

THE INFLUENCE OF NEWTON IN
THE POETRY OF WORDSWORTH AND COLERIDGE

by

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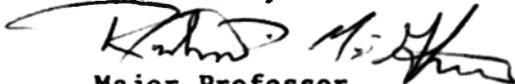
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Preface

It would have been a miracle if the thinking and feeling of the educated person of the eighteenth century were not profoundly affected by science, indeed, if he was not obsessed with it. Science had taken its formal course with Newton's (1642-1727) discoveries of the laws of motion and gravity, and later his optics. It was not that science, in its form understood in Newton's times and now, was unknown previously. Galen (second century A.D.) had introduced science, but for long it was in a pseudo-experimental and more metaphysical state. Since Bacon (1561-1626) it had haltingly taken its experimental and formal direction. Newton's discoveries set it firmly along its formal experimental course, with a powerful impetus. Once it took this path, science as understood today developed so rapidly that its results, methods and implications began to cause concern, confusion and bewilderment to those who did not share the scientific mind. The poet and artist in particular were at variance with science.

It is essential to pause here to define what science is,

its methods, processes and effects that oppose Imagination and creativity. Most school text books make an attempt to describe the nature of science, or better, the scientific method. The scientific method comprises 'repeatability' or 'duplicability,' hypothesis (theory) and experiment, logical derivations and predicability. The first merely requires that any result or effect claimed by one must be repeatable or verifiable by another—indirectly it eliminates subjectivity. The second merely describes the process, when a projected theory (hypothesis) is followed by an experiment to validate, reject or modify it. The third indicates that a conclusion is reached through rational or logical steps or processes. Predictability is a principle of belief that from an accepted or valid theory some yet unknown fact or effect can be discovered: example, that accepting the law of gravity and earth's diurnal motion, Newton was able to predict or foretell that the moon would cause the earth's tides. All these aspects of science are true. But what is of most concern to poets and poetry is not mentioned in standard text books.

What is of most concern to a poet is Imagination or creativity which is his very living element. Here, Imagination and creativity are used synonymously, and any distinction, if it occurs, must be gathered from the context. How does science deny or oppose Imagination or creativity? Before answering this

question, it is necessary to consider what is Imagination or creativity. It may be rather ironical or paradoxical to define creativity, opposed as it is to science, in terms of rational thought, which is the domain of science. However, it can be done. Creativity may be defined as causeless effect; an effect that does not emanate from a cause. Science assumes cause and effect phenomena. Thus creativity or Imagination is directly opposed to science—the latter being directly dependent on cause, the former cause-free.

The above may need further explication. Any effect that is the result of a cause or a series of causes can be worked out backwards to trace those causes. Then those causes can be programmed on a computer, and the computer will follow through the causes, and 'crank out' or regenerate the self-same effect. Therefore, that effect is not one of creativity, but merely one of rational process of cause-effect phenomena. The example of the computer demonstrates the artificiality of the effect, and the absence of creativity in the process. One today is readily aware that what is computer-generated is mechanical and artificial, merely run on the trammel of a pre-program. Computer-music, computer-art, computer-poetry etc. are merely mechanical re-generations, lacking creativity in its definitive sense.

A note may be in order here. One can take a piece of crea-

tion or an effect of creativity, say a composition by Mozart or Coleridge's "The Rime of the Ancient Mariner," and analytically probe into it. Such a probing may yield a string of causes, a system of causes and effects, in it. Then one can readily program this system of causes on a computer, and re-generate the same effect. But to do this, one must first have that original created piece to get started. What is said here is that although a later probing yields a system of causes and effects in that piece by which it can be duplicated, that does not make that piece non-creative. At the origin or time of its creation, the creator (Mozart or Coleridge) did not follow that system of causes and effects, later found in it upon analysis. The original created piece is the First Cause, that is the causeless effect. The creation of the world by God as given in the Genesis chapter of the Bible is one of causeless effect. To explicate this a little further, consider the first water-fall created by God. It was a causeless effect that just came into being through the creativity of God. Had God done it as the result of a cause, then God was not the creator, but merely a spectator watching the effect proceeding from the cause. In addition, God would then have got Himself trapped in the system of causes and effects, and would no longer be God. It is only through later probing that one finds that the water-fall is the result of a cause, the result of gravity acting on water. This latter,

the analysis of the cause and effect of a once-created thing (here, the water-fall), is the aim and domain of science. The original, the first-created thing, which is one of the causeless effect, is the emanation of creativity or Imagination.

It is at this root that Wordsworth and Coleridge move away from science to follow the pathway of creativity or Imagination. Each pathway leads to its own produce or truths—each to different produce and different truths. It is fundamental to Wordsworth and Coleridge that the produce or truth of Imagination is no less valid than that of science. In following the pathway of Imagination one automatically rejects the cause and effect principle as necessary for validation. Wordsworth and Coleridge do not deny or reject the benefits of science, at times they even extol them. If they are critical of them at other times, it is as a secondary effect, such as that they may see the benefits of science as having the side-effects of eroding and weakening the morals and individuality of people. Thus, the issue is not whether they, especially Wordsworth, are against or for science, as is usually debated. The two pathways, the pathways of Imagination and science, co-exist, though diverging, but each leading to its own truth, no less valid than the other. Wordsworth and Coleridge choose the pathway of imagination.

In an abstruse, but incomplete and truncated treatise "on

the imagination or esemplastic power" in chapter thirteen of Biographia Literaria¹, Coleridge considers the confluence of two oppositely directed infinite forces. Were these two forces finite, he observes the "the two equal forces acting in opposite directions, both being finite and each distinguished from the other by its direction only, must neutralize or reduce each other to inaction" (299). However, he adds that "these forces should be assumed to be both alike infinite, both alike indestructible. The problem will then be to discover the result or product of two such forces, as distinguished from the result of those forces which are finite" (299). On the confluence of these two forces, infinite and oppositely directed, he states:

The counteraction then of the two assumed forces does not depend on their meeting from opposite directions; the power which acts in them is indestructible; it is therefore inexhaustibly re-ebullient; and as something must be the result of these two forces, both alike infinite, and both alike indestructible; and as rest or neutralization cannot be this result; no other conception is possible, but that the product must be a tertium aliquid, or finite generation. . . . Now this tertium aliquid can be no other than an inter-penetration of the counteracting powers, partaking of both.

Here the treatise is truncated, leaving the meaning unclear in a bog of abstruseness. In the above passage of Coleridge, the confluence is stated to be "inexhaustibly re-ebullient," the word "ebullient" meaning boiling or agitated. Wordsworth likewise refers to Imagination as of "endless agitation." We read:

And central peace, subsisting at the heart
 Of endless agitation. Here you stand,
 Adore, and worship, when you know it not;
 Pious beyond the intention of your thought;
 Devout above the meaning of your will.

--yes, you have felt, and may not cease to feel.

(Excursion IV, lines 1146-1151)

Wordsworth then continues with the passage to contrast the above "endless agitation" of Imagination with science, which is the reasoning power: "The estate of man would be indeed forlorn/If false conclusions of the reasoning power/Made the eye blind" (Excursion IV, lines 1152-1154). One may surmise the two oppositely directed infinite forces of Coleridge's treatise are the power of Imagination and science, and that their confluence is "inexhaustibly re-ebullient" or of Wordsworth's "endless agitation."

This splitting of the pathways of Imagination and science did not originate with Newton's discoveries, but was emphasized and made prominent by them. Newton's discoveries, in making science more definitive and rigid along the cause and

effect principle, had the effect of emphasizing its split with Imagination, where such a principle was not a necessary condition, and often not invoked at all. Even though the pathways of Imagination and science diverge, Wordsworth and Coleridge include in the workings of their Imagination and in their poetry features of science—its concepts, terms, findings, images, the metaphysics of its conclusions, etc. They could employ such features of science either as a reaction against science or in its favor.

This paper reports the influences of science in Wordsworth's and Coleridge's poetry. The report considers influences of Newton's Principia and his System of the World², which treat the laws of motion, gravity, and movements of heavenly bodies. The area where the influences are traced is limited to Coleridge's poetry in general, and Wordsworth's Excursion in particular, but not limited to it exclusively.

These scientific influences are considered under five chapters. The first chapter treats the imagery that Wordsworth and Coleridge draw from Newton's works. The second chapter notes how the generation of Wordsworth and Coleridge went through a transition period when the aims of Imagination and science were often confusingly merged. The effects of this confusion in their poetry are considered. Whereas the first two chapters generally deal with the results of the effects of science, the third chap-

ter treats the causes of hylozoism or animism in their poetry-- it argues that these causes might have a strong relation to Newton's First Law of Motion and his law of gravity. Distinct from the results and causes of science on their poetry, the fourth chapter treats the reaction of Wordsworth and Coleridge against the scientific method, when it is applied to non-material phenomena. In such cases the conclusions by science may be in error, and the process of Imagination may be the surer guide. The fifth chapter considers the causes for the phenomenon studied in chapter four--it discusses that the process of abstraction of science is the cause, an effect termed as "the Fallacy of Misplaced Concreteness."

Imagery from Newton's Principia and The
System of the World.

Under this heading are considered the images, allusions and concepts in the poetry of Wordsworth and Coleridge that appear traceable to Newton's Principia and System of the World. After their novitiate year, students at Cambridge studied "the Sanctum Sanctorum, Newton's 'most beautiful system of the Sun, Planets, and Comets.'" Though "Wordsworth lacked the novitiate preparation, yet his 'schooling [at Cambridge] in Euclid's Elements would have qualified him for a few glimpses into the Sanctum Sanctorum.'" ³ One can surmise that Newton's books came within the knowledge of an educated person of that time to draw images and information from it.

We shall now consider some of the images and references from Newton's works appearing in the poetry of Wordsworth and Coleridge. Wordsworth describes the steady industry of a simple country pastor as, "constant as the motion of the day" (Excursion VII, line 325). The image of the constancy of the turning of the

day must have been a byword as well as a novelty in the thinking of men in that period, for we read in Newton's System of the World, "The planets rotate around their own axes uniformly . . . and there is a like revolution [rotation] of our earth performed in 24^h; and those motions are neither accelerated nor retarded by the actions of the centripetal forces . . . and therefore of all others they are the most uniform and most fit for the measurement of time" (579).

In Principia there are constant references to the steady revolutionary (annual) and rotational (diurnal) motions of the planets and earth, unerringly following their prescribed paths, and innumerable calculations to show that any perturbations and changes occurring in these motions are so infinitesimal over long periods so as to be unnoticeable (insignificant). It is postulated in the Principia:

the very slow motion [perturbation] of the moon's apogee; which in every single revolution amounting but to 3° 3' forwards, may be neglected.

(406)

or, if the aphelion of Mars, in the space of a hundred years, is carried forwards 33' 20", in respect of the fixed stars, the aphelions of the earth, of Venus, and of Mercury, will in a hundred years be carried forwards 17' 40", 10' 53", and 4' 16", respectively. But these

motions are so inconsiderable, that we neglected them
in this Proposition.

(422)

or, in The System of the World,

Kepler, from Tycho's observations and his own,
found the parallax of Mars insensible.

