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Abstract

In *Finnegans Wake*, Joyce attempted to create an intricate artificial universe. To create his fictive universe, Joyce gathered various ancient and modern world-models then merged and altered them to fit the needs of his fiction. He wanted to create a world of four-dimensional, space-time cycles. This paper examines the cosmological, metaphysical, and scientific sources Joyce included in the *Wake*, as well as the use he made of these sources. It examines in detail the influence of the sixteenth-century philosopher, Giordano Bruno, on Joyce and the *Wake*. Joyce employed Bruno's coincidence of contraries to instill progression into the structure of the *Wake*. The implications of that progression are explored throughout the paper.

The influence of Einstein and twentieth-century physics are discussed in Chapter Three, with a special emphasis on the applications Joyce made of relativity theory in *Finnegans Wake*. Finally, the paper deals with Joyce's failure to create an adequate synthesis of the diverse elements in the *Wake*. Joyce was ultimately unable to create the grand-continuum he had intended to create. The failure of Joyce's vision and the reasons for that failure are discussed in the conclusion of the paper.
The problems of language here are really serious. We wish to speak in some way about the structure of the atoms....But we cannot speak about atoms in ordinary language.

Werner Heisenberg
Physics and Philosophy,
p. 177

No, so holp me Pentault, it is not a mis-effectual whyacinthinous riot of blots and blurs and bars and balls and hoops and wiggles and juxtaposed jottings...it only looks as if it is damn it...tare it or leaf it...hoping against hope all the while that, by the light of philosophy...things will begin to clear up a bit one way or another.

Finnegans Wake
(118.30-119.06)
CHAPTER ONE
Introduction

James Joyce took very seriously the role of the creative artist as a godlike originator. In Portrait of the Artist he writes:

Now, at the name of the fabulous artificer, he seemed to see a winged form flying above the waves and slowly climbing the air...A hawklike man flying sunward above the sea, a prophecy of the end he had been born to serve...a symbol of the artist forging anew in his work shop out of the sluggish matter of the earth a new soaring impalpable imperishable being?¹

Joyce never lost the vision of the artist; even if not quite an originator, the artist remained to Joyce a synthesizer and arranger. But by the time he had begun work on Finnegans Wake, his impetus had changed somewhat. Although he was never a naturalist, the difference between the almost naive realism of The Dubliners and A Portrait, on the one hand, and the complex multi-levelled metaphysics of Finnegans Wake, on the other, is profound. In writing the Wake, Joyce was no longer interested in creating a work that the reader could comprehend readily. Instead, he
wanted *Finnegans Wake* "to seek a pan-symbolic, pan-linguistic synthesis in the conception of a four-dimensional universe." In writing the *Wake*, "Joyce is attempting...nothing less than to create a third scripture, the sacred book of the night, revealing the microcosm which he had already conceived in his mind." But, since *Finnegans Wake* is an outgrowth of Joyce's earlier fiction, we cannot understand what Joyce is attempting in his final novel until we first understand what he attempted in *A Portrait* and *Ulysses*. Because the *Wake* is the culmination of Joyce's aesthetic theories, many different critical approaches to it are equally valid. However pretentious the undertaking, Joyce was trying to create a new phase of human consciousness. Thus he created, from the word, an intricate artificial universe complete with a cosmology, a cosmology based largely on the motif of cyclical disintegration paired with at least the possibility of regeneration. This paper will treat in detail these recurring themes of dissolution and rebirth.

In *Finnegans Wake*, cosmic disintegration on the macro-cosmic level becomes comic disintegration on the human level. Much of the humor in *Finnegans Wake* derives from Joyce's transformation of the high tragedy of Greek and Egyptian myths into the personal low comedy of the fall of the dreamer, Tim Finnegan, or HCE and his various emanations.

But this pervasive motif of disintegration produces more than simple comic effect. In the first quarter of the twentieth century, when most of *Finnegans Wake* was written, the underpinnings of classical physical and metaphysical
theories were being shaken. This uncertainty of basic, previously accepted, epistemologies is evident in the *Wake*.

Critics have often noted the influence of the sixteenth-century philosopher and magus, Giordano Bruno, on Joyce's life and work. The first section of this thesis develops the idea that a central theme in the *Wake* is the reluctant repudiation of Brunonian metaphysics, a metaphysics that Joyce accepted and applied in his earlier fiction. In the *Wake*, Joyce also repudiates many other traditional paradigms. Implicit is the idea, new to Joyce and so far as I know to all twentieth-century literature of the time, that atomistic disintegration could signify the annihilation of material existence.  

Bruno's dialectical doctrine, the coincidence of contraries, which he adopted from Nicholas of Cusa, has been cited often as an important theme in the *Wake*, as well as in his earlier fiction. In the *Wake*, this dialectic is most evident in the relationship between the twins, Shem and Shaun.

The coincidence of contraries is, however, only one part of Brunonian philosophy. His theory of atomism and his time philosophy as they appear in the *Wake* are central to this paper. Like the classical atomists, Leucippus and Democritus, Bruno embraced the idea that the atom was the smallest indivisible unit of matter. But unlike the Greeks, who drew a clear line between spirit and matter, Bruno avoids this animate-inanimate dualism. Instead, he developed a unique atomism based on the unity of the spiritual and
material. In Brunonian metaphysics the matter world created from the atom is an emanation from the one universal substance. From the material manifestations of this universal substance proceed the various forms matter takes. These forms are never absolute or fixed. They are in constant flux, but they all have as their ultimate minimum, the atom, impartible. Bruno, then, in his theory of the atom, joined mutability with the indestructibility of the atom. Faced with the theoretical implications of relativity theory and the atom-splitting experiments of Rutherford, Joyce was forced to forge a mutability based on the ultimate destructibility, or annihilation, of the atom. With the sudden disappearance of traditional paradigms, Joyce was left with an essential doubt concerning the nature and validity of basic identity. Although this skepticism about identity is present as early as *A Portrait*, it is profound and central to the *Wake*.

Much of the body of this paper deals with the fables in the *Wake*, with which Joyce elucidates his metaphysics. These interpolated stories form the evanescent fabric of the *Wake*, and it is principally from these fables that the themes of the work gain their meaning. In such fables as the Frankquean, Burrus and Caseous, Mooke and Gripes, the Ondt and the Gracehoper, and Bukley and the Russian General, the reader can discover the most important enigma of the *Wake*: the nature of identity in a world that lacks a coherent center. Much of the kaleidoscopic fusion and splitting of the characters in the *Wake* is the result of
this seemingly random mitosis, which is caused by the loss of a psychic as well as a material center.

Joyce tries to impose order on the Wake through the imposition of cyclical form. The cycles of the Wake are dream cycles. They have their origins in the dream of HCE. They are "coinansdream of lodacircles" (228.18) and come from "Draumcondra's Dreamcountry where the better lies blow" (293.F). They are based on the Viconian cycles but they are also four-dimensional, space-time spirals of cosmic movement. There is also a series of masculine-feminine cycles. In these lesser cycles, Book I .1-.4 is male dominated, Book I .5-.8 is ALP's feminine water cycle, in Book the masculine and feminine elements engage in conflict, and in Book III the male cycle begins again. The male dominance then continues throughout the Wake. Together, these cycles give the Wake coherence and order. The cycles of the Wake will be discussed more fully in Chapters Three and Four of this paper.
CHAPTER TWO
Bruno at the Wake and Before

Giordano Bruno was an early and continuous influence on James Joyce's writing. He first appears, oddly enough, in a 1901 essay, "The Day of the Rabblement," which Joyce wrote to condemn the Irish Literary Theatre for its parochialism. Joyce cites Bruno in this work simply to support his own adolescent view that the artist must isolate himself from, "the multitude." Although Joyce was to outgrow this elitist attitude (at least in principle), he never lost his fascination for Brunonian Philosophy, and many of Bruno's ideas serve as the foundation for Joyce's philosophical novels.

