes, that we may be able to see what is actually before us at every moment. To be fairly behind the scenes of the great spectacle of nature, however, is something more than this. It is not merely to know, at any one moment, that there are many objects existing on the stage, which are invisible where the spectators sit, but to know them as pieces of machinery, and to observe them operating in all the wonders of the drama. It is, in short, to have that *second* view of nature, as existing in time as well as space, to the consideration of which I am to proceed in my next Lecture.

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<sup>24</sup> Fontenelle, *Pluralité des Mondes*, Conversat. 1.

## LECTURE VI

### THE SAME SUBJECT CONTINUED

In my last Lecture, Gentlemen, I considered, at some length, the nature of *Physical Inquiry in general*, and stated to you, in particular, the *two lights*, in which objects may be physically viewed, as existing simply in *space*, or as existing in *time*, – the inquiries, with respect to the one, having regard to the composition of bodies; the inquiries, with respect to the other, having regard to the changes, of which they are either the subjects or occasions, and consequently to their susceptibilities or their powers – their susceptibilities of being affected by other substances, their powers of affecting other substances. I use the word *susceptibility*, you will perceive, as, in this case, synonymous with what Mr Locke, and some other writers, have denominated *passive power*, to avoid the apparent verbal contradiction, or at least the ambiguity, which may arise from annexing the term *passive* to a word, which is generally employed to signify, not the *subject* of change, but the cause or occasion of change.

Of these two points of view, then, in which an object may be regarded, when the question is put, What is it? we have seen, I hope, sufficiently distinctly, the nature of one. If, in answering the question, we regard the object merely as it exists in space, and say, that it is a *compound* of certain substances, we mean nothing more, than that, in the portion of space, which we conceive to be occupied by this one imaginary aggregate, there is truly a plurality of bodies, which, though seemingly contiguous, have an existence, as separate and independent of each other, as if they were at the most remote distance; the one aggregate being nothing more than a name for these separate bodies, to which ourselves give all the unity which they have, merely by considering them as *one*.

The necessity of inquiring into the nature of these separate elementary bodies, – which constitutes one of the two great departments of physical investigation, – we found to arise from the imperfection of our senses, that are not sufficiently acute to discover, of themselves, the component parts of the masses, which nature everywhere presents to us. We are thus obliged to form to ourselves an *art of analysis*, merely that we may perceive what is constantly before our eyes, in the same manner, as we are obliged to have recourse to the contrivances of the optician, to perceive stars and planets, that are incessantly shedding on us their light.

There is, indeed, something truly worthy of our astonishment, in the sort of knowledge of the qualities of matter, which, with our very imperfect senses, we are still able to attain. What we conceive ourselves to know is an aggregate of many bodies, of each of which, individually, we may be said, in the strictest sense of the term, to be absolutely ignorant; and yet the aggregate, which we know, has no real existence, but as that very multitude of bodies, of which we are ignorant. When water was regarded as a *simple substance*, every one who looked upon a lake or river, conceived that he knew as well what the liquid was which flowed in it, as the chemist, who now considers it as compound; and the chemist, who has learned to regard it as compound, is perhaps as ignorant of the true nature of the separate bodies that exist in it, as those who formerly regarded it as simple; since one additional discovery may prove the very elements, which he now regards as the ultimate constituents of water, to be truly compounded of other elements, still more minute, and now altogether unknown to him.

That our only knowledge of matter should be of a multitude of bodies, of the nature of each of which, individually, we are in absolute ignorance, may seem, at first sight, to justify many of the most extravagant doubts of the sceptic: and yet there is really no ground for such scepticism, since, though the *coexisting* bodies be *separately* unknown, the effect, which they produce when coexisting in the circumstances observed by us, is not the less certain and definite; and it is this joint effect of the whole, thus certain and definite, which is the true object of our knowledge; not the uncertain effect, which the minuter elements might produce, if they existed alone. The same aggregates, whatever their elementary nature may be, operate on our senses, as often as they recur, in the same manner;

the unknown elements which constitute an oak, or a tower, or the ivy that clings around it, exciting in the mind those particular sensations, to the external causes of which we continue to give the name of *oak* or *tower* or *ivy*; and exciting these, as precisely and uniformly, as if we were acquainted with each minute element of the objects without. Our knowledge of nature must in this way, indeed, be confined to the *mixed effects* of the masses which it exhibits; but it is not on that account less valuable, nor less sure; for to the certainty of this limited knowledge all which is necessary is uniformity of the mixed effects, whatever their unknown coexisting causes may be. It is with *masses* only, not with *elements* that we are concerned, in all the important purposes of life; and the provident wisdom of the Author of Nature, therefore, has in this as in every other case, adapted our powers to our necessities, – giving to all mankind the knowledge, that is requisite for the purposes which all mankind must equally have in view, and leaving to a few philosophic inquirers, the curiosity of discovering what the substances around us truly are in their elementary state, and the means of making continual progress, in this never-ending analysis.

Such then is the nature of *one* of the views, in which physical inquiry may be directed to the discovery of elements, that are existing together, at the same moment. But is not this species of inquiry, it may be asked, peculiar to *matter*, or may it also be extended to *mind*? It is easy to conceive that, if matter always have extension, and therefore necessarily be composed of parts, an inquiry into its composition may form an important part of physical investigation; but this sort of inquiry will seem to you altogether inadmissible in the *philosophy of mind*, since the mind is not composed of parts that coexist, but is simple and indivisible. If, indeed, the term composition, in this application of it, be understood strictly in the same sense as when applied to matter, it is very evident, that there can be no inquiry into the composition of thoughts and feelings, since every thought and feeling is as simple and indivisible as the mind itself; being, in truth, nothing more than the mind itself existing at a certain moment in a certain state; and yet, in consequence of some very wonderful laws, which regulate the successions of our mental phenomena, the science of mind is, in all its most important respects, a science of analysis, or at least a science which exhibits to our contemplation the same results as if it were strictly analytical; and we inquire into the separate ideas or other feelings, involved in one complex thought or emotion, very nearly as we inquire into the corpuscular elements, that coexist in one seemingly continuous mass. The nature of this very wonderful application of analysis, or at least of a process which is virtually the same as analysis, to a substance, that is necessarily at all times simple and indivisible, will, however, be better understood by you, after we have turned our attention to the other general division of physical inquiry, which is still to be considered by us. I need not I hope, repeat, after the remarks which I made in my last Lecture, that, in leading your thoughts, for so long a time, to the subject of general science, I have had constantly in view its application to the phenomena of our own department of it, and that we are truly learning to study *mind* with accuracy, when we are learning what it is, which is to be studied in the great system of things. There can be no question at least, that he who has erroneous notions of the objects of physical investigation in the material universe, will be very likely also to err, or rather cannot fail to err, in his notions of the objects of physical investigation, as it relates to mind.

I proceed, then, to consider, what it is which we truly have in view, when we direct our inquiry, not to the mere composition of objects existing continuously in *space*, but to the succession of changes which they exhibit in *time*, – to their susceptibility of being affected by other substances, or their power of affecting other substances. The inquiry, as you must perceive, involves the consideration of some words about which a peculiar mystery has been very generally supposed to hang —*causation*, *power*, *connexion* of events. But we shall perhaps find that what is supposed so peculiarly mysterious in them, is not in the very simple notions themselves, but in the misconceptions of those who have treated of them.

It is not in this case, as in the former department of physical investigation, the mere imperfection of our senses, that produces the necessity of inquiry. Matter, as existing in space, is wholly before

us, and all which is necessary for perfect knowledge of it, in this respect, is greater delicacy of our perceptive organs, that we may distinguish every element of the seemingly continuous mass. To know the mere *composition* of a substance, is to know only what is actually present at the very moment, which we may imagine senses of the highest perfection to be capable of instantly perceiving; but to know all the *susceptibilities* and *powers* of a substance, the various modes in which it may affect or be affected by every other, is to know it, not merely as it exists before us in the particular circumstances of any one moment, but as it *might* have existed, or *may* exist, in all possible circumstances of combination, – which our senses, that are necessarily confined to the circumstances of the present moment, never could teach us, even though they were able to distinguish every atom of the minutest mass.

If, indeed, there were any thing, in the mere appearance of a body, which could enable us to predict the changes that would take place in it, when brought into every possible variety of situation, with respect to other bodies, or the changes which it would then produce in those other bodies, the two views, into which I have divided physical inquiry, would coincide exactly; so that to know the *continuous elements* of any substance, would be to know, at the same time, its *susceptibilities* and *powers*. But there is nothing, in the mere sensible qualities of bodies, considered separately, that can give us even the slightest intimation of the changes, which, *in new circumstances of union*, they might reciprocally suffer or produce. Who could infer, from the *similar* appearance of a lump of sugar and a lump of calcareous spar, that the one would be soluble in water, and the other remain unmelted; or, from the *different* aspect of gunpowder and snow, that a spark would be extinguished, if it fell upon the one, and, if it fell upon the other, would excite an explosion that would be almost irresistible? But for experience, we should be altogether incapable of predicting any such effects, from either of the objects compared; or, if we did know, that the peculiar susceptibility belonged to one of the two, and not the other, we might as readily suppose, that calcareous spar would melt in water as sugar, and as readily, that *snow* as that *gunpowder* would detonate, by the contact of a spark. It is *experience* alone, which teaches us that these effects ever take place, and that they take place, not in all substances, but only in some particular substances.

It has, indeed, been supposed by many ingenious philosophers, that, if we were acquainted with what they term the *intimate structure* of bodies, we should then see, not merely *what* corpuscular changes take place in them, but *why* these changes take place in them; and should thus be able to predict, before experience, the effects which they would reciprocally produce. “I doubt not,” says Locke, “but if we could discover the figure, size, texture, and motion of the minute constituent parts of any two bodies, we should know without trial several of their operations one upon another, as we do now the properties of a square or a triangle. Did we know the mechanical affections of the particles of rhubarb, hemlock, opium, and a man; as a watch-maker does those of a watch, whereby it performs its operations, and of a file, which by rubbing on them will alter the figure of any of the wheels; we should be able to tell before-hand, that rhubarb will purge, hemlock kill, and opium make a man sleep; as well as a watch-maker can, that a little piece of paper laid on the balance will keep the watch from going, till it be removed; or that, some small part of it being rubbed by a file, the machine would quite lose its motion, and the watch go no more. The dissolving of silver in aquafortis, and gold in aqua regia, and not *vice versa*, would be then perhaps no more difficult to know, than it is to a smith to understand why the turning of one key will open a lock, and not the turning of another. But while we are destitute of senses acute enough to discover the minute particles of bodies, and to give us ideas of the mechanical affections, we must be content to be ignorant of their properties and ways of operation; nor can we be assured about them any farther, than some few trials we make are able to reach. But whether they will succeed again another time, we cannot be certain. This hinders our certain knowledge of universal truths concerning natural bodies: and our reason carries us herein very little beyond particular matter of fact.