(563)

In the above what are referred to are not the regular motions of the planets, but the changes or perturbations acting on these regular motions and the shifts in their regular elliptic paths, that are small and negligible. For example, a shift in the aphe-
lion will correspond to a shift in the regular elliptic path of the planet. These shifts being negligible, the regular motions, their periods and paths are preserved unchanging. One sees how strong are the echoes of this concept and imagery in the following, where Wordsworth describes the constant, unshifting, halcyon life of the Solitary with his wife and child, before death takes them away:

Smoothly did our life

Advance, swerving not from the path prescribed;

Her annual, her diurnal, round alike

Maintained with faithful care. And you divine

The worst effects that our condition saw

If you imagine changes slowly wrought,

And in their progress unperceivable.

(Excursion III, lines 611-617)

Newton's works made the image of the planets' coursing smoothly in their fixed paths so familiar and novel that Coleridge can evoke the imagery of such motion in describing other movements or progress. He describes the movements of the water-snakes in the sea as "They moved in tracks of shining white" ("The Rime of the Ancient Mariner," line 274). Or, he describes the life's current of his youth: "Life's current then ran sparkling to the noon, / Or silver'd its smooth course beneath the Moon" ("Lines to a Beautiful Spring in a Village," lines 29-30).

Schneider, in Wordsworth's Cambridge Education,⁴ makes an observation on the unusual, child-like desire of Wordsworth to experience the diurnal motion of the earth, "the skating boy of The Prelude, who jerks himself to a sudden stop, has the strange sensation that 'still the solitary cliffs/wheeled by me--even as if the earth had rolled/ With visible motion herdiurnal round!' Very few besides Wordsworth have felt so strongly the need to have direct sense experience of the earth's motion" (251). It is conceivable that Wordsworth got this obsession for earth's daily motion from the many references and studies that Newton made on it in his works.

Newton's discoveries and books and knowledge of these among the educated must have generated talk on motion ad nauseam, so that Coleridge could write a parody on earth's motion. In a poem mocking the

social craze for travel, he has these lines:

Keep moving! Steam, or Gas, or Stage,
 Hold, cabin, steerage, hencoop's cage--
 Tour, Journey, Voyage, Lounge, Ride, Walk,
 Skim, Sketch, Excursion, Travel-talk--
 For move you must! 'Tis now the rage,
 The law and fashion of the Age.

. . .

Cur Mother Earth has ta'en the infection--
 (That rogue Copernicus, 'tis said
 First put the whirring in her head,)
 A planet She, and can't endure
 T'exist without her annual Tour:
 The name were else a mere misnomer,
 Since Planet is but Greek for Roamer.

("The Delinquent Travellers," lines 16-43)

Under various "phenomena" Newton studies in Principia five planets together as a group which he refers to as in:

Phenomenon III

That the five primary planets, Mercury, Venus, Mars,
 Jupiter, and Saturn, with their several orbits, encompass
 the sun

(403)

Phenomenon IV

That the fixed stars being at rest, the periodic times
of the five primary planets . . .

(404)

Phenomenon V

Then the primary planets, by radii drawn to the earth,
describe areas . . .

(405)

Of course, it is possible that this grouping of the five was current before Newton. One can surmise Wordsworth was very conscious of these five, when he describes the Chaldean shepherds' scanning the sky as "The planetary Five/With a submissive reverence they beheld" (Excursion IV, lines 699-700).

Since the cradle of civilization sprang on sea and river banks, 'the diurnal agitations of the waters,' the sea and river tides, were familiar even to the ancients. Until Newton, they remained mysterious, thought to be caused by various agencies, such as the winds, the spirit of the sea-gods, among other things. In his Principia and The System of the World, ^{Newton} gave a detailed explanation, with not only the causes for the tides, but also calculations for their time, their height etc. We read:

Proposition XXIV. Theorem XIX

That the flux and reflux [ebb and flow] of the sea arise
from the actions [gravity] of the sun and moon.

(Principia 435)

The ocean must flow twice and ebb twice, each day, and the highest water occurs at the third hour after the approach of the luminaries to the meridian of the place.

(The System of the World 581)

Computation of the lunar attraction causing tides and the height of the water resulting therefrom [at the mouth of the river Avon].

(The System of the World 593)

Though these removed the mysteries of the tides, they, in their novelty and definiteness, must have exerted a strong intellectual fascination on the mind of man of that period. Schneider has this to say in Wordsworth's Cambridge Education:

Newton's Cambridge is probably in part responsible for the fact that Wordsworth's poetry is haunted by the sun, moon and stars. The sea also is ever present with these, perhaps because, by explaining the tides, Newton had linked the sea to the solar system.

(252)

These scientific explanations of the moon's gravity pulling on the waters of the seas are adapted by Coleridge through various poetic allusions and imageries. In the eulogy, "To William Wordsworth," he writes of Wordsworth's thoughts and understanding as "Of tides obedient to external force" (line 14). He compares the effect of Wordsworth's song (The Prelude) on his soul as "now a tranquil sea,/"

Outspread and bright, yet swelling to the Moon." (lines 100-101). On the flowing of the sea waters (tides) moved by the moon, he writes:

'Still as a slave before his lord,
The ocean hath no blast;
His great bright eye most silently
Up to the Moon is cast--
If he may know which way to go;
For she guides him smooth or grim.
See, brother, see! how graciously
She looketh down on him.'

("The Rime of the Ancient Mariner," lines 414-421)

And likewise, "As when the new or full Moon urges/The high, large, long, unbreaking surges/Of the Pacific main" ("Fragments," No. 36).

Newton postulates the third law of motion as:

Law III

To every action there is always opposed an equal reaction:
or, the mutual actions of two bodies upon each other are always equal, and directed to contrary parts [directions].

(Principia 13)

This law of action and reaction is applicable to matter (material bodies) only. It says that if you push (forward) a body, that body will push you backward, which backward force you need to resist. Or from the body's point of view, every time a body experiences a force, it reacts or responds to it by "creating" an equal and opposite force.

Though the effects of this law in the real physical world were experienced constantly by the ancients, the enunciation of it by Newton would have made it challenging and ^sf[^]ascinating to the mind of an educated man of that period.

It may be surmised that Wordsworth and Coleridge might have been drawn by the intellectual fascination of the law to seek ways of adapting it to literary and poetic uses. Imitating the working of the law of action and reaction in which two forces, equal and opposite, emerge in a sequential chain of response, they could sequence two opposing feelings or emotions in chain reaction, with the one following as a reaction or sequel to the other.

One can develop two literary conceits or narratives, each evoking a feeling or emotion contrary to the other, and the one following as a result or consequence of the other. For example, the first narrative may set in feelings of sadness. The reader feels this sadness, but because of strange psychological metamorphosis, that felt sadness immediately^{ly} changes to a feeling of equal joy, which the poet captures in the second narrative, immediately following the first narrative. Here then one has a literary law of action and reaction of equal opposite emotions, the second following as a reaction to or consequence of the first--analogous to the physical law of action and reaction of two equal opposite forces, the one set by the other. Melancholy, in the classical sense of happy-sadness or peaceful-sadness, is most amenable to this treatment of the literary law of

action and reaction. The poet can evoke in the first narration that kind of sadness, which is not sadness or depression, but sad-melancholy. The reader feels this sadness first, but its being sad-melancholy, it immediately gives in to a feeling of sad-happiness or peaceful-sadness, which is actually a feeling of happiness. This feeling of happiness can then trigger an association of happy events, say, of the past, which the poet captures in the second narration. The literary law of action and reaction is then complete. Wordsworth does exactly this in what follows. He has a pastor narrate a mother's death, and her leaving behind six faithful loving daughters with her loyal wedded partner. We read:

Here rests a Mother. But from her I [pastor-narrator] turn
 And from her grave.--Behold--upon that ridge,
 . . . the Cottage where she dwelt
 And where yet dwells her faithful Partner,
 . . .
 Those six fair Daughters, budding yet--
 . . . the purecourse of human life which there
 Flows on in solitude.
 . . . through the blazing windows--there
 I see the eldest Daughter at her wheel
 Spinning amain . . .
 . . . or, in her turn,

Teaching some Novice of the sisterhood
That skill in this or other household work,

. . .

--Thrice happy, then, the Mother may be deemed,
The Wife, from whose consolatory grave
I turned, that ye in mind might witness where,
And how, her Spirit yet survives on earth!"

(Excursion VI, lines 1115-1191)

This is sad, but the sadness changes to peaceful-sadness (melancholy), akin to quiet-happiness, because of the beauty, love and faithfulness surrounding the family for the dead woman. This quiet happy reaction to the sad story sets in (in the poet) associations of happy boyhood memories, which are captured in the narration immediately following the above sad tale:

While thus from theme to theme the Historian [pastor-
narrator] passed,

The words he uttered, and the scene that lay

Before our eyes, awakened in my mind

Vivid remembrances of those long-past hours,

When, in the hollow of some shadowy vale,

. . .

A wandering Youth, I listened with delight.

(Excursion VII, lines 1-9)

This completes the literary law of action and reaction--two opposite

feelings or emotions, narrated in sequence, the second ensuing as a reaction to the first. It is possible that Wordsworth developed the above twin-narrations, the first evoking sadness from the mother's death, but leading to the second of a suffusion of happy boyhood memories in the poet, as an extended imagery or conceit along the third law of motion of action and reaction.

In the Principia Newton enunciates his first law of motion as:

Law I

Every body continues in its state of rest, or of uniform motion in a right [straight] line, unless it is compelled to change that state by forces impressed upon it.

(Principia, 13)

This law, also known as the law of inertia, links force and motion. It simply states that a body with no motion (at rest) or of uniform motion has no force on it; to move it from rest or change its uniform motion, a force is needed. This linking of motion and force must have been of intellectual novelty to the eighteenth century mind, though certain experimental aspects of it, such as the need of force to make something move, were known even to the ancients. One can surmise that Wordsworth and Coleridge would employ imageries of connecting force and motion both in the material and non-material realms, though Newton's law is valid only for matter. Of a dead person, Wordsworth has "No motion has she now, no force" ("A Slumber did my Spirit Seal," line 5); this is almost a re-phrased image of the first law of motion.

Newton postulates that though the planets move in vast orbits around the sun, and the different moons of the planets move in diverse orbits around their planets, yet in the midst of all these motions within motions, the sun, the planets and their moons as a whole move hardly—that is, the many motions put together as a group have no speed. On this Newton writes:

The common center of gravity of the sun and all the planets is at rest and the sun moves with a very slow motion, Explanation of the solar system.

Because the fixed stars are quiescent [stationary] one in respect of another, we may consider the sun, earth, and planets, as one system of bodies carried hither and thither by various motions among themselves; and the common centre of gravity of all will . . . be quiescent.

(The System of the World, 574)

There is a curious image and reflection of this, when Coleridge writes on the human condition: "in this earthly frame/Ours is the reptile's lot, much toil, much blame,/manifold motions making little speed" ("Psyche," lines 4-6). Coleridge, who, more than Wordsworth, was well versed in philosophy and the science of his time, took his imagery from the solar system described by Newton.