Joyce used the Dedalus myth in both A Portrait and Ulysses: Dedalus appears as the "hawklike man" in A Portrait and as Bloom in Ulysses. One tributary source may have been suggested to Joyce by a sonnet Bruno wove into a dialogue of "Deli eroici furori":

Since I have spread my wings toward sweet delight, the more do I feel the air beneath my feet, the more I spread proud pinions to the wind and contemn the world, and further my way toward heaven.
Nor does the cruel fate of Dedalus' son burden me, on the contrary I follow his way the more: that I shall fall dead upon the earth I am well aware; but what life compares with this death?

I hear the voice of my heart upon the wind: Where do you take me, adventurous one? Resign yourself, for too much temerity is rarely without danger.

I reply: fear not noble destruction, burst boldly through the clouds, and die content, if heaven destines us to so illustrious a death.  

Bruno's Dedalus is the prototype for Joyce's view of the artist in this early work, "the great artificer...a living thing new and soaring and beautiful, impalpable, imperishable" (P., p. 89).

This romantic notion of the artist was an ideal Joyce would retain, little altered, throughout his writing career. But Joyce makes a far subtler use of Brumonian philosophy. Much of A Portrait is concerned with Stephen Dedalus' desire to find or define himself in the world, to apprehend and fix his identity in relationship to the social order and to his immediate universe. Joyce was confronted, as Bruno was, with the provincialism of Catholicism and it is against this conservative ideology that both Joyce, in the persona of Stephen, and Bruno reacted.
Bruno was most concerned in his metaphysical speculations with the place of human beings within the universe they inhabit. He always placed his emphasis, however, not so much on the universe, as on the human being who must produce a vision of the universe within himself. This recreation of the universe within the individual self is an important metaphysical preoccupation which pervades Joyce's work and appears first in A Portrait. In the first few pages of A Portrait, Stephen speculates:

What was after the universe? Nothing. But was there anything round the universe to show where it stopped before the nothing place began? It could not be a wall but there could be a thin line there all around everything. It was very big to think about everything.
(P., p. 16)

Throughout his fiction Joyce labors to create "a thin line" around everything by using what was for him the ultimate magic—The Word. For Joyce, as Jeanne McKnight points out, "words also set limits and create boundaries and thus assuage anxiety." But there must be an element of unreality in any attempt to produce within any finite work of literature the whole of reality. This is a problem Joyce faced in writing Finnegans Wake. Phillip Wheelwright deals with the impotence of literature to express the "real" in Metaphor and Reality:
It is only by an arbitrary limitation of the word "reality" that the claims of one kind of experience can be called "real" and those of other kinds "unreal." But to limit the word is to evade the problem....From the contextual and perspectival character of reality it follows that the nature of reality is intrinsically and ultimately hidden from finite exploration. 8

Joyce is not unaware of the inability of words adequately to express the "real." In fact, Joyce knows that in Finnegans Wake any order he tries to impose on his fictive universe can be ultimately only a canard, a sham, of the "real." Much of the humor in the Wake comes from Joyce's word-plays on this realization that the entire work is in some sense "his sham cram bokk!" (323.34). 9

Yet in spite of Joyce's conscious knowledge that what he is attempting in the Wake cannot be realized completely, he still retains his obsessive need to discover the limits of the universe. A large part of his desire to encompass, and therefore define, the macrocosm within a work of fiction comes from his need to define the limits of the personal self. It is the relationship of the self to the world around it that motivates much of the metaphysical questioning Joyce includes in his fiction.

The metaphysics in Finnegans Wake is most apparent in Joyce's juxtaposition of contraries. This technique does
not share as much with Bruno's coincidence of contraries as many critics have asserted. They fail to see the subtle but central differences in approach between these two writers. Tindall, Atherton, and most recently, Mc Hugh, have made note of Joyce's use of Bruno in the *Wake*. Yet none has discussed the profound modifications Joyce made in Bruno's dialectic. 10

In the Prankquean Fable (21.05-23.15), for example, Tristopher and Hilary represent the dialectic of the twins, Gemini. Their names come from Bruno's motto, "In tristia hilaris hilaritate tristis," and therefore they serve, not only as a clue to Joyce's use of Bruno in the fable, but also as a comment on the interchangeability of tragedy and comedy for Joyce as well as for Bruno.

The dynamics of this fable illustrates the difference between Joyce's and Bruno's views of the dialectic. For Bruno the dialectic is a means of ascent toward God. Joyce treats this view of Bruno's in a review he wrote for a biography of Giordano Bruno by Lewis Mc intyre:

It is not strange, then, that Coleridge should have set him [Bruno] down a dualist...and should have represented him as saying in effect: "Every power in nature or in spirit must evolve an opposite as the sole condition and means of its manifestation; and every opposition is, therefore, a tendency to reunification".
Inwards from the material universe which did not seem to him, as to the Neoplatonists the kingdom of the soul's malady, or as to the Christians a place of probation, but rather his opportunity for spiritual activity, he passes, and from heroic enthusiasm to enthusiasm to unite himself with God.¹¹

Hegel's view of the dialectic is somewhat similar to Bruno's in that it too is a way to resolve contradictions in the endless process toward Absolute Knowing in the apprehension of Absolute spirit.¹² Both of these philosophers attempt to understand the spiritual nature of man and his place within (or encompassing) all natural things in the universe through a knowledge of the human mind itself, through the mind's own dialectical structure.¹³ Indeed, Bruno and Hegel have somewhat similar theories of knowledge. In De la causa Bruno defines his conception of human knowledge:

I want to understand which thing it is that you want to be formal cause, joined to the efficient cause. It is, perhaps, ideal reason? Because every agent which works according to the intellectual rule does not attempt to effectuate anything except in accordance with some intenzione; and this intenzione is not within apprehension of something; this [apprehension] is not other than the form of the thing which is to be produced [by the intellectual agent]. Nevertheless, this
intellect (which has the faculty of producing all of the species and sending them forth with such beautiful architecture from the power of the matter to the act) needs to have them all beforehand, according to certain formal reason, without which the agent would not be able to proceed to their manufacture, just as it is not possible for the maker of statues to execute diverse statues without having previously pondered diverse forms first.

Although at first reading, this passage may appear to be pure Platonism, in truth, it shares a subtle affinity with the Hegelian conception of nature. J. N. Findlay delineates the difference between the Hegelian and Platonic conceptions of nature:

By [Natural Soul] he [Hegel] means a sort of psychic life diffused throughout wide segments of Nature, and not yet parcelled off into separate individual Souls. It is not, he says, a Soul of the World of the sort Plato believed in, but rather a 'substance' out of which individual Souls may be carved.