“And therefore I am apt to doubt, that how far soever human industry may advance useful and experimental philosophy in physical things, scientific will still be out of our reach; because we want perfect and adequate ideas of those very bodies which are nearest to us, and most under our command. Those which we have ranked into classes under names, and we think ourselves best acquainted with, we have but very imperfect and incomplete ideas of. Distinct ideas of the several sorts of bodies that fall under the examination of our senses perhaps we may have; but adequate ideas, I suspect, we have not of any one among them. And though the former of these will serve us for common use and discourse, yet while we want the latter, we are not capable of scientific knowledge; nor shall ever be able to discover general, instructive, unquestionable truths concerning them. Certainty and demonstration are things we must not, in these matters, pretend to. By the colour, figure, taste, and smell, and other sensible qualities, we have as clear and distinct ideas of sage and hemlock, as we have of a circle and a triangle; but having no ideas of the particular primary qualities of the minute parts of either of these plants, nor of other bodies which we would apply them to, we cannot tell what effects they will produce; nor when we see those effects, can we so much as guess, much less know, their manner of production. Thus having no ideas of the particular mechanical affections of the minute parts of bodies that are within our view and reach, we are ignorant of their constitutions, powers, and operations: and of bodies more remote we are yet more ignorant, not knowing so much as their very outward shapes, or the sensible and grosser parts of their constitutions.”<sup>25</sup>

The fallacy of the reasoning of this very eminent philosopher consists partly, in the present case, in a sort of *petitio principii*, or, at least, a false assumption that is involved in the very phrase *mechanical affections*, and in all the mechanical illustrations adduced. If rhubarb purge, and hemlock kill, by qualities that can be said to be mechanical, and if these qualities be PERMANENT, there can be no question, that to know accurately the *mechanical qualities* of these substances, in relation to the human body, would be to know, that rhubarb must purge, and hemlock kill, as much as to know the mechanism of a watch would be to know, that the watch must stop, if a small part of it were rubbed by a file. But the inquiry is still left, whether it be thus, by the mere principles of mechanical action, that rhubarb and hemlock produce their peculiar effects on the animal system, and that silver is dissolved in aqua fortis, and gold in aqua regia; and, if there be no reason whatever to suppose this, we must then surely admit that the prophecy would still be beyond our power, though we were acquainted with “the figure, size, texture, and motion, of the minute constituent parts” of the different bodies. In the same manner, as, in the mechanical division of a substance, we must still come to other substances capable of further division, so, though we could reduce all the changes that appear to be wrought in the great masses around us, to the changes wrought in their minute parts, we must still come to certain ultimate changes as inexplicable as those which we see at present. It is as difficult to predict, without experience, the motion of one atom to or from another atom, as the motion of one mass of atoms to or from another mass of atoms. That the globe of the earth should tend towards the sun, which is at so great a distance from it, and should thus be every moment arrested within that orbit, from which, if there were no such deflecting force, it would every moment have a tendency to escape by flying off in a straight line, is, indeed, most wonderful. But precisely the same laws which operate on the whole globe of the earth, operate on every particle of which the earth is composed, – since the earth itself is only these separate particles under another name; and if it be wonderful that all of these should have a tendency to approach the sun, it must be equally wonderful, that each minute constituent particle should tend individually, though, to use Mr Locke's words, we were accurately acquainted with the “figure, size, texture, and motion of each.” The same original mystery of gravitation, then, would remain, though our senses enabled us to discover every gravitating particle in the intimate structure of the gravitating mass. By knowing the intimate structure of bodies, we should indeed, know *what*

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<sup>25</sup> Essay concerning Human Understanding, book iv. c. 3. sec. 25, 26.

were their elements mutually affected, but not *why* these elements were mutually affected, or were affected in *one* way rather than in *another*.

The chief error of Mr Locke, in this respect, evidently consisted, as I have said, in his assumption of the very thing to be proved, by taking for granted, that all the changes of bodies are the effects of their immediate contact and impulse, and of a kind, therefore, which may be termed strictly mechanical, – an assumption, indeed, which harmonized with the mathematical chemistry and medicine of the age in which he lived, but of the justness of which there is not the slightest evidence in the general phenomena, chemical and nervous, of which he speaks. If, instead of confining his attention to the action of bodies in apparent contact, he had turned his thought to the great distant agencies of nature in the motions of the planetary world, it is scarcely possible to conceive that he should not have discovered his mistake. In another of his works, his *Elements of Natural Philosophy*, he has stated very justly, as a consequence of the law of gravitation, that if the earth were the sole body in the universe, and at rest, and the moon were suddenly created at the same distance from the earth as at present, the earth and the moon would instantly begin to move towards one another in a straight line. What knowledge of the “figure, size, and texture,” of the particles of the earth could have enabled its human inhabitants to predict this instant change? and if the particles of gold and aqua regia, and of hemlock, rhubarb, and opium, which, together with all the other particles of our globe, would in the case supposed, instantly begin to move towards the moon, – can thus attract and be attracted, in gravitation, with tendencies that are independent of every mechanical affection, what authority can there be for supposing, that the chemical and vital agencies of the same particles must be mechanical, or that the one set of changes could have been predicted *a priori*, if the other was confessedly beyond the power of philosophic divination?

But even with regard to the mechanical affections of matter themselves, though all the changes which take place in nature were truly reducible to them, we should still have ultimately the same difficulty in attempting to predict, without experience, the changes that would ensue from them. The mechanical properties are indeed the most familiar to our thought, because they are those which we are constantly witnessing in the great displays of human power that are most striking to our senses. The house, the bridge, the carriage, the vessel, every implement which we use, and the whole wide surface of the cultivated earth, present to us, as it were, one universal trophy of the victories of the great mechanist, man. We cannot look back to the time when we were ignorant of the mechanical properties of matter; but still there was a time when they first became known to us, and became known by experience of the motions that resulted from them. What can be simpler than the phenomena of impulse? That a ball in motion, when it meets another at rest, should force this to quit its place, appears now to be something which it required no skill or experience to predict; and yet, though our faculties were, in every respect, as vigorous as now, – if we could imagine this most common of all phenomena to be wholly unknown to us, – what reason should we be able to discover in the circumstances that immediately precede the shock, for inferring the effect that truly results, rather than any other effect whatever? Were the laws of motion previously unknown, it would be in itself as presumable, that the moving ball should simply stop when it reached the other, or that it should merely rebound from it, as that the quiescent ball should be forced by it to quit its state of rest, and move forward in the same direction. We know, indeed, that the effect is different, but it is because we have witnessed it that we know it; not because the laws of motion, or any of the mechanical affections of matter whatever are qualities that might be inferred independently of observation.

Experience, then, is necessary in every case, for discovering the mutual tendencies of the *elements* of bodies, as much as for determining the reciprocal affections of the *masses*. But experience teaches us the past only, not the future, and the object of physical inquiry is, not the mere solitary fact of a change which has taken place, but the similar changes which will continually take place as often as the objects are again in the same circumstances, – not the *phenomena* only, but the *powers* by which the phenomena are produced.

Why is it, then, we believe that continual similarity of the future to the past, which constitutes, or at least is implied, in our notion of power? A stone tends to the earth, – a stone will always tend to the earth, – are not the same proposition; nor can the *first* be said to involve the *second*. It is not to experience, then, alone that we must have recourse for the origin of the belief, but to some other principle, which converts the simple facts of experience into a general expectation, or confidence, that is afterwards to be physically the guide of all our plans and actions.

This principle, since it cannot be derived from experience itself, which relates only to the past, must be an original principle of our nature. There is a tendency in the very constitution of the mind from which the expectation arises, – a tendency that, in every thing which it adds to the mere facts of experience, may truly be termed *instinctive*; for though that term is commonly supposed to imply something peculiarly mysterious, there is no more real mystery in it than in any of the simplest successions of thought, which are all, in like manner, the results of natural tendency of the mind to exist in certain states, after existing in certain other states. The belief is, a state or feeling of the mind as easily conceivable as any other state of it, – a new feeling, arising in certain circumstances as uniformly as in certain other circumstances. There arise other states or feelings of the mind, which we never consider as mysterious; those, for example, which we term the sensations of sweetness or of sound. To have our nerves of taste or hearing affected in a certain manner, is not, indeed, to taste or to hear, but it is immediately afterwards to have those particular sensations; and this merely because the mind was originally so constituted, as to exist directly in the one state after existing in the other. To observe, in like manner, a series of antecedents and consequents, is not, in the very feeling of the moment, to believe in the future similarity, but, in consequence of a similar original tendency, it is immediately afterwards to believe, that the *same antecedents* will invariably be followed by the *same consequents*. That this belief of the future is a state of mind very different from the mere perception or memory of the past, from which it flows, is indeed true; but what resemblance has sweetness, as a sensation of the mind, to the solution of a few particles of sugar on the tongue, – or the harmonies of music, to the vibration of particles of air? All which we know, in both cases, is, that these successions regularly take place; and in the regular successions of nature, which could not, in one instance more than in another, have been predicted without experience, nothing is mysterious, or every thing is mysterious. It is wonderful, indeed, – for what is not wonderful? – that any belief should arise as to a *future* which as yet has no existence; and which, therefore, cannot, in the strict sense of the word, be an object of our knowledge. But, when we consider Who it was who formed us, it would, in truth, have been more wonderful, if the mind had been so differently constituted that the belief had not arisen; because, in that case, the phenomena of nature, however regularly arranged, would have been arranged in vain, and that Almighty Being, who, by enabling us to foresee the physical events that are to arise, has enabled us to provide for them, would have left the creatures, for whom he has been so bounteously provident, to perish, ignorant and irresolute, amid elements that seemed waiting to obey them, – and victims of confusion, in the very midst of all the harmonies of the universe.

Mr Hume, indeed, has attempted to show, that the belief of the similarity of future sequences of events is reducible to the influence of custom, without the necessity of any intuitive expectation; but he has completely failed in the reasoning with which he has endeavoured to support this opinion. Custom may account for the mere suggestion of one object by another, as a part of a train of images, but not for that belief of future realities, which is a very different state of mind, and which, perhaps, does not follow every such suggestion, however frequent and habitual. The phenomenon A, a stone has a thousand times fallen to the earth; the phenomenon B, a stone will always, in the same circumstances, fall to the earth; are propositions that differ as much as the propositions, A, a stone has *once* fallen to the earth; B, a stone will always fall to the earth. At whatever link of the chain we begin, we must still meet with the same difficulty – the conversion of the past into the future. If it be absurd to make this conversion at one stage of inquiry, it is just as absurd to make it at any other stage; and, as far as our memory extends, there never was a time at which we did not make the instant conversion, – no period,

however early, at which we were capable of knowing that a stone had fallen, and yet believed that, in exactly the same circumstances, there was no reason to suppose that it would fall again. But on this particular error of Mr Hume, the very narrow outline, within which the present sketch is necessarily bounded, will not permit me to enlarge. I have examined it, at considerable length, in the third edition of the Inquiry which I have published on the Relation of Cause and Effect.

It is more immediately our present purpose to consider, What it truly is which is the object of inquiry, when we examine the physical successions of events, in whatever manner the belief of their similarity of sequence may have arisen? Is it the mere series of regular antecedents and consequents themselves? or, Is it any thing more mysterious, which must be supposed to intervene and connect them by some invisible bondage?

We see, in nature, one event followed by another. The fall of a spark on gunpowder, for example, followed by the deflagration of the gunpowder; and, by a peculiar tendency of our constitution, which we must take for granted, whatever be our theory of power, we believe, that as long as all the circumstances continue the same, the sequence of events will continue the same; that the deflagration of gunpowder, for example, will be the invariable consequence of the fall of a spark on it; – in other words, we believe the gunpowder to be susceptible of deflagration on the application of a spark, – and a spark to have the power of deflagrating gunpowder.

There is nothing more, then, understood in the trains of events, however regular, than the regular order of antecedents and consequents which compose the train; and between which, if any thing else existed, it would itself be a part of the train. All that we mean, when we ascribe to one substance a susceptibility of being affected by another substance, is, that a certain change will uniformly take place in it when that other is present; – all that we mean, in like manner when we ascribe to one substance a power of affecting another substance, is, that, when it is present a certain change will uniformly take place in that other substance. Power, in short, is significant not of any thing different from the invariable antecedent itself, but of the mere invariableness of the order of its appearance in reference to some invariable consequent, – the invariable antecedent being denominated a *cause*, the invariable consequent an *effect*. To say, that water has the power of dissolving salt, and to say, that salt will always melt when water is poured upon it, are to say precisely the same thing; – there is nothing in the one proposition, which is not exactly, and to the same extent, enunciated in the other.

It would, indeed, be a very different theory of causation, if, without taking into account the important circumstance of invariableness or the uniform certainty of being at all times followed by a particular event, we were to say, that power is mere antecedence; for there can be no question, that phenomena precede other phenomena, which we never consider as having any permanent relation to them. They are regarded as antecedents, but not invariable antecedents, and the reason of this is obvious. Innumerable events are constantly taking place together in the immense system of the universe. There must, therefore, always be innumerable co-existing series, the parts of each of which, though permanently related to each other, may have no permanent relation to the parts of the other series; and one event of one series, may thus precede, not its own effect merely, which is to be its constant and uniform attendant, in all similar circumstances, but the events also of other co-existing series, which may never occur with it again at the same moment. There is no superstition in believing that an eclipse *may* be followed by a pestilence, or an unpleasant dream by some unforeseen calamity of the day, though there would be much superstition in believing, that these antecedents and consequents had any *permanent* relation to each other. In ordinary and familiar cases, at least, every one knows sufficiently the distinction of what is thus *casual* only, and what is *invariable* in the order of nature. Yet it is only by losing all sight of a distinction so very obvious, and confounding invariable with casual consequences, that Dr Reid, and other eminent philosophers, have been led into much laborious argumentation, in the confidence of confuting one of the simplest and justest of metaphysical opinions. To prove that power is more than invariable antecedence, they prove that it is more than casual antecedence, and that events do not follow each other, loosely and confusedly, as if

antecedents could be invariable, which had not consequents as invariable, or, as if an uniform series were not merely another name for a number of uniform antecedents and consequents. A *cause* is, perhaps, not that which has merely *once* preceded an event; but we give the name to that which *has* always been followed by a certain event, *is* followed by a certain event, and according to our belief, *will continue* to be in future followed by that event, as its immediate consequent; and causation, power, or any other synonymous words which we may use, express nothing more than this permanent relation of that which has preceded to that which has followed. If this invariableness of succession, past, present, and future, be not that which constitutes one event the *effect* of another, Dr Reid, at least, has not pointed out any additional circumstance which we must combine with it, in our definition of an effect, though he has shown, indeed, with most abundant evidence, if any evidence at all were necessary, that the antecedents and consequents are not the same; that we use active and passive verbs, in different senses, applying, as might well be supposed, the one to the antecedent, the other to the consequent; that we speak of effects and causes as if truly different, since it is unquestionably not the same thing to *follow* uniformly a certain change, and to *precede* uniformly a certain change, and that we never think of giving those names where we do not conceive that there is some permanent relation. But, though these distinctions might be allowed to have irresistible weight, in opposition to the scepticism, if such extravagant scepticism there ever were, which affirmed the sequences of events to be altogether casual and irregular, they are surely of no weight against that simple definition of power, which affirms it to consist in the probability of the invariable *sequence*. of some event as its immediate *consequent*; since this very regularity of the sequences, which is supposed by the definition, must, of itself, have given occasion to all those distinctions of thought and language which Dr Reid has adduced.