There is in Wordsworth's poetry a strong association or dualism of science setting man apart from nature in the mental realm and in the physical or material world. In the realm of the mind the very method of science requires or calls for the removal of man from out

of Nature. Science makes man the investigator, and Nature that which is investigated, This very operation or process requires that man step out of Nature to do it. It pulls man out of union with Nature, as Wordsworth sees it, tearing his merged I-Thou relationship with Nature to make it an objective I-you contract. The symbolism of 'Thou' and 'You' are that 'Thou' is one of union, 'You' of separation. 'Thou' evokes interfusion, 'You' disjunction; 'Thou' images insertion, stepping-in, 'You' exertion, stepping-out. To this science-caused effect in the mental realm, there is a parallel of dualism or association in the material world resulting from the same science. The products or works of science separate out from Nature; being artificial, they stand out, distinct from Nature. Such are almost everything produced by science--man's highways, buildings, telephone poles, cities etc., all push Nature out, to make room for themselves, standing starkly different from Nature.

Lamentations of this man's exertion from Nature, both in the mental and physical world, constantly occur in Wordsworth's poetry. Science, rapidly growing from Newton's discoveries, sharply and widely accentuated this dual exertion of man from out of Nature. Partly in reaction to this rapidly accelerating exertion of man from Nature and the impersonal I-You contract with her, and partly drawn by personal inclinations, Wordsworth sought "wise passiveness," which, in the realm of the mind, is personal communion, interfusion and merging with Nature. Whitehead's phrase, 'Naive experience,'⁵

may have some kinship with Wordsworth's 'wise passiveness.' In the material world, the same reasons led Wordsworth to approve and identify with such works of man and science that merged with Nature, rustic and simple, with least protrusion and exertion.

Wordsworth might not have rationally reached the conclusion that science or the effect of science was largely responsible for this dual exertion of man. Coleridge might probably have, because he was more philosophically inclined. His contemplations on science and philosophy can be seen in his abstract and abstruse treatise on infinite forces referred to in the preface. Wordsworth was more poetic, and reached conclusions by intuition or by the truth of Imagination. Even perhaps without being rationally aware that science was responsible for it, Wordsworth had reached the same truth through Imagination, and was strongly conscious of the dual exertion of man from Nature, for he ever laments of it in his poetry. Regretting man's separation from Nature in the mental realm, he advocates man's communion with her:

Our bodies feel, where'er they be,
Against or with our will.

"Nor less I deem that there are Powers
Which of themselves our minds impress;
That we can feed this mind of ours
In a wise passiveness.

("Exposition and Reply," lines 18-24)

On man's merging physically with Nature, he sympathetically sketches the simple abode of the good man living with his six daughters, constant and faithful to his dead wife. The abode seems to be grown of Nature herself:

The Abode

. . .

Would seem in no distinction to surpass
The rudest habitations. Ye might think
That it had sprung self-raised from earth, or grown
Out of the living rock, to be adorned

By nature only; (Excursion VI, lines 1139-1146)

Or in the Wanderer's sympathetic narration of Margaret's pining for her lost husband, her once-happy cottage seemed to be folded into Nature's bosom itself:

Her cottage, then a cheerful object, wore
Its customary look,--only, it seemed,
The honeysuckle, crowding round the porch,
Hung down in heavier tufts; and that bright weed,
The yellow stone-crop, suffered to take root
Along the window's edge, profusely grew,
Blinding the lower panes.

(Excursion I, lines 713-719)

Also observe in the same story how sympathetically Wordsworth describes the Wanderer's daily physical habits and activities as merging into

Nature:

I [Wanderer] roved o'er many a hill and many a dale,
With my accustomed load; in heat and cold,
Through many a wood and many an open ground,
In sunshine and in shade, in wet and fair,
Drooping or blithe of heart, as might befall;
My best companions now the driving winds,
And now the 'trotting brooks' and whispering trees,
And now the music of my own sad steps,
With many a short-lived thought that passed between,
And disappeared.

(Excursion I, lines 697-705)

Unraveling Science and Imagination.

In this chapter we first show that the generation of Wordsworth and Coleridge confused the aims of Imagination with those of science. Then we consider the ways this confusion entered into the poetry of Wordsworth and Coleridge.

It is a recent understanding, generally and fully felt perhaps only in the twentieth century, that science cannot lead man to God, that is, to fathom and identify the nature and Being of God or to see His Face. When man first landed on the moon, there was not any conscious and deliberate feeling that he might see the Face and Presence of God there. It wasn't that there was no fond primitive lingering that there might be some sighting of God out there. When some mysterious particles were reported at one time to have been sighted en route from the window of the space-craft, these primitive lingerings were perhaps agitated a bit that those might be some Substance of God. Like the shooting star that flashes momentarily across the sky, these fond primitive lingerings were mere passing thoughts, not forming part of any deliberate and conscious thinking.

They were, one might say, vestiges of man's ancient yearning and wondering that if only he could one day go to the far-away inaccessible places vaguely conjectured in his mind, he might see God there.

There were individuals, who, before the conquest of the Himalayas in 1952, had felt dreamily that if they could personally get to the Swiss Alps or the Himalayas, hitherto unreached and unreach-able by them, they might see there the Face of God. Before that, when Africa was still mysterious as "the Dark Continent" and fore-boding as "the European's grave," there were individuals who dreamt of reaching Timbuktu, for long a mysterious inaccessible place in the middle of the torrid Sahara desert, that they might see the Face of God there. This was perhaps the lure of the true explorer, rather than hope or desire of finding material wealth. It is thus also that the ancient Greeks had their Elysium at the far-away other side, beyond the mists and the oceans. Likewise medieval Europe had its mysterious place in the distant Arctic, the ultima Thule.

There is still today a vague human lingering or feeling that one day in the distant future science may formulate and solve the riddle and mystery of Death, which is the ultimate, and hitherto irreversible, experience of human beings. Man may then sight and understand God. This incidental remark will be referred to in some detail presently. Other than that, man today knows, more by intuition than perhaps by rational thought, that science can never be the pathway for man to sight or understand God. Intuition, rather

than rational thought, forces the conclusion more strongly; for intuition, which is akin to Wordsworth's and Coleridge's Imagination, has stronger effect of man's understanding in such matters. This knowledge and understanding on the limitation of science, definitive and conclusive as they are today, were not always so.

In the century before Newton a feeling emerged that science could one day explain all of Nature, and show "the ways of God to man." Nicolson notes that there was "the Baconian [1561-1626] belief that man could discover all the secrets of Nature and command her."⁶ One may feel a similar vague belief today, associated mainly with researches in the life-sciences, which try to get to the very bottom of what life is, and through it, of what death is. What is here sought is much more fundamental than mere superficial accomplishments, such as extending old-age, rejuvenation of the body through hormones, genetic engineering, etc. Even duplication of life will be "mere superficial" accomplishment in the context here, for that will only give control over the process of putting life together. What is sought is control and understanding of the very fundamental essence of life, death, and "soul." One can see a parallel between this current vague mystic feeling associated with biosciences, and the same vague mystic feeling associated with emerging science in Bacon's times, four centuries ago. Both these feelings, now and then, hold the hope of man's sighting and understanding God through science. However, there is a major difference caused by the

history of man's understanding of science through the intervening centuries. Then, in Bacon's times, science was just emerging-- it was new, novel and exciting. Its methods were not fully defined yet. But it was producing insight and understanding of physical phenomena, providing answers to long-held riddles of Nature. In this climate it acquired a mystery, a halo, and its potential was envisioned to be limitless. That vague mystic feeling of science's leading man one day to see and know God, was pulled along on the coattail of this hallowed, all-encompassing science. But the same feeling associated today with bio-sciences does not enjoy that pull; for science, bio-sciences included, has lost its glory and limitless potentials envisioned in Bacon's times. Today its methods are better defined. Limits to its potentials are better understood and circumscribed. Whatever glorious accomplishments science may yet lead man to, in the decades or centuries to come, in the area of life-death researches, its pathway will not take man to see and know God. God today has stepped out of the pathway of science, whereas in Bacon's times He appeared to be looming large and bright in its very pathway, though far along the path.

This change did not occur suddenly, but had to go through a slow and confusing transition. The generation of Wordsworth and Coleridge was caught in the midst of this transition. Even before Newton's death (1727) there were rumblings against the limitlessness of science, its pretence of leading man to God, and Newton's usurption of the place of God. Nicolson (1946) has a chapter, "Metaphysical

Implications of the Opticks" (chapter six), in her Newton Demands the Muse, covering the nature of the process and progress of this transition.

More recent commentators have also noted the confusion attending on this transition period. Kelley (1982) argues that the shell and stone of the Arab's Dream in Prelude V, symbolic of the poetry and Euclidean geometry (science) respectively, are not opposed to each other, as critics have hitherto assumed, but complementary.⁷ The shell has its origin in the Euclidean geometry whose spiral form it duplicates. Yet the shell, in its organic growth, is not rigid and fixed as the bounds of Euclidean geometry (as the rigid, unchanging laws of science), and possesses a prophetic voice of its own. The shell and the stone are thus complementary symbolically. Kelley further observes, "If early poems [of Wordsworth] are usually eager to declare that science is inferior to poetry and nature, this position yields within a few years to ambivalent considerations of how science is different from poetry, and then to the claim that science was or might once again be united with poetry."⁸ This flux of Wordsworth's mind attests to the confusion of the period over science. To confound the issue, the generation of Wordsworth and Coleridge believed that science and mathematics (as distinct from medicine) would cure physical and psychological sickness. Averill (1978) writes, "The hope is that 'science' will provide a 'cure' for psychological distress . . . Thus, the laws of light are given a function similar to that of mathematics in Prelude X, where, 'sick, wearied

out with contrarities,' the poet turns 'towards mathematics, and their clear/And solid evidence' (ll. 900-905). In 'Diseases of Increased Volition [mental sickness]', 'Darwin [1731-1802, Erasmus Darwin in his Zoonomia] suggests mathematics and science as cures of various forms of insanity . . . A 'medical person in London,' suffering from paupertatis timor, the obsessive fear of poverty, 'cured himself of this disease by studying mathematics with great attention.'⁹ To add further confusion, Rubino (1983) notes that just as the romantic poets were fascinated with the concept of infinity (eternity) to ward off life's short duration and inevitable death, the clerisy of the generation of Wordsworth and Coleridge found solace and permanence for the ephemeral fluctuations and uncertainties of life in "the grand and immutable utopia of natural law," "in the ordered and immutable universe envisioned by that greatest of artists Issac Newton."¹⁰ One can readily envision a generation that was marked with confusion and ambivalence over science.

As science uncovered and explained more and more of the wondrous workings and principles in Nature, Wordsworth and Coleridge saw in the design the Mind of God. This, of course, is the basis of "Natural Theology," that the marvelous design and Intelligence displayed in Nature affirm the existence of its Creator, who is God. However, even the greatest findings of science soon degenerate into common-place, as the process of cause and effect is repeated endlessly in a mechanical way, unerringly and unchangingly, like an automation, without any ultimate purpose and meaning. Then one

realizes that this system of cause and effect, which is the only working domain of science, may point to God through the marvel of its design, but it cannot take man to God, who must be outside the mechanical automation of cause and effect. Therefore, to seek God one must step out of this realm of cause and effect as well as of rational thought which are of science, and use the aid of Imagination.