Bruno's conception of "substance" is very much like Hegel's, as Patterson points out in The Infinite Worlds of Giordano Bruno when she quotes the Italian philosopher, Ernesto Baldi, in her own translation of the Italian. Baldi says of Bruno, "The philosophy of Giordano Bruno...
is precursor of that of Spinoza, of Schelling, and of Hegel. The world is a singular unique substance in which all the phenomena are identified, notwithstanding their apparent opposition.\textsuperscript{16} Hegel treats this idea of a universal substance in \textit{The Phenomenology of Spirit} when he says:

\begin{quote}
The spiritual alone is real. It is the essence, what exists in itself. It contains itself and becomes determinate, it becomes other-being and being-for-self, and in all this determinateness and externality to self, it remains in itself. It is in and for itself. This being-in-and-for-itself is at first merely \textit{for us}, for in itself: it is merely Spiritual Substance. But it must also be for itself. The living Substance is that being which is truly Subject...between becoming other-than-self and itself.\textsuperscript{17}
\end{quote}

Compare this to Bruno on substance:

\begin{quote}
After having considered it more maturely, and paying attention to things, we find that it is necessary to recognize two natures of substance, the one that is form and the other that is matter, because it is necessary that nature be one most substantial act (\textit{un atto sustanzialissimo}), in which there is the active power of the whole....\textsuperscript{18}
\end{quote}

The differentiation of Brunonian philosophy from pure Platonism may seem an unnecessarily fine distinction for a
paper that focuses on Finnegans Wake, but it is important because Joyce made such extensive use of Bruno and Plato in the Wake. Joyce understood the difference between Bruno and Plato and employed these differences in the structure and motifs of the Wake. While I do not deny that Platonic influences exist in abundance in Finnegans Wake, they are not central to the Wake's structure. Joyce used Plato with the same spirit he employs to exploit the philosophy and mysticism of Blavatsky, Swendenborg, Berkeley, and Yeats. He is "using these theories for all they are worth."

Brunonian metaphysics, exemplified in the coincidence of contraries, on the other hand, is an integral part of the Wake's structure. Joyce employs it to synthesize the divergent systems and character emanations which appear in the Wake. He is unable, however, to completely synthesize all elements in the Wake because of his inability to incorporate into the "pan-symbolic" system of the Wake the feminine element, ALP (which constitutes the irrational component of the work).

In the Wake, Joyce never makes use of the idealism of Bruno. For Joyce, as for most moderns, there are no ideal destinations to be reached by employing Bruno's coincidence of contraries. Joyce seeks, instead, a tenuous equilibrium through the synthesis of diverse doctrines and formulations. It is this process of progression through the coincidence of contraries in an attempt to combine everything that is human within the structure of the Wake that Joyce uses to make whole again the fragmented dreamer, HCE. Haveth
Childers Everywhere, the universal man, is a fragmented presence throughout the *Wake*. His fragmentation resembles nothing so much as mitosis: "There are some creatures that seem not to die at all; they simply vanish totally into their own progeny. Single cells do that, the cells become two then four."20 That, it seems to me, is what has happened to HCE who vanished "totally into his progeny." And much of the impetus of the contraries is directed at HCE's omnipresent attempt to make himself whole again, principally through the contraries of the twins, but also through the regenerative magic of the universal female, ALP, as Isis, Demeter, Mother Eve and others.

In the Prankquean Fable, for example, after the Prankquean has kidnapped them, the twins exchange roles and thus reach a balance that enables them "to keep the peace wave.... Thus the hearsoneness of the burger feliciates the whole of the polis" (23.15). Joyce's overt aim in this fable, then, is to make whole again the "polis" by means of the contraries of the twins. On a subliminal level, however, the fable deals with the true identity of the twins. They are merely the psychic emanations of the one dreamer, HCE, hence their ability to switch roles and become the other in the process of the fable. The fables in which contraries exchange identities recur throughout the *Wake* as HCE attempts to reintegrate himself. Through these fables run the motif of the disputing twin brothers: Shem and Shaun, Able and Cain, Mutt and Jute, Burrus and Caseous, Caster and Pollux (Gemini) and others. It is not, however, the idealist
progression through contraries Bruno employs in his meta-
physics.

Joyce actually expresses his misgivings of Brunonian meta-
physics in the text of the *Wake*. In the fable of
Burrus and Caseous, he says bluntly, "I am not here by
giving my final endorsement to the learned ignorants of
Cusanus Philosophy in which old Nicholas pegs it down....
And I shall be misunderstood if understood to give an un-
conditional sinequamounto the heoicised furibouts of Nolanus
theory..." (163.17-24).

Still, it is Bruno (and to a somewhat lesser extent
Giambattista Vico) Joyce employs in the structure of the
Wake itself. Joyce says of Bruno, "More than Bacon or De-
cartes must he be considered the father of what is called
modern philosophy."21 Yet, Bruno, because of his position
between the ancient Greeks and "modern" philosophy, retains
remnants of older philosophical systems. Something of this
point of view is contained in Frances Yates' book, Giordano
Bruno and the Hermetic Tradition. According to Yates, Bruno
combined both the outlook of a true Renaissance magus and
that of a free philosophical spirit who would be martyred
for his heretical views.22 Yates says, "by engraving in
memory the celestial images, archetypal images in the heavens
which are shadows near to the ideas in the divine mens
on which all things below depend," Bruno hoped "to achieve
this 'Egyptian' experience, to become in true gnostic fashion
the Aion having divine power within him."23 By imprinting
magical, geometrical images on the memory, Bruno believed
that he could prepare the imagination to receive demonic power. 24

The many magical geometrical figures found throughout Bruno's work probably influenced Joyce's decision to include the diagram on page 293 of the Wake. It comes from a relabeled figure which illustrates the First Proposition in Book I of Euclid's Elements, as James Gilhooly points out in his dissertation on Finnegans Wake. 25 The diagram is preceded by a description of Dolph, who dominated the male-oriented portion that precedes this section of the book. The reader is invited at this point to review what we have learned of the wisdom of Giordano Bruno and Giambattista Vico. The Latin portion of this section is neatly summarized by Tanner; we have learned:

(i) that the whole of the river flows safely, with a clear stream;
(ii) that those things which were to have been on the bank would later be in the bed;
(iii) that everything recognizes itself through something opposite;
(iv) that the stream is embraced by rival banks. 26

The diagram on 293 means many things. (In Chapter Three of this paper I discuss its significance as a synthesizing focus for cosmological paradigms.) On one level it becomes the possible (yet never fully realized) merging of the feminine and masculine principles. If the two equilateral triangles that are contained within the overlapping
circles were to overlap each other, they would form Solomon's seal, a symbol for the synthesis of the masculine and the feminine. Joyce suggests, "I'll make you to see figuratively the whom of your eternal geomater. And if you flung her headress on her from under her highlows you's wheezewhse Salmonson set his seel on a hexengown...Fisk!" (296.30-297.06). Yet the ultimate union remains, in the Wake, unconsummated except for the brief and purely physical consummation in Book IV:


(559.20-29)

Joyce is unable to perform the ultimate synthesis, the merging of the male and the female in the true progression that occurs when contraries coincide. Joyce, however, introduces other aspects of Brunonian metaphysics in his fiction. Brunonian atomism and time theory as Joyce adapted them in the Wake are intriguing. Joyce saw a critical flaw in Bruno's
philosophy in his insistence that the atom must be inviolable, retaining its integrity as a complete and solid entity. The atom of Bruno is a psychic center and part of his animistic view of the cosmos. It is an emanation of a universal substratum, a unique substance in which creation is immanent. It is from this unique substance that "reality" emanates; therefore, reality for Bruno is a unitary process.