That one event should invariably be followed by another event, is indeed, it will be allowed, as every thing in nature is, most wonderful, and can be ascribed only to the infinite source of every thing wonderful and sublime; the will of that divine Being, who gave the universe its laws, and who formed these with a most beneficent arrangement for the happiness of his creatures, who, without a belief in the uniformity of these laws, to direct their conduct, could not have known how to preserve even their animal existence. But the uniformity of succession is surely not rendered less wonderful, by a mere change of name. It is the same unaltered wonder still, when we ascribe the term *power* to the prior of two events, as when we ascribe to it the exactly synonymous phrase *invariableness of antecedence*; each of these terms implying nothing more than that the one event cannot take place without being immediately followed by the other. The permanence and uniformity of the relation are the essential circumstances. To be that which cannot exist, without being instantly followed by a certain event, is to be the *cause* of the *event*, as a correlative *effect*. It is impossible for us to believe, that the invariable antecedent is any thing but the cause, or the cause any thing but the invariable antecedent; as it is impossible for us to believe that *homo* is the Latin synonyme of *man*, and yet that *man* is not the English synonyme of *homo*.

To know the *powers* of nature, is, then, nothing more than to know what antecedents are and will be *invariable*, followed by what consequents; for this invariableness, and not any distinct existence, is all which the shorter term power, in any case, expresses; and this, and this alone, is the true object of physical inquiry, in that second point of view, in which we have considered it, as directed to the successions of events.

Whenever, therefore, the question is put, as to any object, What is it? there are two answers, and only two answers, that can be given with meaning. We may regard it as it exists *in space*, and state the elements that co-exist in it, or rather that constitute it; or we may regard it, as it exists *in time*, and state, in all the series of changes, of which it forms an invariable part, the objects to which it is related as antecedent or consequent.

To combine these two views of nature, as it exists in space and time, and to know, with perfect accuracy, every element of every aggregate, and every series of changes, of which each forms, or

can form, a part, would be to know every thing which can be physically known of the universe. To extend our mere physical inquiry still farther into the phenomena of nature, after this perfect knowledge, would be to suppose erroneously, that, in the compounds before us, of which we know every element, there is some element, not yet discovered, or, in the well-known successions of events, some antecedent or consequent as yet unobserved; or it would be to inquire without any real object of inquiry, – a sort of investigation, which, for two thousand years, was almost the sole employment of the subtle and the studious, and which is far from having perished, with those venerable follies of the schools, at which we know so well how to smile, even while we are imitating them, perhaps, with similar errors of our own. I cannot but think, for example, that, on this very subject of the connexion of events, the prevalent notions and doctrines, even of very eminent philosophers, are not far advanced beyond the verbal complexity of the four causes of which Aristotle treats, the *material*, the *formal*, the *efficient*, and the *final*; or Plato's five causes, which Seneca, in one of his Epistles, briefly defines the *id ex quo*, the *id a quo*, the *id quo*, the *id ad quod*, and the *id propter quod*,<sup>26</sup> and though there were no other evidence than this one subject affords, it would still, I fear, prove sufficiently, that, with all our manifest improvements in our plans of philosophical investigation, and all the splendid discoveries to which these improvements have led, we have not wholly lost that great art, which, for so long a time, supplied the place of the whole art of philosophizing – the art of inquiring assiduously, without knowing what we are inquiring about.

It is an art, indeed, which, there is too much reason to suppose, will accompany philosophy, though always, it is to be hoped, in less and less proportion, during the whole course of its progress. There will forever be points, on which those will reason ill, who may yet reason, with perfect accuracy, on other matters. With all those sublime discoveries of modern times, which do us so much honour, and with that improved art of discovery, which is still more valuable to us than the discoveries produced by it, we must not flatter ourselves with exemption from the errors of darker ages – of ages truly worthy of the name of dark, but to which we perhaps give the name, with more readiness, because it seems to imply, that our own is an age of light. Our real comfort, in comparing ourselves with the irrefragable and subtle doctors of other times, is not that we do not sometimes reason as indefatigably ill as they, and without knowing what we are truly reasoning about, but that we do this much *less* frequently, and are continually lessening the number of cases, in which we reason as ill, and increasing, in proportion, the number of cases, in which we reason better, and do truly know, what objects we are seeking.

Of all the cases, however, in which it is of importance, that the mind should have precise notions of its objects of inquiry, the most important are those which relate to the subject at present considered by us; because the nature of power, in the relation which it is impossible for us not to feel of events, as reciprocally effects and causes, must enter, in a great measure, into every inquiry which we are capable of making, as to the successive phenomena, either of matter or of mind. It is of so much importance, therefore, to our future inquiries, that you should know what this universal and paramount relation is, that I have dwelt on it at a length, which I fear must have already exhausted your patience; since it is a discussion, I must confess, which requires considerable effort of attention; and which has nothing, I must also confess, to recommend it, but its dry utility. I trust, however, that you are too well acquainted with the nature of science, not to know, that it is its utility which is its primary recommendation; and that you are too desirous of advancing in it, not to disregard the occasional ruggedness of a road, which is far from being always rugged. It may be allowed to him, who walks only for the pleasure of the moment, to turn away from every path, in which he has not flowers and verdure beneath his feet, and beauty wherever he looks around. But what should we have thought of the competitor of the Olympic course, whose object was the glory of a prize, contested by the proudest of his contemporary heroes, if, with that illustrious reward before him, – with strength

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<sup>26</sup> Epist. 65.

and agility that might ensure him the possession of it, – and with all the assembled multitudes of Greece to witness his triumph, he had turned away, from the contest, and the victory, because he was not to tread on softness, and to be refreshed with fragrance, as he moved along! In that knowledge which awaits your studies, in the various sciences to which your attention may be turned, you have a much nobler prize before you; and, therefore, I shall not hesitate to call forth occasionally all the vigour of your attention, at the risk of a little temporary fatigue, as often as it shall appear to me, that, by exciting you to more than ordinary intellectual activity, I can facilitate your acquisition of a reward, which the listless exertions of the indolent never can obtain, and which is as truly the prize of strenuous effort, as the Palms of the Circus or the Course.

## LECTURE VII ON POWER, CAUSE, AND EFFECT

My last Lecture, Gentlemen, was chiefly employed in examining *what it is*, which is the real object of inquiry, when we consider the phenomena of nature as successive; and we found, that, by an original principle of our constitution, we are led, from the mere observation of change, to believe, that, when similar circumstances recur, the changes, which we observed, will also recur in the same order, – that there is hence conceived by us to be a permanent relation of one event, as invariably antecedent, to another event, as invariably consequent, – and that this *permanent relation* is all which constitutes *power*. It is a word, indeed, of much seeming mystery; but all which is supposed to be mysterious and perplexing in it vanishes, when it is regarded in its true light as only a short general term, expressive of invariable antecedence, or, in other words, of that, which cannot exist in certain circumstances, without being immediately followed by a certain definite event, which we denominate an effect, in reference to the antecedent, which we denominate a cause. To express, shortly, what appears to me to be the only intelligible meaning of the three most important words in physics, immediate invariable *antecedence*, is *power*, – the immediate invariable *antecedent*, in any sequence, is a *cause*, – the immediate invariable *consequent* is the correlative *effect*.

The object of philosophic inquiry, then, in that second department of it, which we considered with respect to the phenomena of nature as successive, we have found not to be any thing different from the phenomena themselves, but to be those very phenomena, as preceding or following, in certain regular series. Power is not any thing that can exist separately from a substance, but is merely the substance itself, considered in relation to another substance, – in the same manner, as what we denominate *form*, is not any thing separate from the elementary atoms of a mass, but is merely the relation of a number of atoms, as co-existing in apparent contact. The sculptor at every stroke of his chisel, alters the form of the block of marble on which he works, not by communicating to it any new qualities, but merely by separating from it a number of the corpuscles, which were formerly included by us, in our conception of the continuous whole; and when he has given the last delicate touches that finish the Jupiter, or the Venus, or Apollo, the divine form which we admire, as if it had assumed a new existence beneath the artist's hand, is still in itself *unaltered*, – the same quiescent mass, that slumbered for ages in the quarry of which it was a part.

Quale fuscae marmor in Africæ  
Solo recisum, sumere idoneum  
Quoscunque vultus, seu Diana  
Seu Cytheræa magis placebit;  
Informis, ater, sub pedibus jacet,  
Donec politus Phidiaca manu  
Formosa tandem destinatae  
Induitur lapis ora divæ.  
Jam, jamque poni duritiem placens,  
Et nunc ocelli, et gratia mollium  
Spirat genarum, nunc labella et  
Per nivium coma sparsa collum.

The *form* of bodies is the relation of their elements to each other *in space*, – the *power* of bodies is their relation to each other *in time*; and both form and power, if considered separately from the number of elementary corpuscles, and from the changes that arise successively, are equally

abstractions of the mind, and nothing more. In a former Lecture, I alluded to the influence of errors with respect to the nature of abstraction, as one of the principal causes that retard the progress of philosophy. We give a name to some common quality of many substances; and we then suppose, that there is in it something real, because we have given it a name, and strive to discover, what that is in itself, which, in itself, has no existence. The example, which I used at that time, was the very striking one, of the *genera*, and *species*, and the whole classes of ascending and descending universals of the schools. I might have found an example, as striking, in those abstractions of form and power, which we are now considering, – abstractions, that have exercised an influence on philosophy, as injurious as the whole series of universals in Porphyry's memorable tree, and one of which, at least, still continues to exercise the same injurious influence, when the tree of Porphyry has been long disregarded, and almost forgotten.

In the philosophy of Aristotle, *form*, which all now readily allow to be a mere abstraction of the mind, when considered separately from the figured substance, was regarded as something equally real with matter itself; and indeed, *matter*, which was supposed to derive from *form* all its qualities, was rather the less important of the two. Of substantial forms, however, long so omnipotent, we now hear, only in those works which record the errors of other ages, as a part of the history of the fallible being, man, or in those higher works of playful ridicule, which convert our very follies into a source of amusement, and find abundant materials, therefore, in what was once the wisdom of the past. Cramb , the young companion of Martinus Scribberus, we are told, “regretted extremely, that substantial forms, a race of harmless beings, which had lasted for many years, and afforded a comfortable subsistence to many poor philosophers, should be now hunted down like so many wolves, without the possibility of a retreat. He considered that it had gone much harder with them, than with *essences*, which had retired from the schools, into the apothecaries' shops, where some of them had been advanced into the degree of quintessences. He thought there should be a retreat for poor substantial forms among the Gentlemen Ushers at Court, and that there were indeed substantial forms, such as *forms of Prayer* and *forms of Government*, without which the things themselves could never long subsist.”<sup>27</sup>

The subject of this pleasantry is, indeed, it must be owned, so absurd in itself, as scarcely to require the aid of wit, to render it ridiculous; and yet this more than poetic personification of the mere figure of a body, as itself a separate unity, which appears to us too absurd almost to be feigned as an object of philosophic belief, even to such a mind as that of Cramb , was what, for age after age, seemed to the most intelligent philosophers a complete explanation of all the wonders of the universe; and *substantial forms*, far from needing a retreat among Gentlemen Ushers at Court, had their place of highest honours amid Doctors and Disputants, in every School and College, where, though they certainly could not give science, they at least served the temporary purpose of rendering the want of it unfelt, and of giving all the dignity which science itself could have bestowed.