In seeking God through Imagination, one must then perforce distract science whose pathway, inter-meshed with that of Imagination, does not lead to God. Yet the pathway of science in the eighteenth century also pointed to God, such as through the Design and Intelligence of God that one perceived in Nature. For this, science needed to be extolled. Living in the transition period, Wordsworth and Coleridge experienced the need both to be wary of science and to extol science. One can observe Wordsworth and Coleridge struggling to unravel these two intertwined strands, these two intermeshed pathways of science and Imagination. Stallknecht notes, "The latter books of The Prelude record a prolonged struggle between two ways of thought: mystical intuition [Imagination], on one hand, and, on the other, 'scientific' reason supported only by the evidence of sensuous observations"¹¹

It was a matter of untangling the two pathways of why's and how's. The pathway of Imagination answers the innate and fundamental questions of the meaning of human existence and of Nature—it answers or attempts to answer the why's. The pathway of science merely

answers the how's. The why is a question of fundamental Destiny. The how is a question of the process of something. An illustration may help. Take, for example, gravity. Science can only answer the "how" of gravity, describe the process of gravity—map or tabulate the strength and direction of gravity at each point. But the "why" of gravity, 'why is there gravity?', has never yet been answered by science; science can never answer it. That, the why, belongs to the realm of Imagination. It is for this reason one can make statements like, "science is the work of laborers, Imagination of Kings," or "science is the employment of sessile mechanics, Imagination of wandering poets" ("wandering" as used connotes searching, "pilgrimming," rather than vagrancy).

The "how" and "why" have also a curious connection with children. Wordsworth affirms that a child is closer to God and Truth, from whom it had come, and as it grows older, it gets more and more distant from God and Truth. Now it is also known, and parents who have been constantly with their children will attest to it, that a child at two or three years will inquire the 'why' of everything—you tell a child, 'sugar is sweet,' the child will ask, 'why?' 'it is going to rain'—'why?' 'it is getting dark'—'why?' There is no end to its 'why's' It is only as the child grows older, the 'why' is replaced with 'how,' and after adulthood it is mostly 'how.' This gives likely confirmation to the poet's claim that a child, being closer to God and Truth, is inquisitive of the fundamental questions of Destiny and Existence sought through the 'why's'

of Imagination; and only as the child grows older and away from God and Truth, is it drawn to the mundane knowledge of the 'how's' of science.

Reflecting on these why's and how's, of Imagination and science, Nicolson writes, "never did an age need God for a final explanation of its philosophy and science more than did the age of Newton."¹² These two pathways of the why's and the how's, of Imagination and science, were intermeshed then. Wordsworth and Coleridge were struggling to unravel them. That was the state during that transition period, of which Wordsworth and Coleridge were part. One can readily guess that this struggle of unravelling would be attendant with confusion.

How does this struggle of untangling translate itself in the poetry of Wordsworth and Coleridge? In other words, in what manner does this confusion over the entangled pathways of science and Imagination appear in their poetry? It appears in different ways which will be considered here.

One kind of muddle resulting from the entangled twining of the two pathways was the poet's castigation of science for failing to serve a purpose which was not its function or realm. To probe into and answer fundamental and ultimate questions of human Destiny and of God is not the domain of science, but of Imagination. Science merely provides the "surface human knowledge," working with the mechanical 'know-how's' and cause-effect processes of the physical world of matter, be it dead or alive. Read, for example, Words-

worth's position that he would rather choose rustic ignorance and superstitious ways, than see and hear

The repetitions wearisome of sense,
 Where soul is dead, and feeling hath no place;
 Where knowledge, ill begun in cold remark
 On outward things, with formal inference ends;
 Or, if the mind turn inward, she recoils
 At once--or, not recoiling, is perplexed--
 Lost in a gloom of uninspired research;
 Meanwhile, the heart within the heart, the seat
 Where peace and happy consciousness should dwell,
 On its own axis restlessly revolving,
 Seeks, yet can nowhere find, the light of truth.

(Excursion IV, 620-630)

The poet is obviously referring to the processes of science with such descriptive phrases as, "where knowledge . . . begun in cold remark on outward things," and "with formal inference ends." But science is not intended to serve the emotions of "the heart within the heart," which is the realm of the Imagination. So, here is clearly a confusion of 'misplaced purpose'—and it arises because for the generation of Wordsworth and Coleridge, the pathway of science was confused with that of Imagination. (Again note in the penultimate line just quoted the influence of Newton's Principia in the image and concept of earth's revolving on its axis.) A similar

lamentation on science resulting from its misplaced purpose is seen in the following, where Wordsworth pairs science and life of Imagination (Imagination activated by Nature), only to dismiss science for not serving the purpose of Imagination:

Sweet is the lore which Nature brings;
 Our meddling intellect
 Mis-shapes the beauteous forms of things:
 We murder to dissect.

Enough of Science and of Art;
 Close up those barren leaves;
 Come forth, and bring with you a heart
 That watches and receives.

("The Tables Turned," lines 25-32)

Likewise, Coleridge, calling science "these shapings," takes it to task for not providing the "awe" necessary for Faith:

These shapings of the unregenerate mind;
 Bubbles that glitter as they rise and break
 On vain Philosophy's aye-bubbling spring.
 For never guiltless may I speak of him,
 The Incomprehensible! save when with awe
 I praise him, and with Faith that inly feels.

("The Eolian Harp," lines 55-60)

Another kind of confusion, entering in the poetry of Wordsworth and Coleridge from the intertwining of the pathways of science and Imagination, is found in 'Natural Theology.' Natural Theology is the evoking of a transcendental leap to faith in God through the sublimity and Intelligence displayed in His handiwork, the created universe. The working of Natural Theology is through the Imagination, not through the rational thought processes of science. Here is an example from Coleridge:

Ye Ice-falls ye that from the mountain's brow
 Adown enormous ravines slope amain--
 Torrents, methinks, that heard a mighty voice,
 And stopped at once amid their maddest plunge!
 Motional torrents! silent cataracts!
 Who made you glorious as the Gates of Heaven
 Beneath the keen full moon? Who bade the sun
 Clothe you with rainbows? Who, with living flowers
 Of loveliest blue, spread garlands at your feet?--
 God! let the torrents, like a shout of nations,
 Answer! and let the ice-plains echo, God!

("Hymn before Sunrise," lines 49-59)

The evocation of God is through the sublime, the mystery and the awe, which are of the Imagination, and proper to Natural Theology.

Newton's theories, with their simple yet universal laws, and the growth of science thereon, soon led to discoveries displaying an intricate, brilliant and marvelous design and workmanship in natural

phenomena, including the bodies of plants, animals and man. Such design and workmanship call for an Intelligence behind them, and from it, God is evoked or inferred. This is the famous watch-Watchmaker concept--the existence of the watch with its brilliant design presupposes the existence of the Watchmaker with Intelligence. The generation of Wordsworth and Coleridge applied this to Natural Theology. But there is a fallacy in this. In the watch-Watchmaker concept, there are three, not just two, entities: the watch, the Watchmaker, and the observer, independent and external to the watch, who sees or picks up the watch. The observer makes an external examination of the watch, and from such examination, he, the observer makes his conclusion on the Watchmaker.

It is assumed that the observer's intelligence is higher than that of the watch, that he transcends the level of the watch, for him to deduce the Intelligence of the Watchmaker. However, as applied to Natural Theology, there are only two entities--Nature of which man is a mere part, and God. The third entity, the observer, is not here--he is merely a part of the watch, examined for its design and workmanship, for man is a mere part of that Nature, which is examined for its design and workmanship. Whatever man comprehends, through science, of Nature's design and workmanship, he is no more than comprehending his own intelligence; he has not comprehended or transcended to any higher intelligence than his own. In other words, he is merely patting himself on his back, so to say, feeling "how intelligent I am!" It is like standing in a bucket, and trying to

lift himself, by pulling up the bucket-handle. Therefore, what is required is something ineffable and incomprehensible to man. Not being able to comprehend, he is reaching or transcending to some Intelligence higher than his own. This is the ineffable, the sublime, the awe, the mystery which are felt only by Imagination, but not comprehended by it. The moment something becomes comprehensible, no matter how brilliant the design or workmanship, it is pulled down to the level of the comprehending intelligence, and is merely of science, not of Imagination. Therefore, Natural Theology works only through Imagination, and not by comprehending or understanding through science any design or workmanship in Nature, no matter how brilliant such design may be. On this, John Stuart Mill in his essay, "Coleridge," writes, "Coleridge (like Kant) maintains positively, that the ordinary argument for a Deity, from marks of design in the universe, or, in other words, from the resemblance of the order in nature to the effects of human skill and contrivance, is not tenable." ¹³

A third way by which the confusion, resulting from the inter-merging of the pathways of science and Imagination, enters in the poetry of Wordsworth and Coleridge is through stylistic aspects of their poetry. In style or mode, elements of science and Imagination are worked together harmoniously as in a fugue, so to say, with science and Imagination as the contrapuntal elements. In this harmony, science and Imagination are worked as complementary elements, as of intertwined cords, satisfying the requirements of a fugue with

respect to its contrapuntal elements--whereas science and Imagination are independent and separate of each other, not complementary. Wordsworth describes the Wanderer through such a mode of fugue:

A Herdsman on the lonely mountain tops,

Such intercourse was his . . .

. . . Early had he learned

To reverence the volume [of Nature] that displays

The mystery . . .

. . .

In oft-recurring hours of sober thought

To look on Nature with a humble heart,

. . .

Lore of different kind,

The annual savings of a toilsome life,

His Schoolmaster supplied; books that explain

The purer elements of truth involved

In lines and numbers, and, by charm severe [of science],

(Especially perceived where nature droops

And feeling is suppressed) preserve the mind

. . .

Yet, still uppermost,

Nature was at his heart as if he felt,

Though yet he knew not how, a wasting power

In all things that from her sweet influence
 Might tend to wean him. Therefore with her hues,
 Her forms, and with the spirit of her forms,
 He clothed the nakedness of austere truth.
 While yet he lingered in the rudiments
 Of science, and among her simplest laws,
 His triangles--they were the stars of heaven.
 The silent stars!

(Excursion I, lines 219-273)

In this style of a fugue, Imagination (Imagination triggered by Nature) and science are harmoniously intermeshed and worked together, even though they are independent and separate of each other. Note how in the first part of the passage the poet places harmoniously on the same plane or kind the activation of the Imagination through being "A herdsman on the lonely mountain top" that instructs him "to reverence the volume that displays the mystery" and the instruction of science through "books that explain the purer elements of truth involved in lines and numbers." In the latter part of the passage, observe how in the intertwined and coalesced strands the simple "triangles" of science change into "the stars of heaven" of the Imagination. In this fugue one can see that in the generation of Wordsworth and Coleridge, the pathways of science and Imagination were intertwined, reflecting the transition period discussed here. In different phraseology, science and Imagination do not mix nor blend; but Wordsworth, living in a period of intellectual transition,

mixes them harmoniously as in a fugue—which expresses the confusion of the period on the nature of science with respect to Imagination.

Likewise Coleridge harmonizes as in a fugue the elements of scientific demonstration and of poetic Imagination in a poem describing the construction of an equilateral (the three sides equal) triangle. Written more as a parody than in earnest, he notes in the preface to the poem, "To assist Reason [of science] by the stimulus of Imagination is the design of the following production." The poem begins with:

On a given finite line
Which must no way incline;
To describe an equi--
--lateral Tri--
--A,N,G,L,E.
.
.
.
Aid us, Reason--aid us, Wit!