Bruno's universe is a harmonious whole in which all aspects and contradictions are eventually merged and resolved. Bruno's view of the unity of reality is, of course, a vision he shared with other Renaissance philosophers, such as Ficino and Campanella, but Bruno was able to make this shared belief uniquely his own by expanding it. One way he did this was to develop an original and puzzling conception of time. Time in Brunonian metaphysics is as inviolable as matter. It, too, presents a complete unity. Time, for Bruno, is "irreversible duration," and on the level of the eternal there exists the simultaneity of all possibilities. "Eternity is not an indefinite time, a succession of hours or centuries, but a unique instant: 'past, present and future in the eyes of God are one present, one single eternal present.'"

Joyce definitely employs this conception of time in *Finnegans Wake*. However, I feel Joyce's adaptation of both Brunonian time theory and atomism are not crucial to the structure of the Wake as the coincidence of contraries is. This conception of the unity of time appears in the text of the Wake as "one continuous present tins...all marry-voisin moodmoulded cycle wheeling history" (185.36-186.02)
and the "no place like no timelike absolent" (609.02).
Joyce gives the name "heliotropical noughttime" (349.06) to
the eternal now of Bruno. The heliotrope was the emblem
on the coat of arms of Florio, Bruno’s good friend and
patron while he was in England. Frances Boldereff connects
Florio’s heraldic emblem to Joyce’s symbol of the helio-
trope throughout the Wake. It became, in the Wake, Bruno’s
timeless reality, the Monus Mondum.

The idea that all time exists simultaneously was, as
Clive Hart has pointed out, experiencing a literary revival
at the time Joyce was writing Finnegans Wake. Eliot ex-
presses the idea of the eternal now by comparing it to the
center point of a great wheel which does not itself move but
from which all movement emanates:

At the still point of the turning world. Neither
flesh nor fleshless;
Neither from nor towards; at the still point,
there the dance is,
But neither arrest nor movement. And do not call
it fixity,
Where past and future are gathered. Neither move-
ment from nor towards,
Neither ascent nor decline. Except for the point
the still point,
There would be no dance, and there is only the
dance. 31

This "dance" for Bruno manifests itself in cosmic cycles
which are part of the law of nature both for the universe and for individual destinies. Bruno's cycles may have had an impact on the cyclical structure of the *Wake*, just as those of Blâvatsky were an influence in both *Ulysses* and the *Wake*. It is, however, the Viconian notion of process—Birth, Marriage, Death, and Reconstitution or *ricorso*—found in *Scienza Nuoya* that most obviously informs the cyclical structure of *Finnegans Wake*. Like Vico, Joyce uses the four-part cycle. The cyclical patterns of both Blatvasky and Bruno are tripartite formulas.

Still, Brunonian cycles do appear in the *Wake*. The zodiac was extremely important to Bruno's cycles. It is from the twelve houses of the zodiac that Bruno develops his conception of "the great revolution," the 36,000 year cycle which in the first dialogue of *Spaccio de bestia trionfante*, (The Expulsion of the Triumphant Beast), marks the beginning of a new order. Jove calls a council of the gods to discuss the reformation of the heavens. He tells them that the zodiac now reflects the corruption of the gods. The stars and constellations are the symbols for various acts of debauchery, lust, and avarice committed by the gods. Jove says of this reform:

> If we thus purge our habitations, O ye gods, if we thus renew our heaven, the constellations and influences shall be new, the impressions and fortunes shall be new, for all things depend on this upper world....

32
Near the beginning of the *Wake*, Joyce introduces a parody that denies this ideal conception of Bruno's:

Your heart is in the system of the Shewolf and your crested head is in the tropic of Capricorn. Your feet in the cloister of Virgo. Your olala is in the region of shuls.... Everything's going on the same or so it appears to all of us, in the old holmstead here.... The same shopslop in the window (26.11-30).

This is another example of the late Joyce's inability to accept the idealized metaphysics of Bruno. Man's moral nature has not changed, and as for the forms represented in the zodiac, they remain the "same shopslop in the window."

There is much more to Brunonian philosophy than the Neo-Platonism inherent in *De umbris idearum*, *Eroic furori*, and *Spaccio* (in this work Neo-Platonism is tempered by an ethical naturalism). Later in his short writing career, Bruno developed an astrophysical sophistication unmatched by any of his contemporaries, with the possible exceptions of Copernicus and Galileo. His philosophy certainly contained the seeds of later developments. He was intuitive and speculative in his pursuit of truth. His philosophy synthesizes various conceptions, methods and doctrines:

All these conceptions, especially the evolutionism of Bruno, we shall meet again in the systems of Leibnitz, Bonnet, Diderot, and Hegel, which his
philosophy contains in germ and in the undifferentiated state, as it were. As synthesis of monism and atomism, idealism and materialism, speculation and observation, it is the common source of modern ontological doctrines.  

Bruno may have been a "source of modern ontological doctrines" in the latter quarter of the nineteenth century when Weber wrote these lines, but by the first quarter of the twentieth century, when most of Finnegans Wake was being written, all "ontological doctrines" had been subjected to severe questioning and most had been found inadequate to explain the problems of being in the confused world of the present century.

During the late period, when he wrote the Wake, Joyce, "the cosmic pessimist," could no longer accept Brunonian metaphysics. Finnegans Wake is a book steeped in doubt and uncertainty. Nothing about its structure or content can be said with absolute certainty. Even its language is full of the distortions and ambiguities which grow out of Joyce's profound ontological uncertainties. By the time he wrote the Wake, Joyce was too much enmeshed in twentieth-century doubt to accept uncritically Bruno's unmitigated idealism. He could no longer assent to Bruno's "implicit universe," but he never lost his appreciation for its rare order and beauty.
CHAPTER THREE

Twentieth-Century Cosmology in Finnegans Wake

"Shifted science will do your arts good" (440.19).

Thomas Kuhn, in The Structures of Scientific Revolutions, defines the shift in the world of research scientists:

"Paradigm changes do cause scientists to see the world differently. In so far as their recourse to that world is through what they see and do, we may want to say that after a revolution scientists are responding to a different world." It is certainly true that Newton, in writing *Principia* and *Opticks*, was recreating the world by employing an *a posteriori* cosmology. He negated, or at least radically altered, the *a priori* cosmology of Descartes' world view.

Descartes' cosmology was based on a one-to-one correspondence between physical and mathematical entities. Cartesian geometry develops a one-to-one correspondence between numbers and geometrical configurations, and Descartes simply extended this correspondence to the "real" world as well, to define matter as nothing more than extension in space. The universe itself was formed of this matter, contained in huge whirling vortices that moved with qualitative constancy and were eternally stable, with the only changes occurring within the underlying motion within the particles themselves, which were formed by friction are were mutable. So that
for Descartes, the purely geometrical character of physics implies its mechanism; matter and motion are both continuous and qualitatively constant.