The vague and obscure notions, at present attached to the words power, cause, effect, appear to me very analogous to the notions of the Peripatetics, and, indeed, of the greater number of the ancient philosophers, with respect to form; and, I trust that as we have now universally learned to consider *form*, as nothing in itself, but only as the relation of bodies co-existing immediately in space, so *power* will at length be as universally considered as only the relation which substances bear to each other *in time*, according as their phenomena are immediately successive; the invariable antecedent being the cause, the invariable consequent the effect; and the antecedent and consequent being all that are present in any phenomenon. There are, in nature, only substances; and all the substances in nature, are every thing that truly exists in nature. There is, therefore, no additional *power*, separate, or different from the antecedent itself, more than there is *form*, separate or different from the figured mass, or any other quality, without a substance. In the beautiful experiment of the prismatic decomposition

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<sup>27</sup> Mart. Scrib. c. 7. – Pope's Works, Ed. 1757, v. vii. p. 58, 59.

of light, for example, the refracting power of the prism is not any thing separate or separable from it, more than its weight or transparency of colour. There are not a prism and transparency, but there is a prism giving passage to light. In like manner, there are not a prism, and refracting power, and coloured rays, but there are a prism and rays of various colours, which we have perceived to be deflected variously from their original line of direction, when they approach and quit the lens, and which we believe, will, in the same circumstances, continually exhibit the same tendency.

It is the mere regularity of the successions of events, not any additional and more mysterious circumstance, which power may be supposed to denote, that gives the whole value to our physical knowledge. It is of importance for us to know, *what* antecedents truly precede *what* consequents; since we can thus provide for that future, which we are hence enabled to foresee, and can, in a great measure, modify, and almost create, the future to ourselves, by arranging the objects over which we have command, in such a manner, as to form with them the antecedents, which we know to be invariably followed by the consequents desired by us. It is thus we are able to exercise that command over nature, which *He*, who is its only real Sovereign, has designed, in the magnificence of His bounty, to confer on us, together with the still greater privilege of knowing that Omnipotence to which all our delegated empire is so humbly subordinate. It is a command which can be exercised by us, only as beings, who, according to one of the definitions that have been given of man, look both *before* and *behind*; or, in the words of Cicero, who join and connect the future with the present, seeing things, not in their progress merely, but in the circumstances that precede them, and the circumstances that follow them, and being thus enabled to provide and arrange whatever is necessary for that life, of which the whole course lies open before us. “Homo autem (quod rationis est particeps, per quam consequentia cernit, causas rerum videt, earumque progressus et quasi antecessiones non ignorat, similitudines comparat, et rebus præsentibus adjungit atque annectit futuras) facile totius vitæ cursum videt, ad eamque degendam præparat res necessarias.”<sup>28</sup>

That power is nothing more than the relation of one object or event as antecedent to another object or event, though its immediate and invariable consequent, may, perhaps, from the influence of former habits of thought, or rather, of former abuse of language, at first appear to you an unwarrantable simplification; for, though you may never have clearly conceived, in power, any thing more than the immediate sequence of a certain change or event, as its uniform attendant, the mere habit of attaching to it many phrases of mystery, may, very naturally, lead you to conceive, that, in itself, independently of these phrases, there must be something peculiarly mysterious. But the longer you attend to the notion, the more clearly will you perceive, that all which you have ever understood in it, is the immediate sequence of some change with the certainty of the future recurrence of this effect, as often as the antecedent itself may recur in similar circumstances. To take an example, which I have already repeatedly employed, when a spark falls upon gunpowder, and kindles it into explosion, every one ascribes to the spark the *power* of kindling the inflammable mass. But let any one ask himself, what it is which he means by the term, and, without contenting himself with a few phrases that signify nothing, *reflect*, before he give his answer, and he will find, that he means nothing more than that, in all similar circumstances, the explosion of gunpowder will be the immediate and uniform consequence of the application of a spark. To take an example more immediately connected with our own science, we all know, that as soon as any one, in the usual circumstances of health and freedom, wills to move his arm, the motion of his arm follows; and we all believe, that, in the same circumstance of health, and in the same freedom from external restraint, the same *will* to move the arm, will be constantly followed by the same motion. If we knew and believed nothing more, than that this motion of the arm would uniformly follow the will to move it, would our knowledge of this particular phenomenon be less perfect, than at present, and should we learn any thing new, by being told, that the will would not merely be invariably followed by the motion of the arm, but that the

<sup>28</sup> Cicero de Officiis, lib. i. c. 4.

will would also have the power of moving the arm; or would not the power of moving the arm be precisely the same thing, as the invariable sequence of the motion of the arm, when the will was immediately antecedent?

This test of identity, as I have said in my Essay on the subject, appears to me to be a most accurate one. When a proposition is true, and yet communicates no additional information, it must be of exactly the same import, as some other proposition, formerly understood and admitted. Let us suppose ourselves, then, to know all the antecedents and consequents in nature, and to believe, not merely that they have once or repeatedly existed in succession, but that they have uniformly done so, and will continue forever to recur in similar series, so that, but for the intervention of the Divine will, which would be itself, in that case, a new antecedent, it will be absolutely impossible for any one of the antecedents to exist again, in similar circumstances, without being instantly followed by its original consequent. If an effect be something more than what invariably follows a particular antecedent, we might, on the present supposition, know every invariable consequent of every antecedent, so as to be able to predict, in their minutest circumstance, what events would forever follow every other event, and yet have no conception of power or causation. We might know, that the flame of a candle, if we hold our hand over it, would be instantly followed by pain and burning of the hand, – that, if we ate or drank a certain quantity, our hunger and thirst would cease: – we might even build houses for shelter, sow and plant for sustenance, form legislative enactments for the prevention or punishment of vice, and bestow rewards for the encouragement of virtue; – in short, we might do, as individuals and citizens, whatever we do at this moment, and with exactly the same views, and yet, (on the supposition that power is something different from that invariable antecedence which alone we are supposed to know,) we might with all this unerring knowledge of the future, and undoubting confidence in the results which it was to present, have no knowledge of a single power in nature, or of a single cause or effect. To him who had previously kindled a fire, and placed on it a vessel full of water, with the certainty that the water, in that situation, would speedily become hot, what additional information would be given, by telling him that the fire had the *power* of boiling water, that it was the *cause* of the boiling, and the boiling its *effect*? And, if no additional information would in this case be given, then, according to the test of this identity of propositions, before stated, to know events as invariably antecedent and consequent, is to know them as causes and effects; and to know all the powers of every substance therefore, would be only to know what changes or events would, in all possible circumstances, ensue, when preceded by certain other changes or events. It is only by confounding *casual* with uniform and invariable antecedence, that power can be conceived, to be something different from antecedence. It certainly is something very different from the priority of a single moment; but it is impossible to form any conception of it whatever, except merely as that which is constantly followed by a certain effect.

Such is the *simple*, and, as it appears to me, the *only* intelligible view of *power*, as discoverable in the successive phenomena of nature. And yet, how different from this simple view is the common, or, I may almost say, the universal notion of the agencies, which are supposed to be concerned in the phenomena that are the objects of philosophic inquiry. It is the detection of the powers of nature, to which such inquiry is supposed to lead, – but not of powers, in the sense in which alone that phrase is intelligible, as signifying the objects themselves which uniformly precede certain changes. The powers which our investigation is to detect, or which, at least, in all the phenomena that come under our observation, we are to consider as the sole efficient, though invisible producers of them, are conceived by us to be something far more mysterious, – something that is no part of the antecedent, and yet is a part of it, – or that intervenes between each antecedent and consequent, without being itself any thing intermediate, – as if it were possible that any thing could intervene in a series, without instantly becoming itself a part of the series, – a new link in the lengthened chain, – the consequent of the former antecedent, and the antecedent of the former consequent.

To me, indeed, it appears so very obvious a truth, that the substances which exist in nature – the world, its living inhabitants, and the adorable Being who created them, – are all the real existences in nature, and that, in the various changes which occur, therefore, there can as little be any powers or susceptibilities different from the antecedents and consequents themselves, as there can be forms different from the co-existing particles which constitute them, – that to labour thus to impress this truth upon your minds, seems to me almost like an attempt to demonstrate a self-evident proposition. An illusion, however, so universal, as that which supposes the powers of nature, to be something more, than the mere series of antecedents themselves, is not rashly, or without very full inquiry, to be considered as an illusion; and, at any rate, in the case of a mistake, so prevalent and so important in its consequences, it cannot be uninteresting, to inquire into the circumstances, that appear most probably to have led to it. Indeed the more false, and the more obviously false the illusion is, the more must it deserve our inquiry, *what* those circumstances have been which have so long obtained for it the assent, not of common understanding merely, but of the quick-sighted and the subtle. For a full view of my opinions on this subject, I must refer you to the work which I have published on the Relation of Cause and Effect; and the short abstract of them which I now offer, as it would be superfluous for those who have read and understood that work, is chiefly for the sake of those who may not have had an opportunity of perusing the volume itself.

One source of the general fallacy unquestionably is that influence of *abstraction*, to which I before alluded, as aided, and in a great measure perpetuated, by the use of language, and the common unavoidable modes of grammatical construction. We speak of the powers of a substance, of substances that have certain power – of the figure of a body, or of bodies that have a certain figure, in the same manner as we speak of the students of a university, or of a house that has a great number of lodgers; and we thus learn to consider the power, which a substance possesses, as something different from the substance itself, inherent in it indeed, but inherent, as something that may yet subsist separately. In the ancient philosophy, this error extended to the notions both of form and power. In the case of *form*, however, we have seen, that the illusion, though it lasted for many ages, did at length cease, and that no one now regards the *figure* of a body, as any thing but the body itself. It is probable that the illusion, with respect to power, as something different from the substance that is said to possess it, would, in like manner, have ceased, and given place to juster views, if it had not been for the cause, which I am next to consider.

This cause is the *imperfection of our senses*, the same cause which, in the other department of physics before examined by us, – the department, that relates to matter considered merely as existing in space, – we find to give occasion to all our inquiries into the compositions of bodies. In this department of physics, however, which relates to the successions of phenomena in time, the imperfection of our senses operates in a different way. It is not that which gives occasion to the necessity of inquiry; for we have seen, that senses, of the utmost accuracy and delicacy, could not, of themselves, and without experience, have enabled us to predict any one event, in the innumerable series of phenomena that are constantly taking place around us. But, though senses of the nicest discrimination could not have rendered inquiry into the successions of events superfluous, they would have saved us from much idle inquiry, and have given far greater precision, if not to our *rules*, at least to our uniform *practice*, of philosophizing.

As our senses are at present constituted, they are too imperfect, to enable us to distinguish all the elements, that co-exist in bodies, and of elements, which are themselves unknown to us, the minute changes which take place in them, must of course be unknown. We are hence, from our incapacity of discovering these elements by our imperfect senses, and imperfect analysis, incapable of distinguishing the whole series of external changes that occur in them, – the whole progressive series of antecedents and consequents in a phenomenon that appears to our senses simple; and, since it is only between immediate antecedents and consequents, that we suppose any permanent and invariable relation, we are therefore constantly on the watch, to detect, in the more obvious changes that appear

to us in nature, some of those minuter elementary changes, which we suspect to intervene. These minute invisible changes, when actually intervening, are truly what connect the obvious antecedents with the obvious consequents; and the innumerable discoveries, which we are constantly making of these, lead us habitually to suppose, that, amid all the visible changes perceived by us, there is something latent which links them together. He who for the first time listens to the delightful sounds of a violin, if he be ignorant of the theory of sound, will very naturally suppose that the touch of the strings by the bow is the cause of the melody which he hears. He learns, however, that this primary impulse would be of little effect, were it not for the vibrations excited by it in the violin itself; and another discovery, still more important, shews him that the vibration of the instrument would be of no effect, if it were not for the elastic medium, interposed, between his ear and it. It is no longer to the violin, therefore, that he looks, as the direct cause of the sensation of sound, but to the vibrating air; nor will even this be long considered by him as the *cause*, if he turns his attention to the structure of the organ of hearing. He will then trace effect after effect, through a long series of complex and very wonderful parts, till he arrive at the auditory nerve, and the whole mass of the brain, – in some unknown state of which he is at length forced to rest, as the cause or immediate antecedent, of that affection of the mind, which constitutes the particular sensation. To inquire into the latent causes of events is thus to endeavour to observe changes which we suppose to be actually taking place before us unobserved, very nearly in the same manner, as to inquire into the composition of a substance is to strive to discover the bodies that are constantly before us, without our being able to distinguish them.