Imitating Euclidean format, he first describes the construction of the equilateral triangle using standard geometry principles, and follows it with a proof of the demonstration. Then he concludes that now the steed (Pegasus of poetic Imagination) rests harmoniously on science (on the starting base of the triangle):

But rein your stallion in, too daring Nine! [nine Muses]
Should Empires bloat the scientific line?

. . .

And now our weary steed [Pegasus] to rest in fine,
'Tis raised upon A.B. the straight, the given line.

("A Mathematical Problem," lines 1-14;

and lines 62-73)

III

The Animation of Nature by Wordsworth and Coleridge.

In this chapter we analyse the relationship of Wordsworth and Coleridge to Nature, and the influence of Newton on it.

Wordsworth and Coleridge animate and anthropomorphize all Nature and matter. Yager notes that going beyond "animism, or the attribution of a consciousness to nature," "Coleridge often personifies as a method of de-humanizing, or of 'naturalizing' the self."¹⁴ I only draw conjectures on the above at this point. It is probable that Yager means by it that Coleridge merges the human-self with the non-human Nature. Such a merging or fitting will call for the removal of the human element in the human being. In other words, such a fitting de-humanizes the self in taking the human element out of the self. Or looking at it from the side of Nature, the above de-humanizing is the same as naturalizing the human-self or fitting the self to Nature, which is devoid of any human element. It is also probable that Yager suggests that Coleridge goes a step further to

hold that the human-self is actually climbing a step higher in the Great Chain of Being by its being accepted by Nature into her relationship (rather than Nature's climbing a step up in her being anthropomorphized)—for there are individuals and poets who hold that Nature, the beasts and vegetation, is closer to God and Truth than man. These people voice a protest that why Nature should be pulled down to the level of man, who wants to anthropomorphize her. Why do Wordsworth and Coleridge animate Nature? There is a consistent and self-contained explanation for it.

Until the time of Newton, many believed that all Nature, even matter, was alive, because it had motion, subject to flux and change. A rock, for example, now stationary, begins to move—fast now, then slow, exhibiting various motions. Motion appeared to be innate to the rock, to all matter. Newton's first law of motion took this motion from the rock and matter, and gave it to the abstract concept called "force." In doing this, he immediately made all matter inert and dead. Perhaps it was no more than a re-orientation in thinking, a shift in abstraction or metaphysics that in no way changed the reality of who has the motion—the rock and matter or the force. But it did soon change man's intuition and understanding radically to rob all matter of motion, and give it to an external image, called force. On this Piper writes:

Newton's First Law of Motion stated that a 'A body must continue in its state of rest or uniform motion in a

stright line, unless acted upon by some external force.' It can be seen in this definition that the concept of motion has become disconnected from that of matter. Indeed matter interpreted as absolutely inert, and, seen in this way, it had nothing in common with either life or mind. ¹⁵

(The Active Universe p.9)

To the generation of Wordsworth and Coleridge the situation was stranger yet. On one hand, with a single universal stroke of abstraction Newton killed all matter of life; on the other hand, he introduced a major theory—of gravity—that opened a wide gap or yawning abyss of mystery, which we shall presently consider. This mystery covered the entire Universe, seeping into every corner and nook of creation, even through the inner substance and material of all matter. As wherever there is a large vacuum, air must rush in to fill it; so wherever there is a gaping mystery, God must rush in to fill it. These double effects—the robbing all matter of life, and the mystery following gravity—directly led to Wordsworth's and Coleridge's animation and anthropomorphization of Nature.

Newton's law of gravity simply states that every element of matter is attracted to every other element of matter with a force, called the force of gravity, of a given magnitude. The magnitude is directly proportional to the product of the two masses (the amount of matter in the two bodies), and inversely proportional to the

square of the distance between the centres of the two masses. Newton did not have rigorously the first part on the product of the two masses, as stated above, which is the modern version. We read in Florian Cajori's "An Historical and Explanatory Appendix [to Principia]:"

The modern general statement of this law . . . is nowhere found in the Principia and The System of the World. Perhaps the nearest approach to it is given in the General scholium at the end of the Principia, where Newton states that 'gravity . . . operates . . . according to the quantity of the solid matter which they [the sun and the planets] contain, and propagates its virtue on all sides to immense distances, decreasing always as the inverse square of the distances.' ¹⁶

(670)

What is relevant here is that all material bodies attract each other with a force. But how do two bodies, like the sun and earth for example, with no material contact or anything visible whatsoever between them, attract or experience this force? This is the riddle and mystery of "action at a distance." Over the generations and centuries since Newton, man has been conditioned and comatosed into accepting it, so the modern man accepts it as second-nature or intuition. Had the primitive man done a similar thing, it would be dismissed as gross superstition and illiterate ignorance. The

ancient Greeks had four horses pulling the sun across the sky to explain the phenomenon along the rational cause-effect principle—you needed a horse (cause) to produce that effect (of pulling the sun). Substituting gravity for the horses is no more than a mere transference in abstraction, for one can see the gravity no more than the four horses. To this day nobody has explained this mystery of action at a distance, when there is no intervening medium of any kind between the two attracting bodies—it has over the centuries only gone through transference of names or abstractions, from the ancient Greeks' four horses, to Aristotle's Prime Mover,¹⁷ to Newton's ether or spirit, Coleridge's "monads"¹⁸ (which is direct from Leibnitz), Wordsworth's "active Principle,"¹⁹ to Einstein's "field."²⁰ The last is the modern abstraction of it, where in the empty space between the two bodies, say sun and earth, one interposes an abstract field, called gravitational field, whose characteristics are described or mapped.

Thus the generation of Wordsworth and Coleridge was faced with a depressing, yet exhilarating situation—depressing, for the dead inertness of all matter; exhilarating, for the mystery of action at a distance, when these very dead bodies seemed to "communicate" with each other through an attractive force across space with no intervening material connection or medium of any kind linking them. This situation was ideal for the poet. He would animate all matter, thus removing the depressing part of their dead inertness. He would then interfuse all space and matter with some spiritual force or

medium that, by connecting all matter, would account for the mystery of action at a distance. This spiritual force or medium would then form the nexus of communication and subjective relationships between the now-animated entities of matter.

This interfused spiritual force or medium could be the consciousness of all matter, forming part of the Universal Consciousness of God. It could be Coleridge's 'Monads of the Infinite Mind.' It could be Aristotle's 'Prime Mover.' Or it could be Wordsworth's 'active Principle.' Whatever are its different names, they all share the nature of some substance or medium of spiritual or divine origin, that, interfused throughout all space and matter, can account for the mystery of action at a distance. They all serve furthermore as universal, spiritual pulsating force or medium linking all matter in subjective communication and relationships. We can understand the general nature of this interfused spiritual force or medium by considering Wordsworth's 'active Principle.' The others share some kinship with it. "The Wanderer [the venerable Sage] asserts that an active Principle pervades the Universe:"

'To every Form of being is assigned,'
 Thus calmly spake the venerable Sage,
 'An active Principle:- how'er removed
 From sense and observation, it subsists
 In all things, in all natures; in the stars
 Of azure heaven, the unending clouds,

In flower and tree, in every pebbly stone
 That paves the brooks, the stationary rocks,
 The moving waters, and the invisible air.
 Whate'er exists hath properties that spread
 Beyond itself, communicating good,
 A simple blessing, or with evil mixed;
 Spirit that knows no insulated spot,
 No chasm, no solitude; from link to link
 It circulates, the Soul of all the worlds.
 This is the freedom of the universe;
 Unfolded still the more, more visible,
 The more we know; and yet is revered least,
 And least respected in the human Mind,
 Its most apparent home.

(Excursion IX, lines 1-20)

Newton in his Principia also suggests the existence of such a universal interfused spirit or medium to account for action at a distance. However, his suggestion has no moral elements, and lacking experimental evidence, he does not want to indulge in claiming it as a hypothesis--to Newton a hypothesis is not proper to science (experimental philosophy):

Hitherto we have explained the phenomena of the heavens and of our sea by the power of gravity, but have not yet assigned the cause of this power. This is certain, that it must proceed from a cause that penetrates to the very

centres of the sun and planets, without suffering the least diminution of its force . . . But hitherto I have not been able to discover the cause of these properties of gravity from phenomena [scientific observations], and I frame no hypotheses; for whatever is not deduced from the phenomena is to be called an hypothesis; and hypotheses, whether metaphysical or physical, whether of occult qualities or mechanical, have no place in experimental philosophy . . . And now we might add something concerning a certain most subtle spirit which pervades and lies hid in all gross bodies; by the force and action of which spirit the particles of bodies attract one another at near distances, and cohere, if contiguous; and electric bodies operate to greater distances as well repelling as attracting the neighboring corpuscles; and light is emitted, reflected, refracted, inflected, and heats bodies; and all sensation is excited, and the members of animal bodies move at the command of the will, namely, by the vibrations of this spirit.

(Principia 547)

Thus, even the best scientific thinking of the period had some spirit animating all Nature and matter to account for 'action at a distance.' To this spirit the poet must have almost felt the compulsion to add an element of Will, otherwise it would have been very depressing. This depressing state was the result of Newton's

discoveries and the method of science emerging from them. This science soon subjected all Nature and matter, both of life and inert, to the cause-and-effect principle. Life-sciences, including incipient physiology, placed even all life-processes under this cause-and-effect domination. Emerging psychology ^{in due time} did the same even for the thinking processes of the human mind—these were studied as electric impulses following a series of complex, but nonetheless, cause-and-effect links. These put all Nature, inert or of life, under iron-clad determinism, mechanically run by the cause-and-effect principle. There was no room for any arbitrariness. Newton's laws of motion and gravity had all universe on "endless and meaningless motion," by the very rigidity and universality of the laws he had discovered. Such was the depressing state perpetrated and continued by the cause-and-effect principle of science. Only Will can redeem this depressing state, for Will is the only element in the universe that can set aside the inexorable cause-and-effect principle. To explain the unusual talent of a country actor, Wordsworth does not give any cause-and-effect response, but provides an answer that endows Nature with Will: "If ye enquire/How such consummate elegance was bred/Amid these wilds, this answer may suffice;/'Twas Nature's will" (Excursion VI. lines 298-301).

To this universal interfused spirit-with-Will, Wordsworth and Coleridge give anthropomorphic qualities. These qualities are either reflections of the poets themselves cast upon Nature, or they are feelings and lessons evoked in them by certain acts and events of

Nature. Unlike the universal interfused spirit that is innate to Nature and matter to account for 'action at a distance,' these anthropomorphic qualities are not innate to Nature. They are what we ourselves see in Nature, or what we attribute to it. On this transference of one's own feelings to Nature through the medium of one's mind, Willey writes, "his [poet's] mind had been aroused, and had impressed its own mood upon the 'vulgar forms of present things.'" ²¹ On this point Nicolson observes:

'Whatever theory you choose,' says Alfred North Whitehead, discussing that world view, 'there is no light or color as a fact in external nature. There is merely motion of material . . . Nature is a dull affair, soundless, scentless, colorless; merely the hurrying of material, endlessly, meaninglessly. However you disguise it, this is the practical outcome of the characteristic scientific philosophy which closed the seventeenth century.' Whence, then, arises that 'pleasing delusion' of the beauty of nature, shared by poets and artists for so many hundreds of years? Professor Whitehead replies: 'Nature gets credit which should in truth be reserved for ourselves' . . . Beauty is not in nature; it is man who confers upon her the beauty which she boasts. ²²

If this be true, that we ourselves bestow on Nature such feelings, moods and anthropomorphic qualities, then they must be relative to the individual. That is, what of Nature is pleasing to

one may be depressing to another. Wordsworth affirms this, as when the Solitary says to the Wanderer and other company:

Forgive me, if I say
 That an appearance which hath raised your minds
 To an exalted pitch (the self-same cause
 Different effect producing) is for us
 Fraught rather with depression than delight.