Newton was to alter radically this view of the universe. For Newton, the mathematical and physical realms were not continuous as they had been for Descartes. Newton's material particles were formed at creation and were "so very hard as never to wear or break to pieces," and further the atom, or the Newtonian corpuscle, is non-mathematical. Atoms, in Newton's universe, were discontiguous, indivisible entities separated by void space. Newton's ether, unlike Descartes' plenum, maintained the unity of void space because, although Newton saw it as a quasi-pressurized fluid, it was also, according to Newton's postulates, almost completely void. This near-void of ether was, however, capable of displacement in response to a body moving through it. In other words, Newton postulated ether waves.

Since the Cartesian systems consists of intricate logical connections, the denial of any of Descartes' postulates meant, ultimately, the denial of them all. Newton's paradigm was neater, simpler than Descartes' for explaining the physical phenomena of celestial motion and terrestrial gravitation, so Newtonian physical theories ultimately displaced those of Descartes.

In similar fashion, Newton's cosmology was replaced by Einstein's relativity theory early in the twentieth century. Newton's universe consisted of absolute space, time and velocity. The ethereal medium pervaded the whole system,
the whole of absolute space. This was true for Newton because he perceived a metaphysical necessity (a predisposition he shared with Descartes) that there be a single privileged observer in the universe, God. Einstein diverged from this position and made basic to physics the postulate that all positions in the universe were equivalent, all possible observers being able to obtain the same information about each other. There was no longer a special position, no longer an absolute, privileged observer that made absolute space, velocity and time necessary. Jean James, a Cambridge philosopher, discusses this shift in perspective in his book, *Physics and Philosophy*:

Giordano Bruno (1548-1600), in discussing space and time in their astronomical aspects, argued that the words "above" and "below," "at rest" and "in motion" become meaningless in a world of eternally revolving suns and planets which know no fixed centre. Thus all motion is relative—as Einstein subsequently convinced the world—and absolute space and time became figments of the imagination.  

Einstein, unlike Bruno, postulates, not an infinite universe, but one that is finite, unbounded and (with the imposition of Riemann vectors) contains a positive curvature. Still, Bruno and Einstein both see that the universe is basically egalitarian since no position within it is privileged. Joyce employs this perspective in the *Wake*, as Clive
Hart notes: 'As there is no stationary absolute in Joyce's world any more than in Einstein's, the godlike Artist of the idealistic Stephen finds himself obeying Laws of Motion like anybody else, moving with equal and (in a sense) opposite velocity to that which he imparts to his creation.'

Joyce's use of Einstein in *Finnegans Wake* "may be vast and vague indeed," as Adaline Glasheen says. Einstein is first mentioned by name in the fable of the Mookse and the Gripes. The fable is the expository and didactic lecture by Professor Jones, an academic pendant who cares more for his position and reputation than he does for discerning the truth. Jones is identified by Glasheen with Wyndham Lewis. Lewis was one of the first critics to point out the connection between Einstein and Joyce. Lewis is extremely critical of what he calls the "time" school of philosophy, literature, and physics, which he claims is composed of Einstein-Stein-Proust-Joyce and Bergson. Lewis (who was a virulent anti-semitic and wrote a book praising Hitler in 1931) argues dubiously when he includes Einstein and Bergson as members of the same philosophic school. Bergson was totally at odds with Einsteinian relativity theory and in 1922 published his criticism of relativity theory in *Durée et simultaneité*. Bergson argues that Einstein's theory forces the physicist into the irresolvable paradox of the existence of multiple "real times" in the universe. Such a view, Bergson felt, compromised time's nature. It was necessary for Bergson to save the absolute nature of time, for he believed it to be the essential
essence of life. He tried to prove in *Durée* that Einstein had created in his relativity theory an impossible "phantom time made up of abstract calculations which had no real substance." \(^4^4\) If this argument seems somewhat naive, it is perhaps in part because the paradigm of relativity theory has become so much a part of contemporary twentieth-century thought.

Much of the time-space polarity in *Finnegans Wake* consists of Joyce's attempt to create a synthesis of these two arguments, as well as other theories that contain this theme of the interrelationship between space and time. Professor Jones is a neo-classicist and spatialist who launches into a labyrinthine argument intended to be a repudiation of both Bergsonian and Einsteinian time theories. Jones' comic sophistry is evident in his lecture to what he calls his "muddlecrass pupils" (152.08) concerning "reality only a done by chance ridiculisation of the whoo-whoo and where's hairs thorics of Winsain [Einstein]" (149.27-78), and "Bitchson" (149.20) [Bergson], whom he calls the "romantic in rags" (151.07). To illustrate his ridicule he reverts to a more "expletive method" (152.07). And after telling one of his pupils, "Bruno Nowlan" (152.11), to take his tongue out of his ink pot, he begins to narrate a parable he has translated; since none of his dull pupils are able to read the original, which happens to be in "javanese."

Jones contrasts the older order Mookse spatialists (for whom he has an affinity) with the newer time-ordered Gripes. One strong motif in this fable is that of the feuding twin
brothers Joyce often uses to symbolize the coincidence of contraries. The apparently opposing time theories are represented by Shaun, who (as Shiv Kumar points out) is often the "space oriented successful man of the world," and Shem who is the "introverted indrawn, self-absorbed," time-obsessed artist.

Unable to understand the differences between the two time philosophies, Jones combines them in order to condemn them both. He calls the Gripes "cupolar clods" and escapists (151.17-21). He expresses consternation at the claims of the Gripes that they can transform themselves to another specific time by clever trickery: "I fail to see when... while, for aught I care for the contrary the all is the where" (151.26-36). In other words, Jones is reasserting his spatial claims: the importance of the "where" which has precedence for Jones over the "when." After Jones is sure he has soundly defeated the Gripes with his pompous erudition, he lavishes mock pity on them:

(Poor little sowsieved subsquashed Gripes! I begin to feel contemtion for him!) My side, thank decretals, is as safe as moutherour's houses, he continued, and I can see from my holeydome what it is to be wholly sane (151.09-.16)

Jones, in smug contentment, asks that there be "no applause, please," (159.19) and goes on to illustrate his defeat of the new time-ordered philosophy with another
parable, Burrus and Caseous, but this proves Jones' undoing. Caseous, whom Jones defines as a misguided singer, tries to prove that the subordination of space to time is necessary in music. Jones answers Caseous' argument:

Of course the unskilled singer continues to prevent our wiser ears by subordinating the space-element. That is to sing, the aria, to the time-factor, which ought to be killed, ill tempor (164.32-35).

Jones here has revealed a serious fallacy in his argument. He has tried to render music a part of his spatial paradigm. Since music is an almost purely temporal medium, his attempt to confine it to his spatial system would destroy it.

The Einsteinian paradigm appears again in the text under the diagram on page 293. Einstein is the "Great Ulm." Ulm was Einstein's birthplace and the elm tree in the Wake always represents time. The Great Ulm becomes the umbrella under which many past cosmologies are gathered, altered, merged and married, hence the "Mearingstone in the Foreground" (293.14). The defunct Cartesian conception of giant whirling vortices becomes "The vortex. Spring of Sprung verse" (293. L2), and Joyce reduces Newton's mechanical universe to "heaving alljawbreakical expression out of Sare Issac's universal of specious aristmystic unsaid..." (293.16-.19).