It is quite impossible, that this constant search, and frequent detection of causes, before unknown, thus found to intervene between all the phenomena observed by us, should not, by the influence of the common principles of our mental constitution, at length associate, almost indissolubly, with the very notion of changes as perceived by us, the notion of something intermediate, that as yet lies hid from our search, and connects the parts of the series which we at present perceive. This latent something, supposed to intervene between the observed antecedent and the observed consequent, being the more immediate antecedent of the change which we observe, is of course regarded by us as the *true cause* of the change, while the antecedent actually observed by us, and known, ceases, for the same reason, to be regarded as the cause, and a cause is hence supposed by us, to be something very mysterious; since we give the name, in our imagination, to something of the nature of which we must be absolutely ignorant, as we are, by supposition, ignorant of its very existence. The parts of a series of changes, which we truly observe, are regarded by us as little more than signs of other intervening changes as yet undetected; and our thought is thus constantly turned from the known to the unknown, as often as we think of discovering a cause.

The expectation of discovering something intermediate and unknown between all known events, it thus appears, is very readily convertible into the common notion of power, as a secret and invisible tie. Why does it do this? or, How does it produce this effect? is the question which we are constantly disposed to put, when we are told of any change which one substance occasions in another; and the common answer, in all such cases, is nothing more than the statement of some intervening object, or event, supposed to be unknown to the asker, but as truly a mere antecedent in the sequence, as the more obvious antecedent which he is supposed to know. How is it that we see objects at a distance – a tower, for example, on the summit of a hill, on the opposite side of a river? Because rays of light are reflected from the tower to the eye. The new antecedent appears to us a very intelligible reason. And why do rays of light, that fall in confusion from every body, within our sphere of vision, on every point of the surface of the eye, – from the wood, the rock, the bridge, the river, as well as the tower, – give distinct impressions of all these different objects? Because the eye is formed of such refracting power, that the rays of light, which fall confusedly on its surface, converge within it, and form distinct images of the objects from which they come, on that part of the eye which is an expansion of the nerve of sight. Again we are told only of intervening events before unknown to us; and again we consider the mere knowledge of these new antecedents as a very intelligible

explanation of the event which we knew before. This constant statement of *something intermediate*, that is supposed to be unknown to us, as the cause of the phenomena which we perceive, whenever we ask, how or why they take place? continually strengthens the illusion, which leads us to regard the powers of objects as something different from the perceived objects themselves; – and yet it is evident, that to state *intervening* changes, is only to state *other* antecedents, – not any thing different from mere antecedence, – and that whatever number of these intervening changes we may discover between the antecedent and the consequent, which we at present know, we must at length come to some ultimate change, which is truly and immediately antecedent to the known effect. We may say, that an orator, when he declaims, excites the sensation of sound, because the motion of his vocal organs excites vibrations in the intervening air, – that these vibrations of air are the cause of the sound, by communicating vibration to parts of the ear, and that the vibrations of these parts of the ear are the cause of the sound, by affecting in a particular manner the nerve of hearing, and the brain in general; – but, when we come to the *ultimate* affection of the sensorial organ, which immediately precedes the sensation of the mind, it is evident, that we cannot say of it, that it is the cause of the sound, by exciting any thing intermediate, since it then could not itself be that by which the sound was immediately preceded. It is the cause, however; exactly in the same manner as all the other parts of the sequence were causes, merely by being the immediate and invariable antecedent of the particular effect. If, in our inability of assigning any thing intermediate, we were to say, that this last affection of the sensorial organ occasioned the sound, because it had the power of occasioning sound, we should say nothing more than if we had said at once, that it occasioned the sound, or, in other words, was that which could not exist in the same circumstances without the sound as its instant attendant.

“What is there,” says Malebranche, “which Aristotle cannot at once propose and resolve, by his fine words of genus, species, act, power, nature, form, faculties, qualities, *causa per se*, *causa per accidens*? His followers find it very difficult to comprehend that these words signify nothing; and that we are not more learned than we were before, when we have heard them tell us, in their best manner, that fire melts metals, because it has a solvent faculty; and that some unfortunate epicure, or glutton digests ill, because he has a weak digestion, or because the *vis concoctrix* does not perform well its functions.”<sup>29</sup>

We see only parts of the great sequences that are taking place in nature; and it is on this account we seek for the causes of what we *know* in the parts of the sequences that are *unknown*. If our senses had originally enabled us to discriminate every element of bodies, and consequently, all the minute changes which take place in these, as clearly as the more obvious changes at present perceived by us; in short, if, between two known events, we had never *discovered* any thing intermediate and unknown, forming a new antecedent of the consequent observed before, our notion of a cause would have been very different from that mysterious unintelligible something which we now conceive it to be; and we should then, perhaps, have found as little difficulty in admitting it to be what it simply and truly is, – only another name for the immediate invariable antecedent of any event, – as we now find in admitting the *form* of a body, to be only another name for the *relative position* of the parts that constitute it.

But, – I have said in my Essay, – though the powers of created things be nothing more than their relation to certain events that invariably attend them, is this definition consistent with the notion which we form of the power of the Creator? or, Is not *his* efficiency altogether different in nature, as well as in degree? The omnipotence of God, it must, indeed, be allowed, bears to every created power the same relation of awful superiority, which his infinite wisdom and goodness bear to the humble knowledge and virtue of his creatures. But as we know his wisdom and goodness, only by knowing what that human wisdom and goodness are, which, with all their imperfection, he has yet permitted to know and adore him, – so, it is only by knowing created power, weak and limited as it is, that we can rise to the contemplation of his omnipotence. In contemplating it, we consider only his *will*, as the direct

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<sup>29</sup> Recherche de la verité, liv iv. c. ii. – Vol. II. p. 322.

*antecedent* of those glorious effects which the universe displays. The power of God is not any thing different from God; but is the Almighty himself, willing whatever seems to him good, and creating or altering all things by his very will to create or alter. It is enough for our devotion to trace every where the characters of the Divinity, – of provident arrangement *prior* to this system of things, – and to know, therefore, that, without that divine will as *antecedent*, nothing could have been. Wherever we turn our eyes, – to the earth – to the heavens – to the myriads of beings that live and move around us – or to those more than myriads of worlds, which seem themselves almost like animated inhabitants of the infinity through which they range, – above us, beneath us, on every side, we discover, with a certainty that admits not of doubt, intelligence and design, that must have preceded the existence of every thing which exists. Yet, when we analyse those great, but obscure, ideas which rise in our mind, while we attempt to think of the creation of things, we feel, that it is still only a sequence of events which we are considering, – though of events, the magnitude of which allows us no comparison, because it has nothing in common with those earthly changes which fall beneath our view. We do not see any third circumstance existing intermediately, and binding, as it were, the will of the Omnipotent Creator to the things which are to be; we conceive only the *divine will itself*, as if made visible to our imagination, and all nature at the very moment rising around. It is evident, that in the case of the divine agency, as well as in every other instance of causation, the introduction of any circumstance, as a bond of closer connexion, would only furnish a new phenomenon to be itself connected; but even though it were possible to conceive the closer connexion of such a third circumstance, as is supposed to constitute the inexplicable efficiency between the *will* of the Creator and *the rise of the universe*, it would *diminish*, indeed, but it certainly cannot be supposed to elevate, the majesty of the person, and of the scene. Our feeling of his omnipotence is not rendered stronger by the elevation of the complicated process; it is, on the contrary, the immediate succession of the object to the desire, which impresses the force of the omnipotence on our mind; and it is to the divine agency, therefore, that the representation of *instant* sequence seems peculiarly suited, as if it were more emphatically powerful. Such is the great charm of the celebrated passage of Genesis, descriptive of the creation of light. It is from stating nothing more than the antecedent and consequent, that the majestic simplicity of the description is derived. God *speaks*, and *it is done*. We imagine nothing intermediate. In our highest contemplation of His power, we believe only, that, when He *willed* creation, a world arose; and that, in all future time, His will to create cannot exist, without being followed by the instant rise into being of whatever He may have willed; that His will to destroy any thing, will be, in like manner, followed by its non-existence; and His will to vary the course of things, by miraculous appearances. The will is the only necessary previous change; and that Being has almighty power, whose every will is immediately and invariably *followed* by the existence of its object.

## LECTURE VIII ON HYPOTHESIS AND THEORY

The observations which I have already made on *power*, Gentlemen, have, I hope, shown you, both what it truly is, and the sources of that illusion, which leads us to regard it as something more mysterious.

The principal source of this illusion, we found to be our incapacity of distinguishing the minute elements of bodies, – that leads us, in a manner, which it is unnecessary now to recapitulate, to suspect constantly some intermediate and unobserved objects and events, between the parts of sequences, which we truly observe, and, by the influence of this habit, to transfer, at least, the notion of power, from the antecedent which we observe, to the supposed more direct antecedent, which we only imagine, and to consider the causes of events as some unknown circumstances, that exist between all the antecedents which we know, and the consequents which we know, and connect these together in mysterious union.

The same imperfection of our senses, which, from our incapacity of discovering all the minute elements, and consequently all the minute elementary changes, in bodies, leads us to form erroneous notions of power and causation, has tended, in like manner, to produce a fondness for *hypotheses*, which, without rendering the observed phenomena, in any respect, more intelligible, only render them more complicated, and increase the very difficulty, which they are supposed to diminish.

Of this tendency of the mind, which is a very injurious one to the progress of sound philosophy, I must request your attention to a little fuller elucidation. To know well, what *hypotheses* truly are in themselves, and what it is which they contribute to the explanation of phenomena, is, I am convinced, the surest of all preservatives against that too ready assent, which you might otherwise be disposed to give to them; and to guard you from the ready adoption of such loose conclusions, in the reasonings of others, and from the tendency to similar rashness of arrangement and inference, in your own speculative inquiries, is to perform for you the most important office that can be performed, for the regulation, both of your present studies, and of those maturer investigations, to which, I trust, your present studies are to lead.

I have also endeavoured to point out to you, in what manner we are led to believe, that we explain the sequence of two events, by stating some intermediate event. If asked, *How* it is that we hear a voice at a distance, or see a distant object? we immediately answer, Because the primary vibration of the organs of speech is propagated in successive vibrations through the intervening air, and because light is reflected or emitted from the distant object to the eye; and he who hears this answer, which is obviously nothing more than the statement of another effect, or series of effects, that takes place before that particular effect, concerning which the question is put, is perfectly satisfied, for the time, with the acquisition which he has made, and thinks, that he now knows, how it is, that we hear and see. To know *why* a succession of events takes place, is thus at length conceived by us, to be the same thing, as to know some other changes, or series of changes, which take place between them; and, with this opinion, as to the necessary presence of some intervening and connecting link, it is very natural, that, when we can no longer state or imagine any thing which intervenes, we should feel as if the sequence itself were less intelligible, though unquestionably, when we can state some intervening circumstance, we have merely found a new antecedent in the train of physical events, so as to have now *two* antecedents and consequents, instead of *one* simple antecedent and consequent, and have thus only doubled our supposed mystery, instead of removing it.

Since it does *appear* to us, however, to remove the very mystery which it doubles, it is the same thing, with respect to our general practice of philosophizing, as if it *did* remove it. If we suppose the intervention of some unknown cause, in every phenomenon which we perceive, we must be equally

desirous of discovering that unknown cause, which we suppose to be intermediate, – and, when this is not easily discoverable, we must feel a strong tendency to divine what it is, and to acquiesce, more readily than we should otherwise have done, in the certainty of what we have only imagined, – always, of course, imagining the cause, which seems to have most analogy to the observed effect.

Such is the nature of that illusion, from which the love of hypotheses flows, – as seeming, by the intervention of a new antecedent, to render more intelligible the sequences of events that are obviously before us, – though all which is truly done, is to double the number of antecedents; and, therefore, to double, instead of removing the difficulty, that is supposed to be involved in the consideration of a simple sequence of events. A stone tends to the ground – that it should have this *tendency*, in consequence of the mere presence of the earth, appears to us most wonderful; and we think, that it would be much less wonderful, if we could discover the presence, though it were the *mere presence*, of something else. We therefore, in our mind, run over every circumstance analogous, to discover something which we may consider as present, that may represent to our imagination the cause which we seek. The effect of *impulse*, in producing motion, we know by constant experience; and, as the motion, which it produces, in a particular direction, seems analogous to the motion of the stone in its particular direction, we conceive, that the motion of a stone, in its fall to the earth, is rendered more intelligible, by the imagined intervention of some impelling body. The circumstances, which we observe, however, are manifestly inconsistent with the supposition of the impulse of any very gross matter. The analogies of gross matter are accordingly excluded from our thoughts, and we suppose the impulse to proceed from some very subtle fluid, to which we give the name of *ether*, or any other name, which we may choose to invent for it. The hypothesis is founded, you will observe, on the mere analogy of another species of motion, and which would account for gravitation by the impulse of some fine fluid. It is evident, that there may be, in this way, as many hypotheses to explain a single fact, as there have been circumstances analogous observed in all the various phenomena of nature. Accordingly, another set of philosophers, instead of explaining gravitation by the analogy of *impulse*, have had recourse to another analogy, still more intimately familiar to us – that of the phenomena of life: We are able to move our limbs by our mere volition. The mind, therefore, it is evident, can produce motion in matter; and it is hence some interposed spiritual agent, which produces all the phenomena of gravitation. Every orb, in its revolution on its axis, or in its great journey through the heavens, has, according to this system of philosophical mythology, some peculiar *genius*, or directing spirit, that regulates its course, in the same manner as, of old, the universe itself was considered as one enormous animal, performing its various movements by its own vital energies. It is the influence of this analogy of our own muscular motions, as obedient to our volition, – together with the mistaken belief of adding greater honour to the divine Omnipotent, – which has led a very large class of philosophers to ascribe every change in the universe, material or intellectual, not to the original *foresight* and arrangement merely, – the irresistible evidence of which even the impiety, that professes to question it, *must* secretly admit, – but to the direct operation of the Creator and Sovereign of the world, —

“The mighty Hand,  
 That, ever busy, wheels the silent spheres,  
 Works in the secret deep; shoots streaming thence  
 The fair profusion that o'erspreads the spring;  
 Flings from the sun direct the flaming day;  
 Feeds every creature; hurls the tempest forth;  
 And, as on earth this grateful change revolves,  
 With transport touches all the springs of life.”