(Excursion III, lines 152-156)

Or again, in describing the contrast of feelings from sadness to joy on viewing a churchyard from the shadowy or the sunny side, the Wanderer observes, "'We see, then, as we feel'" (Excursion V, line 558).

A necessary corollary to this will be that material Nature is indifferent to our feelings and tragedies—as well as our joys. Wordsworth describes a scene where, after the Wanderer had described the pathetic sufferings and death of the forlorn woman (Margaret), we read of the poet's response:

I turned aside in weakness . . .
 . . .
 I stood, and leaning o'er the garden wall
 Reviewed that Woman's sufferings; and it seemed
 To comfort me while with a brother's love
 I blessed her in the impotence of grief.
 Then towards the cottage of the woman I returned; and
traced
 Fondly, though with an interest more mild,

That secret spirit of humanity
 Which, 'mid the calm oblivious tendencies
 Of nature, 'mid her plants, and weeds and flowers,
 And silent overgrowings, still survived.

(Excursion II, lines 919-930)

We have considered that the anthropomorphic qualities are not innate to Nature, but are what we ourselves impress on her. However, there are certain anthropomorphic qualities, such as that of an instructress, that are partly Nature's own, and partly drawn from our own associations. The time-worn lessons one can learn from Nature, such as from the industry and foresight of squirrels' gathering and storing nuts for winter, fall into this mixed category. On this instructress' role of Nature to mould one's spirit, Coleridge writes for his baby-son:

For I was reared
 In the great city, pent 'mid cloisters dim,
 And saw nought lovely but the sky and stars.
 But thou, my babe! shalt wander like a breeze
 By lakes and sandy shores, beneath the crags
 Of ancient mountain, and beneath the clouds,
 Which image in their bulk both lakes and shores,
 And mountain crags: so shalt thou see and hear
 The lovely shapes and sounds intelligible
 Of that eternal language, which thy God

Utters, who from eternity doth teach

. . .

Great universal Teacher!

("Frost at Midnight," lines 51-63)

Wordsworth writes on the lessons on mortality one can learn from
the flower and the worm:

'Ah! if the heart, too confidently raised,
Perchance too lightly occupied, or lulled
Too easily, despise or overlook
The vassalage that bends her to the earth,
Her sad dependence upon time, and all
The trepidations of mortality,
What place so destitute and void--but there
The little flower her vanity shall check;
The trailing worm reprove her thoughtless pride?

(Excursion IV, lines 418-426)

IV

Wordsworth's and Coleridge's Reaction
Against the Scientific Method.

By scientific method or process is meant the manner of investigating matter, living or inert, by experimentation based on the senses, and derivations through logical or rational steps. Study by such method, called "science," was discussed in some detail in the preface to this paper. The term "science" invokes or comprises any fact, conclusion or result obtained by applying the scientific method to the material phenomena, living or inert. These facts or conclusions are the results of science or the Truths of science. Now consider for a moment the situation when one applies the scientific method to an investigation of the non-material phenomena, and arrives at a certain conclusion or result. This conclusion or result is a result by the scientific method or a Truth by the scientific method, or simply a Truth by science. Whereas the former is a Truth of science, the latter is a Truth by science. The preposition "of" connotes "of the proper realm," "belonging to the right territory." The preposition "by" connotes the agent,

"the means used to obtain a result." "Truth of science" is a result or conclusion obtained by the scientific method in an area belonging to the right territory of science, namely, the material universe, living or inert. "Truth by science" merely reflects that the method or the means used to arrive at that truth or result was the scientific method, but the area of that truth is not of the realm proper to science—the area is of the non-material phenomena. An illustration may clarify the distinction. A result or conclusion stated in chapter I that "The ocean must flow twice and ebb twice, each day, and the highest water occurs at the third hour after the approach of the luminaries to the meridian of the place" is a "Truth of science"—a result or conclusion obtained by applying the scientific method to the material phenomena, the realm proper to science. However, if one were to apply the scientific method—of rational thought bounded by the cause-and-effect principle—to the non-material realm of God or Theology, and conclude, say, that there is no God, then that conclusion will be a "Truth by science."

Conclusions reached, mostly on non-material phenomena, by methods or processes other than the scientific method and process, are called Truths of Imagination. Such methods or processes may be of Intuition, Instinct, Prophecy, Revelation, Nature-taught etc.

Truths of Imagination, especially in the study of Wordsworth, are divided into two categories—here called Truths of Moral Imagination, and Truths of Natural Imagination. The former refer to conclusions where the major guide or influence is Reason. Here

Reason is unrelated to the reasoning faculty used in science, which is of logical or rational thought. Here Reason is right conduct, right attitude, etc., based on morals. Note that Wordsworth also uses reason in the sense of reasoning faculty of science—the meaning must be derived from the context. Truths of Natural Imagination refer to conclusions where the major guide or influence is feelings, emotions, etc., evoked or stirred by Nature. Nature is used in the Wordsworthian sense of rivers, mountains, valleys, moon, sun, woods, etc.

Wordsworth and Coleridge are generally not against the Truths of science—they are only against the Truths by science. It is their general position that the Truths of Imagination are superior to Truths by science. If the latter fail or falter, the former may stand—Wordsworth poses the question, "Is it well to trust/ Imagination's light when reason's fails" (Excursion IV, lines 771-772) to imply that one can. In this, 'reason' is used in the sense of the reasoning of science, as of logical or rational process. Then again following the disillusionment of the French Revolution:

there arose

A proud and most presumptuous confidence
 In the transcendent wisdom of the age,
 And her discernment; not alone in rights,
 And in the origin and bounds of power
 Social and temporal; but in law divine,
 Deduced by reason, or to faith revealed.

An overweening trust was raised; and fear
 Cast out, alike of person and of thing.
 Plague from this union spread, whose subtle bane
 The strongest did not easily escape;

(Excursion II, lines 235-244)

Note that here 'reason' in the sixth line refers to right conduct based on morals. Here again the poet implies that Truth of Imagination in the area of divine laws is superior to Truth by science, and that the latter is pernicious and a plague. Or read again how the poet affirms that solace and peace for the Solitary are through Truth of Imagination, and not Truth by science:

Access for you
 Is yet preserved to principles of truth,
 Which the Imaginative Will upholds
 In seats of wisdom, not to be approached
 By the inferior Faculty that moulds,
 With her minute and speculative pains,
 Opinion, ever changing!

(Excursion IV, lines 1126-1132)

Here "the inferior Faculty" is the reasoning of science. Yet again read how the poet demotes "the reasoning power" (of science) below the Imaginative power:

The estate of man would be indeed forlorn
 If false conclusions of the reasoning power

Made the eye blind, and closed the passages
 Through which the ear converses with the heart.
 Has not the soul, the being of your life,
 Received a shock of awful consciousness,
 In some calm season . . .

. . . [when] The whispering air
 Sends inspiration from the shadowy heights,
 . . .

Where living things, and things inanimate,
 Do speak, at Heaven's command, to eye and ear,
 And speak to social reason's inner sense,
 With inarticulate language.

(Excursion IV, lines 1153-1207)

Again read how the poet considers "the lowly class" more blessed,
 because its members lack leisure to seek Truth by science, and are
 guided by Truths of Imagination:

'And they perhaps err least, the lowly class
 Whom a benign necessity compels
 To follow reason's least ambitious course;
 Such do I mean who, unperplexed by doubt,
 And uncited by a wish to look
 Into high objects farther than they may,
 Pace to and fro, from morn till eventide,
 The narrow avenue of daily toil
 For daily bread.'

(Excursion V, lines 593-601)

These in essence reflect Wordsworth's and Coleridge's reaction to or attitude toward the scientific method or process emerging from Newton's discoveries, when applied to non-material phenomena.

Now we can consider reasons for the superiority of Truth of Imagination to Truth by science. The main reason is that no matter how one may disguise it, Truth by science is ultimately based on the cause-and-effect principle. The cause-and-effect principle is of strict determinism. Therefore, Truth by science cannot transcend anything higher than strict determinism.

Secondly, Truth by science follows strictly the path of logic. There may be other pathways or alternatives that are not of logic or rational thought. On this, Stallknecht quotes R.G. Collingwood, "In thinking something out, as Kepler thought out the paths of the planets, we imagine the alternatives and then accept one and reject the rest; but in imagination the first stage does not exist . . . Hence the will to imagine is a will which does not contemplate alternatives; it is an 'immediate' will . . . In this, imagining is sharply opposed to thinking."²³ Thinking here is of the logical and rational understanding of science. Imagination contemplates some large Idealism of moral beauty, bypassing the logical or rational path. Coleridge notes, "Most interesting is it to consider the effect when the feelings are wrought above the natural pitch by the belief of something mysterious, while all the images are purely natural."²⁴ When he explains, "I see, not feel, how beautiful they

are!"²⁵ the poet affirms that feeling is of the Imagination which is superior to seeing--seeing is of the senses, subject to logical and rational understanding. Willey, writing on Wordsworth, says:

He wrote this tragedy ["The Borderers"] chiefly to show that the attempt to live by the naked reason, though it might be a noble aspiration, is apt to produce monsters rather than supermen. His own experience had taught him that the process of dragging all precepts and maxims to the bar of reason led to moral chaos.

(The Eighteenth Century Background 268)

Stallknecht concludes, "The new humanist is in danger of forgetting that, although imaginative love affords not always an unerring light, it is nonetheless the motive power without which there is nothing generous or noble in the world."²⁶

Thirdly, Imagination absorbs and takes in the entire phenomenon, the whole panorama, for its contemplation and knowing. The method of science cuts off and isolates a part or bit of the panorama for its study and analysis. In doing this, it may weaken or completely miss the Truth of the panorama. It is thus that the Truth of Imagination is superior to the Truth by science. In a sense it is like studying a tree or, worse, the leaf of a tree, and missing the force of the endless forest. Wordsworth castigates this method of science that attempts "To regulate the moving spheres, and weigh/ The planets in the hollow of their [investigators'] hand" (Excursion IV, lines 949-950). On the slivering into bits for analysis, we read;

go, demand

Of mighty Nature, if 't was ever meant
 That we should pry far off yet be unraised;
 That we should pore, and dwindle as we pore,
 Viewing all objects unremittingly
 In disconnection dead and spiritless;
 And still dividing, and dividing still,
 Break down all grandeur, still unsatisfied
 With the perverse attempt, while littleness
 May yet become more little; waging thus
 An impious warfare with the very life
 Of our own souls!

(Excursion IV, lines 957-967)

And again:

Philosophers, who, through the human soul
 Be of a thousand faculties composed,
 And twice ten thousand interests, do yet prize
 This soul, and the transcendent universe,
 No more than as a mirror that reflects
 To proud Self-love her own intelligence;
 That one, poor, finite object, in the abyss
 Of infinite Being, twinkling restlessly!