Joyce realizes that this merging within the Einsteinian paradigm is by no means a complete or satisfying cosmic
synthesis since that synthesis will occur only at the "Dawn [which] gives rise" (293.22). The double entendre of male erection is clear, especially since this phrase appears on the page with the geometrical diagram that is derived from Euclid's proposition over which Joyce has imposed a diagram of the female genitalia. The "dawn" of Finnegans Wake, then, must see the ultimate synthesis, the spiritual union of the masculine and feminine. Yet Joyce's artifice in the Wake proves ultimately impotent; he is unable to effect this synthesis.

Joyce reintroduces the Newton-Einstein controversy with "Thanks eversore much, Pointcarried!" (304.05). This refers to the French mathematican Henri Poincaré, who was an influence on Einstein. As Ronald Clark notes of him, "Poincaré's famous paper contains the prophecy: 'Absolute space, absolute time, even Euclidean geometry, are not conditions to be imposed on mechanics; one can express the facts connecting them in terms of non-Euclidean space.'"47 This paper was read in Zurich at the first International Congress of Mathematicians during Einstein's first year as a student there. Ronald Mc Hugh says of Poincaré, "Joyce may have learned about [Riemannian geometric convex] from Henri Poincaré's La science et l' hypothèse (1912)."48

Mc Hugh notes also, "[Shem] represents Euclid and Newton, [Shaun] represents Poincaré and Einstein...in physics Einstein's celebrated signature was a celebrated sock in the jaw for Newton."49 This sock in the jaw occurs in lines 304.05-305.06:
Thanks eversore much, Pointcarried! I can't say if it's the weight you strike me to the quick or the red mass I was looking at but at the present momentum, potential as I am, I'm seeing raying-bogey rings round me... And that salubrated sick-enagiaour of yaours have teaspilled all my hazey-dency... Eyeinstye!

Joyce acknowledges the implications of Einstine's relativity theory in Book II.2 of the Wake. In this section, the fictive universe Joyce created--complete with space, matter and time--breaks apart. The destruction of Joyce's fictive world comes because of the applications he makes in his fiction of the practical and experimental implications of relativity theory. Using relativity equations, Lord Ernest Rutherford actually succeeded in splitting (or at least chipping) the atom in 1919. Breon Mitchell in his article, "The Newer Alchemy: Lord Rutherford and Finnegans Wake," discusses that part of the Wake which refers directly to Joyce's use of Rutherford (353.22-.32). This passage occurs in the fable of Butt and Taff and describes the shooting of the Russian general. Critics before Mitchell realize that this passage concerned the splitting of the atom and that the noise produced by the shot is also the noise of the atom cleaving. Mitchell has found that Rutherford is present in this portion of the book as the "first lord of Hurtreford."

And he is responsible in the Wake for the ab nihilisation of the etym by the grisnin of the grosning of the grinder of the grunder..." (353.23-.24), that is, for the "annihilation"
of the atom in the grinder of Rutherford.

Joyce clearly must have realized the extreme importance of Rutherford's experiments with the atom. The classical view of the atom before 1895 was that it was the solid, ultimate core of all matter. This was the view of the Greek atomists and of Giordano Bruno, whose metaphysical system had a major effect on Joyce. Joyce had to face the idea that the atom, core of all material existence, was not composed of a spiritual integrity that could not be divided or penetrated, as Bruno had believed, but was, as Rutherford phrased it, "a flimsy whisp of a thing."51

Inherent in the splitting of the atom is another splitting. "Etymon" in its archaic sense is "the 'true' or primitive form of a word" (O.E.D.). So that in this one phrase Joyce not only annihilates the atom but the word as well. There is an obvious parallel; as atoms are to the real world, so the word is to the fictional world of Finnegans Wake. For Joyce, the order of the microcosm is compromised when the atom is split. The sound of the thunder clap that ends the age of this book in the Wake is also the sound of the atom splitting and the shot that kills the Russian general.

As Mitchell points out in his article, Joyce tries to repair the broken order through a "seemingly magical transformation,"52 which Mitchell connects with the alchemical motif in the Wake. He compares Joyce, "the first til last alchemist" (185.34) and Rutherford, the new alchemist and author of The Newer Alchemy, 1937, in which he "even showed
that it was possible to accomplish the medieval alchemist's dream—to create gold from another element. Unfortunately, Rutherford pointed out, gold could only be made from platinum—which was more expensive."

The alchemical motif is pervasive in the Wake. Joyce here attempts a transformation that has been the theme of most of his art. Joyce becomes "a priest of eternal imagination, transmuting the daily bread of experience into the radiant body of everlasting life" (P. p. 249). On the use of alchemy in the Wake, Barbara Di Bernard in her article, "Alchemy in Finnegans Wake," says:

[Alchemy allows Joyce to construct an organic world in which the microcosm reflects the macrocosm; it gives him the archetype for the union of opposites in which he was so interested, strengthens his idea of the artist as forger, gives him a way of getting in touch with his unconscious, gives him a structure in which to fit his notion of incest as a primal activity, and becomes a kind of left-handed path by which to arrive at some religious idea. Alchemy then is a metaphor for looking at the universe as much as a background for Finnegans Wake and a metaphor for the artistic process.]

Joyce is, in effect, trying to re-unify the fragmented structure of the Wake itself. In order to do this he must recreate order on at least two levels. Humpty-Dumpty
is a recurring symbol for a broken unity in the *Wake*. He signifies the shattered psyche of HCE. Earlier in this paper I discussed the fractured emanations of HCE which fill *Finnegans Wake* and appear most often as the disputing twins. As both "the aged monad" (341.13) and as Humpty-Dumpty, HCE is another unity that has come asunder, another center that cannot hold. Joyce's task is to reconstitute the broken egg. He attempts it through the union of opposites but also through magic if this technique fails.

On a still greater level, Joyce shatters the macrocosm when he shatters Humpty-Dumpty, the cosmic egg. Humpty-Dumpty in *Finnegans Wake* is the egg of "The Great Cackler" (237.34) or Seb (or Qeb), who is the husband of Nut and father of Osiris, Isis and Set. He was a male creator who laid the egg from which the world came, "Egg laid by Former Cock" (440.20). Joyce presents variations on this myth often in the *Wake*. The Great Cackler appears in *The Egyptian Book of the Dead*. On the morning the Ka, or double, of the deceased is resurrected into the underworld, he is to recite, as part of the resurrection ceremony, this passage:

I embrace the great throne which is in Khemeunnu (Hermopolis) and I keep watch over the Egg of the Great Cackler; I germinate as it germinateth; I live as it liveth; and my breath is its breath.\(^55\)

Joyce introduces the idea that the egg is a part of a ceremony of magic in Book I when Shem, the alchemist,
subsists principally on eggs which he cooks, boils, and poaches in an athanor (184.11-32). (An athanor was used by early alchemists to incubate eggs for mixture into magical solutions.) And in Book IV line 621.12 breakfast consists of eggs. It seems that the eggs in the Wake serve two distinct purposes. They are a symbol for the broken cosmos, and are also a magic food which, when consumed, will impart; by a eucharistic process, the "sameold gamebold adomic structure of our Finnius the old One" (614.35-615.07). The original cosmic egg, according to Joyce, was laid by a chicken who happened to be male and happened to know the exact size of an eggcup (616.20-21). In other words, the egg when eaten introduces into the body of the newly resurrected the atomic structure of HCE, the universal man. It is only by breaking the structure of the original cosmic One that it can be "digested" by the deceased, and make his resurrection possible. So that in Book IV, Humpty-Dumpty, the broken cosmos, becomes a symbol for resurrection, a kind of Easter egg. As Anthony Burgess phrases it, "In Joyce annihilation becomes 'abnihilisation' --the creation of new life ab nihilo, from the egg of nothing." Still, Joyce does not seem to be able to effect the alchemical, spiritual transformation he intends, and the broken pieces of past unities--the atom (the microcosm), the word, the psyche, and finally the macrocosm or the cosmic egg--remain fractured entities. Joyce is never able to put Humpty-Dumpty back together again even with the help of "all the King's Hoarsers with all the Queen's Mum" (219.16).
Humpty-Dumpty, the symbol of the broken cosmic order, appears on the first page of *Finnegans Wake* as "Humpty" (3.32) and on the last page as "humbly dumble" (628.11), so the motif forms the fractured shell in which the fractured structure of the *Wake* is encapsulated.