So prone is the mind to complicate every phenomenon, by the insertion of imagined causes, in the simple sequences of physical events, that one hypothesis may often be said to involve in it many other hypotheses, invented for the explanation of that very phenomenon, which is adduced in explanation of another phenomenon, as simple as itself. The production of muscular motion by the will, which is the source of the hypothesis of direct spiritual agency, in every production of motion, or change, in the universe, has itself given occasion to innumerable speculations of this kind. Indeed, on no subject has the imagination been more fruitful of fancies, that have been strangely given to the world under the name of philosophy. Though you cannot be supposed to be acquainted with the minute nomenclature of anatomy, you yet all know, that there are parts termed *muscles*, and other parts termed *nerves*, and that it is by the contraction of our muscles that our limbs are moved. The nerves, distributing to the different muscles, are evidently instrumental to their contraction; since the destruction of the nerve puts an end to the voluntary contraction of the muscle, and consequently to the apparent motion of the limb. But what is the influence that is propagated along the nerve, and in what manner is it propagated? For explaining this most familiar of all phenomena, there is scarcely any class of phenomena in nature, to the *analogy* of which recourse has not been had, – the vibration of musical chords, – the coiling or uncoiling of springs, – the motion of elastic fluids, electricity, magnetism, galvanism; – and the result of so many hypotheses, – after all the labour of striving to adapt them to the phenomena, and the still greater labour of striving to prove them exactly adapted, when they were far from being so – has been the return to the *simple fact*, that muscular motion follows a certain state of the nerve; – in the same manner, as the result of all the similar labour, that has been employed to account, as it has been termed, for gravitation, has been a return to the simple fact, that, at all visible distances observed, the bodies in nature tend toward each other.

The mere sequence of one event after another event, is, however, too easily conceived, and has too little in it of that complication, which at once busies and delights us, to allow the mind to rest in it long. It must forever have something to disentangle, and, therefore, something which is perplexed; for, such is the strange nature of man, that the simplicity of truth, which might seem to be its essential charm, – and which renders it doubly valuable, in relation to the weakness of his faculties, – is the very circumstance that renders it least attractive to him; and though, in his analysis of every thing that is compound in matter, or involved in thought, he constantly flatters himself, that it is this very simplicity, which he loves and seeks, he yet, when he arrives at *absolute simplicity*, feels an equal tendency to turn away from it, and gladly prefers to it any thing that is *more* mysterious, merely because it is mysterious. “I am persuaded,” said one, who knew our nature well, “that, if the majority of mankind could be made to see the order of the universe, such as it is, as they would not remark in it any virtues attached to certain numbers, nor any properties inherent in certain planets, nor fatalities, in certain times and revolutions of these, they would not be able to restrain themselves, on the sight of this admirable regularity and beauty, from crying out with astonishment, What, is this all?”

For the fidelity of this picture, in which Fontenelle has so justly represented one of the common weaknesses of our intellectual nature, we unfortunately need not refer to the majority of mankind alone, to whom, it may be said, almost with equal truth, that every thing is wonderful, and that nothing is wonderful. The feeling which it describes exists even in the most philosophic mind, and had certainly no increased influence even on that mind which described it so truly, when it employed all its great powers, in still striving to support the cumbrous system of the *Vortices*, against the simple theory of *attraction*. Even Newton himself, whose transcendent intellect was so well fitted to perceive the sublimity, which simplification adds to every thing that is truly great in itself, yet, showed, by his query with respect to the agency of ether, that he was not absolutely exempt from that human infirmity of which I speak; and though philosophers may now be considered as almost unanimous with respect to gravitation, – in considering it as the mere tendency of bodies towards each other, we yet, in admiring this tendency which we perceive, feel some reluctance to admit a mere fact, that presents itself so simply to our conception, and would be better pleased, if any other mode could be

pointed out, by which, with some decent appearance of reason on its side, the same effect could seem to be brought about, by a natural apparatus, better suited to gratify our passion for the *complicated* and the wonderful. Though the theory of *Vortices* can scarcely be said now to have any lingering defender left, there is a constant tendency, and a tendency which requires all our philosophy to repress it, – to relapse into the supposition of a great ethereal fluid, by the immense ocean, or immense streams, of which the phenomenon now asserted to gravitate, may be explained, and we have no objection, to fill the whole boundless void of the universe, with an infinite profusion of this invisible matter, merely that we may think, with more comfort, that we know how a *feather* falls to the ground; – though the fall of the feather, after this magnificent cast of contrivance, would still be as truly inexplicable as at present; and though many other difficulties must, in that case, be admitted in addition. It is only in *geometry*, that we readily allow a straight line, to be the shortest that can be drawn between any two points. In the physics of mind, or of matter, we are far from allowing this. We prefer to it almost any *curve* that is presented to us by others, – and, without all doubt, any curve which we have described ourselves; and we boldly maintain, and, which is yet more fairly believe, that we have found out a *shorter road*, merely because, in our philosophical peregrination, we have chosen to journey many miles about, and in our delight of gazing on new objects, have never thought of measuring the ground which we have trod.

I am aware, indeed, that, in the consideration of the simple antecedents, and consequents which nature exhibits, it is not the mere complication of these, by the introduction of new intervening substances or events, which obtains from the mind so ready an adoption of hypotheses. On the contrary, there is a sort of false simplification in the introduction of hypotheses, which itself aids the illusion of the mystery. I term the simplification *false*, because it is not in the phenomena themselves, but in our mode of conceiving them. It is certainly far more simple, *in nature*, that bodies should have a tendency toward each other, than that there should be oceans of a subtle fluid, circulating around them, in vortices, – or streams of such a fluid, projected continually on them from some unknown source, merely to produce the same exact motions, which would be the result of the reciprocal tendency in the bodies themselves. But the interposition of all this immensity of matter, to account for the fall of a feather or rain-drop, cumbrous as the contrivance must be allowed to be, is yet in one respect, more simple to our conception, because, instead of two classes of phenomena, those of *gravitation* and of *impulse*, we have, in referring all to *impulse*, only one general class. Man loves what is simple *much*, but he loves what is mysterious *more*; and a mighty ocean of ether, operating invisibly in all the visible phenomena of the universe, has thus a sort of double charm, by uniting the false simplification, of which I have spoken, with abundance of real mystery. This mixture of the simple and the mysterious, is, in some measure, like the mixture of uniformity with diversity, that is so delightful in works of art. However pleasing objects may separately be, we are soon wearied with wandering over them, when, from their extreme irregularity, we cannot group them in any distinct assemblage, or discover some slight relation of parts to the whole; and we are still sooner, and more painfully fatigued, when every object which we see is in exact symmetry with some other object. In like manner, the mind would be perplexed and oppressed, if it were to conceive a great multitude of objects or circumstances, concurring in the production of one observed event. But it feels a sort of dissatisfaction also, when the sequences of events which it observes, are reduced to the mere antecedents and consequents of which they consist, and must have a little more *complication* to flatter it with the belief, that it has learned something which it is important to have learned. To know that a withered leaf falls to the ground, is to know, what the very vulgar know, as well as ourselves; but an ocean of *ether*, whirling it downward, is something of which the vulgar have no conception, and gives a kind of mysterious magnificence to a very simple event, which makes us think, that our knowledge is greater, because we have given, in our imagination, a sort of cumbrous magnitude to the phenomenon itself.

That hypotheses, in that wide sense of the word which implies every thing conjectural, are without use in philosophy, it would be absurd to affirm, since every inquiry may, in that wide sense, be

said to pre-suppose them, and must always pre-suppose them if the inquiry have any object. They are of use, however, not as superseding investigation, but as directing investigation to certain objects, – not as telling us, what we are to believe, but as pointing out to us what we are to endeavour to ascertain. An hypothesis, in this view of it, is nothing more than a reason for making one experiment or observation rather than another; and it is evident, that, without some reason of this kind, as experiment and observations are almost infinite, inquiry would be altogether profitless. To make experiments, at random, is not to *philosophize*; it becomes philosophy, only when the experiments are made with a certain view; and to make them, with any particular view, is to suppose the presence of something, the operation of which they will tend either to prove or disprove. When Torricelli, for example, – proceeding on the observation previously made, by Galileo, with respect to the limited height to which water could be made to rise in a pump, – that memorable observation, which demonstrated, at last, after so many ages of errors, what ought not for a single moment to have required to be demonstrated; the absurdity of the horror of a void ascribed to nature – when, proceeding in this memorable observation, Torricelli made his equally memorable experiment with respect to the height of the column of mercury supported in an inverted tube, and found, on comparison of their specific gravities, the columns of mercury and water to be exactly equiponderant, it is evident that he was led to the experiment with the mercury by the supposition, that the rise of fluids *in vacuo* was occasioned by some counterpressure, exactly equal to the weight supported, and that the column of mercury, therefore should be less in height than the column of water, in the exact inverse ratio of their specific gravities, by which the counterpressure was to be sustained. To conceive the air, which was then universally regarded as essentially light, to be not light but heavy, so as to press on the fluid beneath, was, at that time, to make as bold a supposition as could be made. It was indeed, a temporary hypothesis, even when it led to that experimental demonstration of the fact, which proved it forever after not to be hypothetical.

An hypothesis, then, in the first stage of inquiry, far from being inconsistent with sound philosophy, may be said to be essential to it. But it is essential only in this first stage, as suggesting what is afterwards to be verified or disproved; and, when the experiments or observations to which it directs us do not verify it, it is no longer to be entertained, even as an hypothesis. If we observe a phenomenon, which we never have observed before, it is absolutely impossible for us, not to think of the analogous cases which we may have seen; since they are suggested by a principle of association, which is as truly a part of our constitution, as the senses with which we perceived the phenomenon itself; and, if any of these analogies strike us as remarkably coincident, it is equally impossible for us not to imagine, that the cause, which we knew in that former instance, may also be present in this analogical instance, and that they *may*, therefore, both be reduced to the same class. To stop here, and, from this mere analogy, to infer positive identity of the causes, and to follow out the possible consequences in innumerable applications, would be to do, as many great artists in systematizing have done. What a philosopher, of sounder views, however, would do in such a case, is very different. He would assume, indeed, as *possible* or perhaps as *probable*, the existence of the supposed cause. But he would assume it, only to direct his examination of its reality, by investigating, as far as he was able, from past experience, what the circumstances would have been, in every respect, if the cause supposed had been actually present; and, even if these were all found to be exactly coincident, though he would think the presence of the cause more probable, he would be very far from considering it as certain, and would still endeavour to lessen the chances of fallacy, by watching the circumstances, should they again recur, and varying them, by experiment, in every possible way.

This patience and caution, however, essential as they are to just philosophizing, require, it must be confessed, no slight efforts of self-denial, but of a self-denial which is as necessary to intellectual excellence as the various moral species of self-denial are to excellence and virtue.

“Mr Locke, I think,” says Dr Reid, “mentions an eminent musician, who believed that God created the world in six days, and rested the seventh, because there are but seven notes in music. I

myself,” he continues, “knew one of that profession, who thought that there could be only three parts in harmony, to wit, bass, tenor, and treble; because there are but three persons in the Trinity.”<sup>30</sup>

The minds that could be satisfied with analogies so very slight, must, indeed, have been little acquainted with the principles of philosophic inquiry; and yet how many systems have been advanced in different ages, admired by multitudes, who knew them only by name, and still more revered by the philosophers, who gloried in adopting them, that have been founded on analogies almost as slight.