(Excursion IV, lines 987-994)

On this same thought of not missing the whole by studying its bits
 and pieces, Stallknecht quotes William Law:

Wonder not therefore, my Friend, that though the Mystery under consideration contains the greatest of Truths, yet I am unwilling to help you to reason and speculate upon it; for if you attempt to go further in it, than Self-evidence leads you, you only go so far out of it, or from it.

(Strange Seas of Thought 70)

We have indicated that Truths of Imagination fall under Truths of Moral Imagination and Truths of Natural Imagination. On the nature of the working of the moral guidance, Wordsworth writes of the Shepherd-lad:

His round of pastoral duties, is not left
 With less intelligence for moral things
 Of gravest import. Early he perceives
 Within himself, a measure and a rule,
 Which to the sun of truth he can apply,
 That shines for him, and shines for all mankind.

(Excursion IV, lines 805-810)

Coleridge writes of the same moral guidance, which he calls Reason:

Whene'er the mist, that stands 'twixt God and thee,
 Defecates to a pure transparency,
 That intercepts no light and adds no stain--
 There Reason is, and then begins her reign!

("Reason," lines 1-4)

In illustration of the Truths of Moral Imagination, the follow-

ing identifies the source of the "tribute" and "regards" one feels for the buried dead:

--No," the philosophic Priest

Continued, "'t is not in the vital seat
 Of feeling to produce them, without aid
 From the pure soul, the soul sublime and pure;
 With her two faculties of eye and ear,
 The one by which a creature, whom his sins
 Have rendered prone, can upward look to heaven;
 The other that empowers him to perceive
 The voice of Deity, on height and plain,
 Whispering those truths in stillness, which the Word,
 To the four quarters of the winds, proclaims.
 Not without such assistance could the use
 Of these benign observances prevail:
 . . .
 This is the genuine course, the aim, and end
 Of prescient reason; all conclusions else
 Are abject, vain, presumptuous, and perverse.

(Excursion VI, lines 983-1010)

This is an example of the Truth (of feeling tribute to the dead) arrived at by Moral Imagination. Moral Imagination here shares kinship with the moral force, the poet's "prescient reason" in the above passage, which he believes to be innate to the Universe. Cicero refers to this innate universal moral force as "the ori-

ginal source of law, which existed before the State [legal codes] was established." ²⁷ This innate moral force is also the "Law of Nature" through which "Christianity had in Adam and his prelapsarian bliss a type of the natural [moral] man . . . a state in which the laws of God and of reason . . . should prevail, as a perpetual check upon existing ways of life." ²⁸ The poet in the above passage appeals to this innate moral force to aid Moral Imagination.

As an illustration of the Truths of Natural Imagination:

'And, leaving it to others to foretell,
 'By calculations sage, the ebb and flow
 'Of tides, and when the moon will be eclipsed,
 'Do you, for your own benefit, construct
 'A calender of flowers, plucked as they blow
 'Where health abides, and cheerfulness, and peace.'

(Excursion VI, lines 170-175)

In this passage the poet appeals not to the universal moral force, but depends on the sights and sounds of Nature—"A calender of flowers, plucked as they blow"—to trigger the Natural Imagination to feel the Truth or virtue. On this Coleridge notes in his Biographia Literaria "the sudden charm, which accidents of light and shade, which moon-light or sun-set diffused over a known and familiar landscape . . . these are the poetry of nature." ²⁹ Engell and Bate, editors of Biographia Literaria, provide the following illustration ³⁰ in support of the above claim of Coleridge:

Within the soul a faculty abides,

. . .

As the ample moon,

In the deep stillness of a summer even
 Rising behind a thick and lofty grove,
 Burns, like an unconsuming fire of light,
 In the green trees; and, kindling on all sides
 Their leafy umbrage, turns the dusky veil
 Into a substance glorious as her own,
 Yea, with her own incorporated, by power
 Capacious and serene. Like power abides
 In man's celestial spirit; virtue thus
 Sets forth and magnifies herself.

(Excursion IV, lines 1058-72)

In this passage as the moon magnifies her glory by setting "the dusky veil" of the shadowy trees glow in her brilliance, the soul of man has the potential to augment and magnify its inborn virtue. It is implied that the peace and beauty of the moon's spreading her glory will have the power of "the poetry of nature" to induce in man's soul a like augmentation of his virtue. This inducing power of Nature is the source for the Truths of Natural Imagination.

From Coleridge, another illustration of the Truths of Natural Imagination:

A damsel with a dulcimer
 In a vision once I saw:
 It was an Abyssinian maid,
 And on her dulcimer she played,
 Singing of Mount Abora.
 Could I revive within me
 Her symphony and song,
 To such a deep delight 'twould win me,
 That with music loud and long,
 I would build that dome in air,
 That sunny dome! those caves of ice!

(*"Kubla Khan,"* lines 37-47)

Here again, the poet is referring to a Truth gained by Natural Imagination. The damsel's "symphony and song," a part of Nature (as different from any moral elements), are the source to stir him to build his "sunny dome" and the "caves of ice." The oxymoron-linking of "sunny dome" and "caves of ice" captures the poet's transcendental inspiration and romance of halcyon indolence of the idyllic sunny tropics and the mysteries of far-away icy places, like the romantic ultima Thule.

Or this from Wordsworth for another illustration of the Truths of Natural Imagination:

I have seen

A curious child . . .

. . .

applying to his ear

The convolutions of a smooth-lipped shell;

To which . . .

Listened intently . . .

. . . for from within were heard

Murmurings . . .

Mysterious union with its native sea.

Even such a shell the universe itself

Is to the ear of Faith; and there are times,

I doubt not, when to you it doth impart

Authentic tidings of invisible things;

Of ebb and flow, and ever-during power;

And central peace, subsisting at the heart

Of endless agitation.

(Excursion IV, lines 1133-1147)

The "Fallacy of Misplaced Concreteness."

It was pointed out in the last chapter that one of the reasons for the superiority of the Truth of Imagination over the Truth by science is that the latter considers only a piece or bit of the whole panorama. Doing only a piece of the whole panorama may sometimes completely miss the essence and Truth of the issue, reaching conclusions that are destructive and even immoral. The importance of this topic and the nature of the working of its principle call for further explication and merit a separate chapter.

In the material investigation of matter, inert or living, it is the practice of science to consider a particular part or element of the whole, study and analyse it, and then link it to the whole. This latter linking, or interfacing with the whole, will call for some minor corrections or adjustments to the conclusions and results obtained on the particular part or element that was studied separately. That is, the conclusions and results obtained separately on the particular element hold generally and substantially as they are,

when that element is later joined to the whole.

This technique or process of isolating a part or element from the whole and studying it separately is so very common to science, that one may almost consider it as the method of science. One can pick up examples from just about anywhere—one studies separately a leaf, part of the whole, a tree; the lungs, part of the body; the gene, which is part of a cell, which is part of tissue, which is part of an organ, which is part of the body, thus gene is many parts removed from the whole; the moon, part of the solar system; the muffler, part of the car; the transistor, part of a radio; the spices, part of a dish; the cloud, part of the large atmospheric firmament etc. etc. In all, the results and conclusions obtained on the part basically and substantially hold, when it is later linked to the whole, except for minor interface corrections. For example, a leaf, when investigated separated from the tree, may absorb, say, twenty units of moisture overnight. Actually in situ (on the tree) it may absorb nineteen units. That one unit (out of twenty) is the minor correction needed for the effects of interfacing it with the whole. This method of science is a technique that is valid for material investigation of matter.

Such scientific method of studying and understanding a part of the whole, when applied to non-material phenomena, may completely miss the Truth of the phenomenon. This error Whitehead terms "the fallacy of misplaced concreteness,"³¹ an error of separating or plucking something out of space and time, that form the whole. On

it Whitehead writes, "The objective world of science was confined to mere spatial material with simple location in space and time." ³² He adds, "The unity of all actual occasions forbids the analysis of substantial activities into independent entities." ³³ Schneider elaborates on it:

Science after Newton . . . made the mistake of assuming that the 'simple location' of a body in space and time was a concrete fact, when in truth it was an abstraction. Scientists after Newton assumed that a given event might be abstracted from its space-time context and studied as objective truth . . .

An object is real only by its relation in space to all other objects in space . . . A car, for example, is passing down the road in front of our window. Do we see an object traverse a given space in a given time? Do our minds convey to us its rate of speed by dividing imaginary units of space into imaginary instants of time? No, we see a telephone pole, a house across the street, a tree waving its branches, a yellow field, a blue sky, a car joining and leaving these things. Telephone pole, house, tree, field, sky, and car have no meaning in our field of vision except in relation to each other. We see relationships changing.

(Wordsworth's Cambridge Education, 255)

This scientific abstraction of studying an event or

object separated and disjunct from its environmental whole destroys its essence and meaning at two levels—at the level of space and time; and at the level of emotions and feelings. Whitehead's "fallacy of misplaced concreteness," with its adjunct of Schneider's loss of relationships to the whole, refers to the first level stated above. We shall consider later the second level, which to Wordsworth and Coleridge is a more tragic and significant error than that of the first level.

At the first level, two kinds of errors occur. One is that isolating an event or object from its surrounding-whole severs it from the interactions and effects that impinge on it from the surroundings. It is to these impinging interactions and effects that the human heart more vibrantly pulsates, creating the effect of the sublime. On these impinging interactions and the resulting effect of the sublime, Whitehead says of Wordsworth:

It is the brooding presence of the hills which haunts him. His theme is nature in solido, that is to say, he dwells on that mysterious presence of surrounding things, which imposes itself on any separate element that we set up as an individual for its own sake. He always grasps the whole of nature as involved in the tonality of the particular instance.

(Science and the Modern World 121)

Wordsworth laments the scientific approach of studying an event or object by disjointing it from the whole:

But who shall parcel out
 His intellect by geometric rules,
 Split like a province into round and square?
 Who knows the individual hour in which
 His habits were first sown, even as a seed?
 Who that shall point as with a wand and say
 'This portion of the river of my mind
 Came from yon fountain?' . . .

. . .

that false secondary power [science and its above
 fallacy]

By which we multiply distinctions, then
 Deem that our puny boundaries are things
 That we perceive, and not that we have made.

. . .

And thou [Coleridge] wilt doubt, with me less aptly skilled
 Than many are to range the faculties
 In scale and order, class the cabinet
 Of their sensations, and in voluble phrase
 Run through the history and birth of each
 As of a single independent thing.

(The Prelude II, lines 203-227)

Averill (1978) observes that "Wordsworth is clearly of two minds
 about the value of such analysis [science] ; therefore, he creates
 a good science and an invidious one, the science of 'unity' against

that of the 'false secondary power.'" ³⁴ The "good science" is only in the hopeful mind of Wordsworth, for as already noted, science, by the very nature of its working, studies an object in isolation. It is not that science has a predilection for this method--it is the pragmatic reality that forces it on science. The very aim of science of minute and objective analysis, which is so different from capturing a vast and general feeling, prevents it from studying a vast panorama or phenomenon with unending connections and interactions, without breaking it into smaller isolated bits and parts.