When I say that the structure of the *Wake* is "fractured," I do not mean to imply that it lacks internal coherence. Indeed, as Walt Litz expressed it, "*Finnegans Wake* is a supremely rational work." Although Joyce infused the *Wake* with an extreme density of vocabulary, various material forms, acts, and competing cosmologies, philosophies, and metaphysical construction, he imposed a controlled, formal, cyclical pattern on the *Wake*’s seemingly random glossolalia. Joyce derives his cyclical form from many sources. Most obviously he employs Vico’s cycles, but he also borrows from those of Blavatsky, Bruno, Yeats, and Blake. As Clive Hart points out, Joyce also makes extensive use of the world of modern physics:

The nature of the cycle is thus revealed: it is a space-time unit, a four-dimensional cycle of 432 mile-years, measuring a non-Euclidian world of four-dimensional events. The importance of this at first apparently peripheral piece of symbolism lies in the space-time conception. The Four, whose geometrical positions outline the frame which encloses the book, are themselves the 'four-dimensions' - the synoptic gospellers corresponding to the three space dimensions,
and Johnny, always late, to time (367.20 F).

With Einstein and Minkowski at his back Joyce was able to surpass even the ancient mystics in complexity and tortuousness. Like the mathematical world-model of Minkowski, the great cycle of Finnegans Wake cannot be properly understood unless the distance between "events" is measured in terms of both space and time....It is by such up-to-date methods rather than by means of the stérile aesthetics of Stephen Dedalus that Joyce finally managed to place himself above and behind his handiwork, scanning an artificial universe free of time's arrow, able to apprehend time spatially.59

I agree with Hart that in Finnegans Wake Joyce is attempting to create four-dimensional, space-time cycles. Yet this creation would not put Joyce "above and behind his handiwork" as Hart indicates. Relativity theory does not posit any existence outside of time. It simply makes time a malleable, somewhat elastic "medium" which is altered within certain parameters and at certain high velocities. This is probably an unnecessarily fine distinction, since we are considering a work of fiction, not a physics textbook. And as Jeremy Bernstein points out in his biography of Einstein, many writers in the twenties and thirties were misapplying the implications of Minkowski's and Einstein's theories in their creative work.60

It is important to understand also that the existence
of cyclical time in the *Wake* does not automatically negate
the possible existence of extensional or durational time.
By including in the *Wake* the simultaneous existence of
cyclical and extensional conceptions of time, Joyce is employ-
ing an idea he probably derived from Blake. Northrop Frye
discusses this idea as it applies to Blake:

> The numbers four and three, in Blake's later pro-
> phecies, are respectively the numbers of infinite
> extension and of cyclic recurrence. The world of
> eternity is fourfold.61

It may seem that, in some sense, Joyce abandoned twen-
tieth-century cosmology in favor of Blake's "Romantic"
notions of time and space; he is, I think, only adopting
this older notion because it matches so well his own idio-
syncratic ideas of space-time. Further, Donald Ault, in
*Visionary Physics: Blake's Response to Newton*, makes an
extremely cogent statement when he argues that Blake's
cosmology is in many ways that of the "twentieth, if not
the twentieth-first century."62

Joyce evolves in the *Wake* a masculine, active, time and
a feminine, passive, time. ALP, the feminine principle
represents extensional or durational time. She ages pro-
gressively as the cycles of the *Wake* progress. Like Molly
in *Ulysses*, she flows in concert with durational time, and
in fact, dies on the last page of the work.

The masculine principle is embodied principally in the
person of Shaun, who is active and moves against time's
flow. As Clive Hart has pointed out, Shaun literally becomes younger from page 403 until the end of the book. Hart points out that this is a literary technique in Blake's The Mental Traveler and Yeats' A Vision: "a being racing into the future passes a being racing into the past, two foot-prints perpetually obliterating one another, toe to heal, heal to toe." But I think Joyce is employing this idea to enforce his idea of what he thought were the implications of relativity theory. Although Shaun grows younger beginning in Book III and continuing into Book IV, Shem, his twin, continues to age.

In 1911, Langevin, a French physicist, realized a strange implication of relativity theory which he called "The Twin Paradox." Using special relativity, since the general theory of relativity did not appear until 1916, he introduced before the International Congress of Philosophy meeting in Bologna the idea that a space-traveler would not age so quickly as his stay-at-home twin brother because of a phenomenon he called asymmetrical aging. Asymmetrical aging would occur because time, and the biological clocks, body organs, will slow down in harmony with time dilation: that is, time will slow in direct relationship to the speed travelled through space. Joyce adapts Langevin's theory to the needs of his fiction. He introduced a variation on this theme: that would, in strictly scientific terms, be impossible. He not only slows time, he reverses it.

At the beginning of Book III Shaun is "there, you could planémetrically see, when I took a closer look at
him...(gracious helpings, at this rate of growing our cotted child of yestereve will soon fill space and burst in systems, so speeds the instant!)" (429.21). Shaun in this section is a postman, who is carrying ALP's "pen" letter and is receding back through the events already narrated. He becomes lost, or is at least uncertain of his destination. Shaun says of his dilemma, "Where on deearth or in the miraculuous meddle of this expending umiverse to turn since it [the letter] came into my hands I am hopelessly off course to be doing anything concerning" (410.16). Shaun, the postman, soon becomes an adolescent and then a child. Joyce contrasts Shaun's journey backward through time in Book III.2 to those who are stuck in duration time, "Numerous... folks...humble indivisibles in this grand contunuum" (472.27). As their opposite, Shaun has reversed time to "spark spirt:his spyre and sunward stride" (472.19). He has actually reversed the flow of time: "The west shall shake the east awake" (473.24). At the end of Book III, Joyce says we are "eskipping the clock back" (579.05), until Shaun finally re-enters the womb "through the grand tryomphalarch" (590.10). Shaun, the foetus, now called Kevin, continues backward through an ocean of amniotic fluid that decreases until it disappears and then Kevin disappears with an exclamatory "yee!" and a flash of light, only to reappear as the opposite, yet unifying couple, Bishop Berkeley and St. Patrick, who are generated from the two seeds that were once the one being, Kevin. It is from these contrary masculine
natures that. Joyce finally succeeded in developing a theory of light that he promised in Book I, "I am working out a quantum theory about it is really most tautumising state of affairs" (149.34-.36). In this theory of light Joyce is developing a true example of Bruno's coincidence of contraries. Shem, as Berkeley, and Shaun, as St. Patrick, are true "equals of opposites, evolved by a onesame power of nature or of spirit...polarised for reunion by the symphysis of their antipathies" (92.08-.11). Berkeley and St. Patrick engage in a debate concerning the nature of light. Since Berkeley is a solipist and developed a philosophy of the immaterial, he will "savvy inside true inwardness of reality" (611.21). He will see inside objects on which the light falls to the "sextuple gloria of light actually retained...inside them (611.23-.24); while St. Patrick, who is an authoritarian puppet of the papacy (and therefore represents extreme conservatism), cannot see the interiors of objects and must be content to see the one color which is reflected from the surface of objects. When Joyce synthesizes these two ways of perceiving light, he defines the nature of light from the outside in and from the inside out. The masculine Apollonian principle has succeeded in completing itself. HCE, the universal man, is resurrected as the day and disperses the night. Joyce has almost made whole the fractured psyche of the universal dreamer. He must now incorporate the feminine element; then he will have "acquired unification," after which "we shall pass on to diversity and when we shall have passed on to diversity we shall have acquired the instinct
of combat and when we shall have acquired the instinct of combat we shall pass back to the spirit of appeasement" (610.22-26).