“The philosophers who form hypothetical systems of the universe, and of all its most secret laws,” says Voltaire, in one of his lively similes, “are like our travellers that go to Constantinople, and think that they must tell us a great deal about the seraglio. They pretend to know every thing which passes within it – the whole secret history of the Sultan and his favourites, and they have seen nothing but its outside walls.”

In one respect, however, philosophers, in their hypothetical systems, far outdo the travellers to Constantinople. They not merely tell us secrets of nature, which they have no opportunity of learning, but they believe the very tales of their own fancy. To see any usual phenomenon, is, indeed, to wonder at it, at first; but to explain it, is almost the very next step, reason serving rather to defend the explanation, when it is made, than to assist greatly in making it; and, in many cases, each philosopher has his separate explanation, on which he is disposed to put as much reliance, as on the certainty of the fact itself, not abandoning the hypothesis, even though the fact should prove to have been different, but making it bend, with a happy pliability, to all the diversities discovered, so as at last, perhaps, to account for circumstances the very reverse of those which it was originally invented to explain. “I have heard,” says Condillac, “of a philosopher, who had the happiness of thinking that he had discovered a principle, which was to explain all the wonderful phenomena of chemistry; and who, in the ardour of his self-congratulation, hastened to communicate his discovery to a skilful chemist. The chemist had the kindness to listen to him, and then calmly told him, that there was but one unfortunate circumstance for his discovery, which was, that the chemical *facts* were exactly the reverse of what he had supposed. Well then, said the philosopher, have the goodness to tell me *what* they are, that I may explain them by my system.”<sup>31</sup> To those who know that fondness for conjecture, which may almost be said to be a sort of intellectual appetite, there is nothing in all the wonders which Swift tells us of his fabled Houyhnhnms, that marks them more strongly as a different race from mankind, than the total absence of hypothesis from their systems of knowledge.

“I remember,” says Gulliver, “it was with extreme difficulty that I could bring my master to understand the meaning of the word *opinion*, or how a point could be disputable; because reason taught us to affirm or deny only when we are certain; and beyond our knowledge we cannot do either. So that controversies, wranglings, disputes, and positiveness, in false or dubious propositions, are evils unknown among the Houyhnhnms. In the like manner, when I used to explain to him our several systems of Natural Philosophy, he would laugh, that a creature pretending to reason, should value itself upon the knowledge of other people's conjectures, and in things, where that knowledge, if it were certain, could be of no use. Wherein he agreed entirely with the sentiments of Socrates, as Plato delivers them, which I mention as the highest honour I can do that Prince of philosophers. I have often since reflected what destruction such a doctrine would make in the libraries of Europe, and how many paths to fame would be then shut up in the learned world.”<sup>32</sup>

While I wish to caution you against a fondness for hypotheses, by shewing you, not merely that they are liable to error, – for inquiry, of every kind, must be so in some degree, – but that, in truth, they leave the real difficulty of the succession of the observed consequents to the observed antecedents as great as before, and only add, to the supposed difficulty of explaining one sequence, the necessity of

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<sup>30</sup> On the Powers of the Human Mind, Essay vi. Chap. viii. Vol. II. p. 334. 8vo. *edit.*

<sup>31</sup> Traite des Systemes, chap. xii. Vol. II. p. 372.

<sup>32</sup> Travels, Part iv, chap. 8. Swift's Works, *edit.* Nichols, Vol. ix. p. 300.

explaining a sequence additional, – I must remark, at the same time, that what is commonly termed *theory*, in opposition to *hypothesis*, is far from being so different from it as is commonly represented, – at least, in the very wide application which is usually made of it. We are told, by those who lay down rules of philosophizing, that the object of philosophy is, to observe particulars, and, from these, to frame general laws, which may, again, be applied to the explanation of particulars; and the view which is thus given of the real province of philosophy is undoubtedly a just one; – but there is an ambiguity in the language which may deceive you, and with respect to which, therefore, it is necessary for you to be on your guard. If, by the term *general law*, be meant the agreement in some common circumstances of a number of events observed, there can be no question that we proceed safely in framing it, and that what we have already found in a number of events, must be applicable to that number of events; in the same manner, as, after combining in the term *animal* the circumstances in which a dog, a horse, a sheep agree, we cannot err in applying the term animal to a dog, a horse, a sheep. But the only particular to which, in this case, we can, with perfect confidence, apply a general law, are the very particulars that have been before observed by us. If it be understood as more general than the circumstances observed, and, therefore, capable of being applied with perfect certainty to the explanation of new phenomena, we evidently, to the extent in which the general law is applied beyond the circumstances observed, proceed on mere supposition, as truly, as in any hypothesis which we could have framed; and though the supposition may be more and more certain, in proportion to the number of cases thus generalized, and the absence of any circumstance which can be supposed, in the new case, to be inconsistent with it, it never can amount to actual certainty. Let us take, for example, one of the most striking cases of this sort. That bodies tend to each other, *in all circumstances*, with a force increasing directly as their quantities, and inversely as the squares of their distances, may seem in the highest degree probable indeed, from the innumerable facts observed on our globe, and in the magnificent extent of the planetary movements; but it cannot be said to be certain at all distances, in which we have never had an opportunity of making observations, – as it seems to be verified in the heights of our atmosphere, and in the distances of the planets, in their orbits, from the sun, and from each other. It is not necessary, however, to refer, for possible exceptions, to spaces that are beyond our observation; since, on the surface of our own earth, there is abundant evidence, that the law does *not* hold *universally*. Every quiescent mass that is capable of greater compression, and of which the particles, therefore, before that compression, are not in absolute contact, shews sufficiently, that the principle of attraction, which, of itself, would have brought them into actual contact, must have ceased to operate, while there was still a space between the particles that would have allowed its free operation; and, in the phenomena of *elasticity*, and impulse in general, it has not merely ceased, but is actually reversed, – the bodies which, at all visible distances, exhibited a reciprocal *attraction*, now exhibiting a reciprocal *repulsion*, in consequence of which they mutually fly off, as readily as they before approached, – that is to say, the tendency of bodies to each other being converted into a tendency *from* each other, by a mere change of distance, so slight as to be almost inappreciable. When a ball rebounds from the earth, toward which it moved rapidly before, and the gravitating tendency is thus evidently reversed, without the intervention of any foreign force, what eye, though it be aided by all the nicest apparatus of optical art, can discover the lines which separate those infinitesimal differences of proximity, at which the particles of the ball still continue to gravitate toward the earth, and are afterwards driven from it in an opposite direction; – yet the phenomenon itself is a sufficient proof, that in these spaces, which seem, to our organs of sense, so completely the same, that it is absolutely impossible for us to distinguish them, the reciprocal tendencies of the particles of the ball and of the earth are as truly opposite, as if the laws of gravitation had, at the moment at which the rebound begins, been reversed through the whole system of the universe.

It is, indeed, scarcely possible to imagine a more striking proof of the danger of extending, with too great certainty, a general law, than this instant conversion of *attraction* into *repulsion*, without the addition of any new bodies, without any change in the nature of the bodies themselves, and a

change of their circumstances so very slight, as to be absolutely indistinguishable, but for the opposite motions that result from it, with a change of their circumstances. After observing the gravity of bodies, at all heights of our atmosphere, and extending our survey through the wide spaces of our solar system, – computing the tendency of the planets to the sun, and their disturbing forces, as they operate on each other, – and finding the resulting motions exactly to correspond with those which we had predicted by theory; – in these circumstances, after an examination so extensive, if we had affirmed, as an universal law of matter, that, at all distances, bodies tend toward each other, we should have considered the wideness of the induction, as justifying the affirmation; and yet, even in this case, we find, on the surface of our earth, in the mutual shocks of bodies, and in their very rest, sufficient evidence, that, in making the universal affirmation, we should have reasoned falsely. There is no theory, then, which, if applied to the explanation of *new* phenomena, is not, to a certain degree, conjectural; because it must proceed on the supposition, that what was true in certain circumstances, is true also in circumstances that have not been observed. It admits of certainty, only when it is applied to the very substances observed, – in the very circumstances observed, – in which case, it may be strictly said to be nothing more than the application of a general term to the particulars, which we have before agreed to comprehend in it. Whatever is more than this is truly hypothetical, – the difference being, that we commonly give the name of *hypothesis* to cases, in which we suppose the intervention of some substance, of the existence of which, as present in the phenomenon, we have no direct proof, or of some additional quality of a substance before unobserved, – and the name of *theory* to cases, which do not suppose the existence of any substance, that is not actually observed, or of any quality that has not been actually observed, but merely the continuance, in certain *new* circumstances, of tendencies observed in other circumstances. Thus, if a planet were discovered revolving in the space which separates the orbits of any two planets at present known, were we to suppose of matter, in this new situation, that it would be subject to the same exact law of gravitation, to which the other planets were known to be subject, and to predict its place in the heavens, at any time, according to this law, we should be said to form a theory of its motions; as we should not take for granted, any new quality of a substance, or the existence of any substance, which was not evidently present, but only of *tendencies* observed before in other circumstances, – analogous indeed, but not absolutely the same. We should be said to form an hypothesis on the subject, if, making the same prediction, as to its motions, and place in the heavens, at any given time, we were to ascribe the centripetal tendency, which confines it within its orbit, to the impulse of ether, or to any other mechanical cause. The terms, however, I must confess, though the distinction which I have now stated would be, in all cases, a very convenient one, are used very loosely, not in conversation merely, but in the writings of philosophers, – an hypothesis often meaning nothing more than a theory, to which we have not given our assent, – and a theory, an hypothesis which we have adopted, or still more, one which we have formed ourselves.

A *theory*, then, even in that best sense, to which I wish it accurately confined, as often as it ventures a single hair-breadth beyond the line of former observation, may be wrong, as an hypothesis may be wrong. But, in a theory, in this sense of it, there are both less risk of error, and less extensive evil from error, than in an hypothesis. There is less risk of error, because we speak only of the properties of bodies, that must be allowed actually to exist; and the evil of error is, for the same reason, less extensive, since it must be confined to this single point; whereas, if we were to imagine falsely the presence of some third substance, our supposition might involve as many errors, as that substance has qualities; since we should be led to suppose, and expect, some or all of the other consequences, which usually attend it, when really present.

The practical conclusion to be drawn from all this very long discussion, is, that we should use hypotheses to suggest and direct inquiry, not to terminate or supersede it; and that, in theorizing, – as the chance of error, in the application of a general law, diminishes, in proportion to the number of analogous cases, in which it is observed to hold, – we should not form any general proposition, till after as wide an induction, as it is possible for us to make; and, in the subsequent application of it

to particulars, should never content ourselves, in any new circumstances, with the mere probability, however high, which this application of it affords; while it is possible for us to verify, or disprove it, by actual experiment.

## LECTURE IX

# RECAPITULATION OF THE FOUR PRECEDING LECTURES; AND APPLICATION OF THE LAWS OF PHYSICAL INQUIRY TO THE STUDY OF MIND, COMMENCED

For several Lectures, Gentlemen, we have been employed in considering the objects that are to be had in view, in Physical Inquiry in general, a clear conception of which seems to me as essential to the Philosophy of Mind, as to the Philosophy of Matter. I should now proceed to apply these general remarks more particularly to our own science; but, before doing this, it may be of advantage to retrace slightly our steps in the progress already made.

All inquiry, with respect to the various substances in nature, we have seen, must regard them as they exist in *space*, or as they exist in *time*, – the inquiry, in the one case, being into their composition; the inquiry, in the other case, into the changes which they exhibit. The first of these views we found to be very simple, having, for its object, only the discovery of what is actually before us at the moment, – which, therefore, if we had been endowed with senses of greater delicacy and acuteness, we might have known, without any inquiry whatever. It is the investigation of the elements, or separate bodies, that exist together, in the substances which we considered, or rather that constitute the substances which we considered, by occupying the space which we assign to the one imaginary aggregate, and are regarded by us as one substance, – not from any absolute unity which they have in nature, since the elementary atoms, however continuous or near, have an existence as truly separate and independent, as if they had been created at the distance of worlds, – but from a unity, that is relative only to our incapacity of distinguishing them as separate. It is to the imperfection of our senses, then, that this first division of Physical Inquiry owes its origin; and its most complete results could enable us to discover only, what has been before our eyes from the moment of our birth.