It is again the spirit of not yielding to the scientific inquiry and method of treating every event or object as separate, isolated and independent from some global whole, that is reflected in Wordsworth's preface to "An Evening Walk." By not identifying the Walk with any particular place or walk, he preserves its general character of being part of some larger whole, without isolating and slivering it to one independent event by itself. We read:

I will conclude my notice of this poem by observing that the plan of it has not been confined to a particular walk or an individual place,--a proof (of which I was unconscious at the time) of my unwillingness to submit the poetic spirit to the chains of fact and real circumstance.

(Preface to "An Evening Walk")

The avoiding of this error of isolating an event or object from its environmental whole, that is, avoiding the error of "the

fallacy of misplaced concreteness," has a parallel in the paintings of the generation of Wordsworth and Coleridge. Heffernan (1984) notes that William Turner (1795-1851), for example, avoided the classical parallel perspective with its clear vertical and horizontal strokes, that "stress clear, sharp-edged forms," thus separating the object sharply and concretely from its surroundings and their interactions. This parallel perspective is an abstraction in the visual art, for the human eye does not see along such verticals and horizontals, but sees along curves—"the field of human vision is circular." Working with curvilinear perspective (curved) and chiaroscuro effects that "blur the limits, contours, and boundaries" of the visual forms, Turner captured an effect of infinity, unboundedness, of the whole, together with the effect of the sublime in his paintings.³⁵ Such paintings have kinship with Wordsworth's contemplating "nature in solido," referred to just earlier.

We had noted that there was a second kind of error, different from the loss of interacting relationships treated above, associated with the abstraction of treating an event or object as an independent entity separate from its surrounding-whole. Even if one were to ignore the interacting relationships with its surroundings, an event or object has no independent, absolute identity in space and time, apart from its surroundings. Their generation could not have known this, but Wordsworth and Coleridge would turn happily in their graves to hear that such absolute identity in space and time is an error of classical or Newtonian physics, that is corrected by modern

or Einsteinian physics. A lapse of one second is not the same throughout the Universe—it depends on the environment. Classical physics will claim that it is the same. Rubino (1983) observes that Homer foretold Einstein, for he treated time relatively in *Odyssey*.³⁶ When Ulysses returned to his home in Ithaca after twenty years in Troy, with many comrades dead in battle, he found nothing had changed in Ithaca—time had stood still in Ithaca, when in Troy it had passed by twenty years. There have been recent occasional references to this concept in Literature, to support the position that nothing is absolute, everything is relative to the actor, observer or protagonist.

We had stated earlier that treating an event or object in scientific abstraction and isolation from its environment destroys its essence and meaning at a second level, at the level of emotions and feelings. Science investigates only the objective details of the object or event under study; in the process it drains off all the natural and rightful emotions due to that object. On this point, Bohm (1983) argues that Coleridge was highly indebted to Forster's A Voyage Round the World for his "The Rime of the Ancient Mariner." In the Voyage, as a member of Cook's voyage to the poles to gather scientific information, George Forster narrates how a sparrow befriended the sailors many days, eating the worms in the cabins etc., till someone killed it for experiment or for "fun."³⁷ Coleridge could not accept it in abstraction and isolation as a scientific event, drained of all emotions and feelings that ought to have

emanated to the bird as a part of the whole-environment. Thereupon he changed the sparrow to an albatross, whose killing and the ensuing guilt had to be shared by all. Taken in this historical context, "The Rime" is a dramatic protest against the kind of scientific attitude and experimental method that Newton had started.

It is also against the same kind of information-gathering, completely objective without any natural and rightful feelings, that Wordsworth protests, when he has a philosopher (scientist) botanizing on his own mother's grave:

Physician art thou? one, all eyes,
 Philosopher! a fingering slave,
 One that would peep and botanise
 Upon his mother's grave?

. . .

One to whose smooth-rubbed soul can cling
 Nor form, nor feeling, great or small;
 A reasoning, self-sufficing thing,
 An intellectual All-in-all!

("A Poet's Epitaph," lines 17-32)

Conclusion

Though one today enjoys and appreciates the benefits of science, one does not place science in any mysterious position. Science works only with the mechanical cause-and-effect phenomena of the material world, and cannot provide answers to the search and need for deeper and transcendental Truths. However, such was not the case for the generation of Wordsworth and Coleridge. Newton's discoveries had just ushered in the age of science. Its method, the scientific method, was not well defined yet. But it had provided answers to some long-held riddles, like explanations of the tides, the motions of the heavenly bodies, and the phenomenon of light. Thus science enjoyed a mysterious halo. On the other hand, sensitive people, especially poets such as Wordsworth and Coleridge, were painfully aware of the limitations of science that the modern man has finally fully realized.

This confusing Janus-faced status of science, at once mysterious and hallowed, yet incapable of responding to man's transcendental needs, naturally played on the emotions and thinking of the poets. What effects Newton's works—especially his Principia and The System of the World—and the emerging science thereon had on the poetry of Wordsworth and Coleridge forms the report of this paper.

Whatever reservations Wordsworth and Coleridge might have had towards science, they were definitely fascinated by its ability to fathom riddles long held secret and mysterious by Nature. Newton's explanations for the tides and the motions of the heavenly bodies might have been of particular wonder to them. One marvels at the closeness of the phrasal and conceptual similarities between Newton's descriptions of the constant, unerring motions of the planets and the imagery Wordsworth draws from them. No less arresting is the powerful romantic and poetic spell Coleridge casts on the bare, dry effect of the Moon on the ocean. Routine understanding of the scientific explanation for the tides has dimmed Newton's image; but Coleridge's magical weaving of the relationship of the Moon and the earth over the tides still holds one's fancy. Which schoolboy does not memorize the relevant passages on it from "The Rime of the Ancient Mariner?" Coleridge's creative poetic transformation of it is as brilliant as Newton's scientific probing of it.

Animism had been with us since the ancient Greeks. But Newton's explanation of the gravity, or perhaps his lack of explanation on the nature of its operation, opened a wide territory of mystery for the poets to have freeplay with an animating spirit of the Universe.

Yet there was the somber side to it. Wordsworth and Coleridge felt, each in his own way, that science had robbed man of some mystical quality and heritage.

Numbered Bibliography.

1. Coleridge, Samuel Taylor. Biographia Literaria. Ed. James Engell and W. Jackson Bate. 2 vols. Princeton University Press, 1983. vol. 1.
2. Newton, Sir Isaac. Mathematical Principles (Principia) of Natural Philosophy and His System of the World. Trans. into English by Andrew Motte in 1729. Revised by Florian Cajori. University of California, 1934.
3. Schneider Jr., Ben Ross. Wordsworth's Cambridge Education. 167-168.
4. Ibid. 251.
5. Whitehead, Alfred North. Science and the Modern World. The MacMillan Company, 1937. 130.
6. Nicolson, Marjorie Hope. Newton Demands the Muse. Princeton University Press, 1946. 135.
7. Kelley, Theresa M. "Spirit and Geometric Form: The Stone and the Shell in Wordsworth's Arab Dream." Studies in English Literature 1500-1900. 22(4): (Autumn 1982), 563-82.
8. Ibid.
9. Averill, James H. "Wordsworth and 'Natural Science': The Poetry of 1798." Journal of English and Germanic Philology. 77:(1978), 232-46.

10. Rubino, Carl A. "Winged Chariots and Black Holes: Some Reflections on Science and Literature." Genre, 16(4): (Winter 1983), 335-353.
11. Stalknecht, Newton P. Strange Seas of Thought. Duke University Press, 1945. 66.
12. Nicolson, p.106.
13. Mill, John Stuart. "Coleridge." Mill's Essays on Literature and Society. Ed. J.B. Schneewind. Collier-MacMillan, 1965. 300.
14. Yager, Patricia Smith. "The Plenitude of Belief: Animism in Coleridge's Notebooks and Poetry." Dissertation Abstracts International. 40: 6296A-97A.
15. Piper, H.W. The Active Universe. The Athlone Press, 1962. 9.
16. Cajori, Florian. "An Historical and Explanatory Appendix." Newton's Mathematical Principles (Principia) of Natural Philosophy and His System of the World. Trans. into English by Andrew Motte in 1729. Revised by Florian Cajori. University of California, 1934. 670.
17. Whitehead, p.249.
18. Piper, p.11.
19. Excursion (Wordsworth) IX, line 3.
20. Cajori, p.635.
21. Willey, Basil. The Eighteenth Century Background. Chatto and Windus, 1949. 279.
22. Nicolson, pp.147-150.

23. Stallknecht, pp.246-247.
24. Coleridge, Samuel Taylor. "Translation of a Passage in Otffried's Metrical Paraphrase of the Gospel." (preface to this) The Poetical Works of Samuel Taylor Coleridge. Ed. James Dykes Campbell. MacMillan and Company, 1893. 144.
25. Ibid. "Dejection: An Ode." line 39. p.160.
26. Stallknecht, p.249.
27. Willey, p.15.
28. Ibid. p.15.
29. Coleridge, Samuel Taylor. Biographia Literaria. Vol.2, chapter 14, p.5.
30. Ibid. chapter 14, p.5.
31. Schneider, p.255.
32. Whitehead, p.209.
33. ibid. p.255.
34. Averill.
35. Heffernan, James A.W. "Wordsworth, Coleridge, and Turner: The Geometry of the Infinite." Bucknell Review, 29(1): (1984), 49-72.
36. Fubino.
37. Bohm, Arnd. "George Forster's A Voyage Round the World as a Source for "The Rime of the Ancient Mariner": A Reconsideration." Journal of English Literary History, 50(2): (Summer 1983), 363-377.

THE INFLUENCE OF NEWTON IN
THE POETRY OF WORDSWORTH AND COLERIDGE

by

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Abstract

The influences and traces of Newton's Principia and The System of the World in Wordsworth's Excursion in particular and Coleridge's poetry in general are described and illustrated from the texts.

One influence is the imagery drawn from Newton's works into Wordsworth's and Coleridge's poetry. Images built on the different motions of the universe, such as the constant earth's rotation, the small aberrations of these motions, the insignificant motion of a whole heavenly system inspite of large motions of its parts, poetic experiencing and expressing of earth's diurnal motion, are one category. Romantizing the relationship of earth and the moon through the tides is another kind. Humor and parody mimicking these motions is another type. The developing of two conceits of contrary emotions, the second following as a reaction to the first, is studied as an imitation of Newton's third law of action and reaction. Then there are poetic reflections of the first law of inertia. The separation of man from Nature, as the investigator from the object investigated, finds different poetic expressions.

The domain of science is distinct today from that of poetic creativity or Imagination—the former of cause-and-effect phenomena, the latter of cause-free effects. This distinction was not well-defined for the generation of Wordsworth and Coleridge. Their confusion is reflected in the poets' criticizing science for not performing the job of Imagination, misunderstanding over the operative source of Natural Theology, and certain stylistic aspects when

mutually independent elements of science and Imagination are worked into complementary elements as in a fugue.

The hylozoism of Wordsworth and Coleridge is suggested as being strongly caused by Newton's discoveries. Newton's first law of motion that separated motion from matter, robbing matter of motion, and life with it, as well as his law of gravity with its mystery of "action at a distance" left a vacuum, which needed to be filled by the poets with some Universal Spirit.

The scientific method of examining, not only by breaking a whole phenomenon into small separate parts for analysis, but also doing it with emotionless objectivity, came under criticism by Wordsworth and Coleridge. Their reactions and modes of protest are described and illustrated.