Ronald Mc Hugh points out that Joyce makes a classical distinction between the male and the female in Book VI.B 35.23 of the Buffalo Notebooks where he writes:

\[
\begin{align*}
\text{sol} & \\
\Delta \text{luna (her phases)} & 
\end{align*}
\]

\(\text{sol}\) is the sigla Joyce uses for Earwicker or HCE and \(\Delta\) is his designation for ALP or Anna Livia. Since Joyce has made the masculine and the feminine such diametrical opposites, the two cannot merge in any true sense, and the masculine light of morning can only displace and negate the feminine night, hence ALP's death at the end of Book IV of the Wake. ALP's final monologue reflects her knowledge that the morning means her death:

I see them rising! Save me from those thrrble prongs! Two more One two moremens more....If I seen him bearing down on me now under whitespread wings like he's come from Arkangels....Far calls. Coming, far! End here. Us then. Finn, again! (628.04-13).

ALP's displacement by HCE necessitates the repetition of the cycles of the Wake. The merging of these two primordial contraries, the masculine and the feminine, has not
occurred and, therefore, the attempt must be made again.
In *Finnegans Wake*, Joyce is attempting to unite the whole of what is human. And in Book IV, Joyce claims that all of humanity will be "anastomosically assimilated" (615.05) within the *Wake*-s structure. He is unable to effect this ultimate unifying feat. After long excursions through space-time, having churned up masses of trivia which repeat the same story several ways in miniature, we rearrive at those opposed archetypal figures, ALP and HCE. From this disparate pair, Joyce is unable to create the universal human consciousness he intended.
Finnegans Wake is a "gigantic wheeling rebus," in which Joyce attempts to resolve unreconciled opposites by synthesizing and altering them within the fictional universe of the Wake. In order to accomplish this synthesis, Joyce relied on Giordano Bruno's metaphysical doctrine, the coincidence of contraries. Joyce is attempting nothing less than a kind of fictional unified field theory in the Wake. In other words, in writing the Wake, Joyce was still laboring to accomplish what he wished to accomplish in A Portrait—to "draw a thin line around everything" in the universe.

But just as Einstein failed to derive a unified theory because he could not extend the implications of his field equations to encompass the electro-magnetic forces internal to the atom, so Joyce was unable to forge the complete synthesis of his fictional system. His failure to complete this grand synthesis comes from his failure to merge and marry the universal masculine and feminine principles. He successfully merges the two halves of the masculine principle, as represented by the feuding twins, Shem and Shaun, who are finally reconciled within the two aspects of light, but he is unable to consummate the ultimate marriage, the "Pax and Quantum wedding" (508.06).
The morning of the resurrection of HCE must see the dislocation and "death" of ALP because she is the night and he the day. The two cannot coexist in Joyce's universe and their inability to exist as contiguous beings necessitates the eternal repetition of Joyce's cycles in the *Wake*. These cycles become an endless iteration, one cycle folding into the next for eternity in "exprogressive progress" (614.30). For Joyce infinity is a "zeroic couplet" (284.11) in which the circles of cycles continue forever. The object of cyclical time, for Joyce, is the creation of a whole and complete synthesis of the divergent elements that compose the cycle itself. The total synthesis of every element within a cycle is, of course, impossible because that would mean that all contraries had been resolved, and without contraries there can be no progression. In a universe without contraries there would be no more movement, there would be only stasis. The ultimate teleology of the *Wake*, then, would consist of the attempt to create a whole from the broken cycles of the broken structure of the *Wake*. The successful completion of such a design was impossible from the beginning; still, the attempt was necessary for Joyce. The object of the *Wake* is to see, "How many were married on that top of all strapping mornings after the midnight turkay drive, my good watcher" (510.06-.08).
Notes

1 James Joyce, A Portrait of the Artist as a Young Man (New York: Viking), p. 169. Hereafter cited as 'P' and followed by the page number within the text of the paper.


3 Atherton, p. 28.


I include the original of this sonnet from Giordano Bruno, Dialoghi Italiani: Dialoghi metafisici dialoghi morali, ed. Giovanni Gentile and Giovanni Aquilicchi (Firenze: Samsone, 1957), p. 348:

Poi che spiegat' ho l'ali al bel desio
Quanto più sott' il piè l' aria mi scorgo,
Più le veloci penne al vento porgo,
E speggo il mondo, e verso il ciel m' invio.

Ne del figliulo di Dedalo il fin rio
Fa che giù pieghi, anzi via più pisogo.
Chi cadro moto a terra, ben m'accorgo;
Ma qual vita pareggia al mirir mio?

La voce del mio cor per l'aria sento:
Ove mi porti, temerario? China,
Chè raro è senza duo tropp'ardimento.

Non temer, respond'io, l'alta ruina.
Fendi sicur le nube, e muor contento.
s'il ceil si illustra moto ne destina.

7 Jeanne McKnight, "Unlocking the Word Hoard: Madness, Identity and Creativity in James Joyce," James Joyce Quarterly, 3 (1965), 426; hereafter cited as JJQ.


9 James Joyce, Finnegans Wake (Middlesex: Penguin, 1967), p. 323. Hereafter I quote Finnegans Wake within this paper by page/line references to indicate the line on which quotations begin as follows: 323.34 (page 323, line 34).

'F', 'L', and 'R' following the point in such references refer to the footnotes, left-marginal notes, and right-marginal notes, respectively, on pp. 140-380 of the Wake. The four main sections of Finnegans Wake are referred to as "Books," in accordance with established practice. Book/chapter and


38 Sir Issac Newton, Optiks; or a Treatise of the Refractions, Refractions, Inflections and Colors of Light (New York: Dover, 1952), p. 400.

39 Newton, p. 59.


41 Hart, p. 116.


43 Wyndham Lewis, Time and Western Man (London: Faber, 1927) p. 132.


52

46 Kumar, p. 134.


49 McHugh, p. 75.

50 Mitchell, p. 97.

51 Mitchell, p. 98.

52 Mitchell, p. 99.


56 Di Bernard, p. 281.


59 Hart, p. 64.


65Bergson, p. x.
66McHugh, p. 72.
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