The second division of inquiry, – that which relates to the successions of phenomena in time, – we found, however, to have a different origin; since the utmost perfection of our mere senses could show us only what *is*, at the moment of perception, not what *has been*, nor what *will be*; and there is nothing in any qualities of bodies perceived by us, which, without experience, could enable us to predict the changes that are to occur in them. The foundation of all inquiry, with respect to phenomena as successive, we found to be that most important law, or original tendency, of our nature, in consequence of which we not merely perceive the changes exhibited to us at one particular moment, but from this perception, are led irresistibly to believe, that similar changes *have* constantly taken place, in all similar circumstances, and *will* constantly take place, as often as the future circumstances shall be exactly similar to the present. We hence consider events, not as casually antecedent and consequent, but as invariably antecedent and consequent, – or, in other words, as causes and effects; and we give the name of *power* to this permanent relation of the invariable antecedent to its invariable consequent. The powers of substances, then, concerning which so many vague, and confused, and mysterious notions prevail, are only another name for the substances themselves, in relation to other substances, – not any thing separate from them and intermediate, – as the *form* of a body, concerning which too, for many ages, notions as vague and mysterious prevailed, is not any thing different from the body, but is only the body itself, considered according to the relative position of its elements. Form is the relation of immediate proximity, which bodies bear to each other in *space*; – power is the relation of immediate and uniform proximity, which events bear to each other in *time*; and the relation, far from being different, as is commonly supposed, when applied to matter and to spirit, is precisely the same in kind, whether the events, of which we think, be material or immaterial. It

is of invariable antecedence that we speak alike in both cases, and of invariable antecedence only. When we say, that a magnet has the power of attracting iron, we mean only, that a magnet cannot be brought near iron, without the instant motion of the iron towards it. When we say, in treating of *mental* influence, that man, in the ordinary circumstances of health, and when free from any foreign restraint, has the power of moving his hand, we mean only, that, in these circumstances, he cannot will to move his hand, without its consequent motion. When we speak of the omnipotence of the Supreme of Beings, – who is the fountain of all power, as he is the fountain of all existence, – we mean only, that the universe arose at his command, as its instant consequence, and that whatever he *wills* to exist or perish, exists, or is no more.

This simple view of power, as the mere antecedent substance itself, in its relation to its immediate and invariable consequences, without the intervention of any mysterious tie, – since there surely can be nothing in nature, but all the substances which exist in nature, – it was necessary to illustrate, at great length, in consequence of the very false notions, that are generally, or, I may say, universally prevalent on the subject. The illustration, I am aware, must, to many of you, have appeared very tedious, and a sufficient exemplification of that license of exhausting occasionally your attention, and perhaps, too, your patience, of which I claimed the right of exercise, whenever it should appear to me necessary, to make any important, but abstract truth familiar to your mind. I shall not regret, however, any temporary feeling of weariness which I may have occasioned, by dwelling on this great fundamental subject, if I have succeeded in making familiar to your minds, the truths which I wished to impress on them, and have freed you from those false notions of occult and unintelligible agency in causes, – as something different from the mere causes or antecedents themselves, – which appear to me to have retarded, in a very singular degree, the progress of philosophy, – not merely, by habituating the mind to acquiesce in the use of language, to which it truly affixes no meaning, though even this evil is one of very serious injury in its general effects, – but by misdirecting its inquiries, and leading it, from the simplicity of nature, – in which every glance is truth, and every step is progress, – to bewilder itself, with the verbal mysteries of the schools, where there is no refreshment of truth to the eye, that is wearied with wandering only from shadow to shadow, – and where there is all the fatigue of continual progress, without the advance of a single step.

Even those philosophers, who have had the wisdom to perceive, that man can never discover any thing in the phenomena of nature, but a succession of events, that follow each other in regular series, – and who, accordingly, recommend the observation and arrangement of these regular antecedents and consequents, as the only attainable objects of philosophy, yet found this very advice, on the distinction of what they have termed efficient causes, as different from the physical causes, or simple antecedents, to which they advise us to devote our whole attention. There are certain *secret causes*, they say, continually operating in the production of every change which we observe, and causes which alone deserve the name of efficient; but they are, at the same time, careful to tell us, that, although these causes are constantly operating before us, and are all which are truly acting before us, we must not hope, that we shall ever be able to detect one of them; and indeed, the prohibition of every attempt to discover the efficient causes of phenomena, – repeated in endless varieties of precept or reproof, – is the foundation of all their rules of philosophizing; as if the very information, – that what we are to consider exclusively, in the phenomena of nature, is far less important, than what we are studiously to omit, – were not, of itself, more powerful, in stimulating our curiosity to attempt the forbidden search, than any prohibition could be in repressing it. “Felix qui potuit rerum cognoscere causas.” This will forever be the feeling of the inquirer, while he thinks that there are any causes, more than those, which he has already investigated. Even Newton himself, that sagest of observers and reasoners, who could say, with the simplicity of pure philosophy, “*Hypotheses non fingo.*” yet showed, as we have seen, by one of the most hypothetical of his Queries, that he was not exempt from the error which he wished to discourage – that inordinate love of the unknown, which must always lead those, who believe that there is something intermediate and undiscovered truly existing

between events, to feel the anxious dissatisfaction of incomplete inquiry, in considering the mere antecedents and consequents which nature exhibits, and to turn, therefore, as if for comfort, to any third circumstance, which can be introduced, without obvious absurdity, as a sort of connecting link, between the pairs of events. To suppose that the mind should not have this disposition, would, indeed, be to suppose it void of that principle of curiosity, without which there can be no inquiry of any kind. He who could believe, that, between all the visible phenomena, there are certain invisible agencies continually operating, which have as real an existence as all that he perceives, and could yet content himself with numbering the visible phenomena, and giving them names, without any endeavour to discover the intervening powers, by which he is constantly surrounded, or at least to form some slight *guess*, as to that universal machinery, by which he conceived all the wonders of nature to be wrought, must be a being as different from the common intellectual beings of this earth, as the perfect sage of the Stoics from the frail creatures, of mingled vice and virtue, that live and err around us. That, in considering the phenomena of nature, we should confine our attention to the mere antecedents and consequents, which succeed each other in regular series, is unquestionably the soundest advice that can be given. But it is sound advice, for this reason more than any other, that the regular series is, in truth, all that constitutes the phenomena, and that to search for any thing more, is not to have an unattainable object in view, but to have no conceivable object whatever. *Then only* can the inquirer be expected to content himself with observing and classing the sequences, which nature presents to us spontaneously, or in obedience to our art, when he is convinced, that all the substances which exist in the universe – God and the things which he has created – are every thing which truly exists in the universe, to which nothing can be added, which is not itself a *new* substance; that there can be nothing in the events of nature, therefore, but the antecedents and consequents which are present in them; and that these, accordingly, or nothing, are the very causes and effects, which he is desirous of investigating.

After this examination of the notions connected with the uniform successions of events, our attention was next turned to the nature and origin of *hypothetical inquiry*, which we found reason to ascribe to the imperfection of our senses, that renders it impossible for us to know whether we have observed the whole train of sequences in any phenomenon, from our inability to distinguish the various elements that may be the subjects of minute changes unobserved.

We are hence eager to supply, by a little guess-work of fancy, the parts unobserved, and suppose deficiencies in our observation where there may truly have been none; till at length, by this habitual process, every phenomenon becomes, to our imagination, the sign of something *intermediate* as its cause, the discovery of which is to be an explanation of the phenomenon. The mere succession of one event to another appears, to us, very difficult to be conceived, because it wants that intervening something, which we have learned to consider as a cause; but there seems to be no longer any *mystery*, if we can only suppose something intervening between them, and can thus succeed in doubling the difficulty, which we flatter ourselves with having removed; since, by the insertion of another link, we must now have two sequences of events instead of one simple sequence. This tendency of the imagination to form and rest on hypotheses, – or, in other words, to suppose substances present and operating, of the existence of which we have no direct proof, – we found to be one great source of error in our practice of philosophizing.

Another source of error, we found to be the *too great extension* of what are termed general laws; which though a less error in itself, is yet, in one respect, more dangerous than the former; because it is the error of better understandings, – of understandings that would not readily fall into the extravagant follies of hypotheses, but acknowledge the essential importance of induction, and think they are proceeding on it without the slightest deviation, almost at the very moment when they are abandoning it for conjecture. To observe the regular series of antecedents and consequents, and to class these as similar or dissimilar, are all which philosophers can do with complete certainty. But there is a constant tendency in the mind, to convert a *general* law into an *universal* law, – to suppose, after a

wide induction, that what is true of many substances that have a very striking analogy, is as certainly true of *all* that have this striking analogy, – and that what is true of them in *certain* circumstances, is true of them in *all* circumstances, – or, at least, in all circumstances which are not remarkably different. The widest induction which we can make, however, is still limited in its nature; and, though we may have observed substances in many situations, there may be some new situations, in which the event may be different, or even, perhaps, the very reverse of that which we should have predicted, by reasoning from the mere analogy of other circumstances. It appeared to me necessary, therefore, in consequence of the very ambiguous manner in which writers on this higher branch of logic speak of reasoning from general laws to particulars, to warn you, that the application to particulars can be made with certainty, only to the very particulars before observed and generalized, – and that, however analogous other particulars may seem, the application of the general law to them admits only of *probability*, which may, indeed, as the induction has been wider, and the circumstances of observed analogy more numerous, approach more or less to certainty, but must always be short of it, even in its nearest approximation.

Such, then, is *physical inquiry*, both as to its objects, and its mode of procedure, particularly as it regards the universe without; and the laws which regulate our inquiry in the internal world of thought are, in every respect, similar. The same great objects are to be had in view, and no other, – the analysis of what is complex, and the observation and arrangement of the sequences of phenomena, as respectively antecedent and consequent.

In this respect, also, I may remark, the philosophy of matter and the philosophy of mind completely agree – that, in both equally, our knowledge is confined to the phenomena which they exhibit. We give the name of *matter* to the unknown cause of various feelings, which, by the constitution of our nature, it is impossible for us not to refer to something external as their cause. What it is, independent of our perception, we know not; but as the subject of our perception, we regard it as that which is extended, and consequently divisible, impenetrable, mobile; and these qualities, or whatever other qualities we may think necessary to include for expressing the particular substances that affect our senses variously, constitute our whole definition of matter, because, in truth, they constitute our whole knowledge of it. To suppose us to know what it is in itself, in absolute independence of our perception, would be manifestly absurd: since it is only by our perception, – that is to say, by the feelings of our mind, – that it can be known to us at all; and these mere feelings of the mind must depend, at least, as much on the laws of the mind affected, as on the laws of the substance that affects it. Whatever knowledge we may acquire of it, therefore, is relative only, and must be relative in all circumstances; though, instead of the few senses which connect us with it at present, we were endowed with as many senses as there are, perhaps, qualities of matter, the nature of which we are at present incapable of distinguishing; – the only effect of such increased number of senses being, to render more qualities of matter known to us, not to make matter known to us in its very essence, as it exists without relation to mind.

“Tell me,” says Micromegas, an inhabitant of one of the planets of the Dog Star, to the secretary of the Academy of Sciences in the planet Saturn, at which he had recently arrived in a journey through the heavens, – “Tell me, how many senses have the men on your globe?” – I quote, as perhaps the name has already informed you from an ingenious philosophic romance of Voltaire, who, from various allusions in the work, has evidently had Fontenelle, the illustrious secretary of the French Academy of Sciences, in view, in the picture which he gives of the Saturnian secretary. – “We have seventy-two senses,” answered the academician, “and we are, every day, complaining of the smallness of the number. Our imagination goes far beyond our wants. What are seventy-two senses! and how pitiful a boundary, even for beings with such limited perceptions, to be cooped up within our ring, and our five moons! In spite of our curiosity, and in spite of as many passions as can result from six dozen of senses, we find our hours hang very heavily on our hands, and can always find time enough for yawning.” – “I can very well believe it,” says Micromegas, “for, in our globe, we have very near *one*

*thousand* senses; and yet, with all these, we feel continually a sort of listless inquietude and vague desire, which are forever telling us that we are nothing, and that there are beings infinitely nearer perfection. I have travelled a good deal in the universe. I have seen many classes of mortals far beneath us, and many as much superior; but I have never had the good fortune to find any, who had not always more desires than real necessities to occupy their life. – And, pray, how long may you Saturnians live with your few senses?” continued the Sirian. – “Ah! but a very short time, indeed!” said the little man of Saturn, with a sigh. – “It is the same with us,” said the traveller; “we are forever complaining of the shortness of life. It must be an universal law of nature.” – “Alas!” said the Saturnian, “we live only five hundred great revolutions of the sun (which is pretty much about fifteen thousand years of our counting.) You see well, that this is to die almost the moment one is born. Our existence is a point – our duration an instant – our globe an atom. Scarcely have we begun to pick up a little knowledge, when death rushes in upon us, before we can have acquired any thing like experience. As for me, I cannot venture even to think of any project. I feel myself but like a drop of water in the ocean; and, especially now, when I look to you and to myself, I really feel quite ashamed of the ridiculous appearance which I make in the universe.”

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