

SOME ASPECTS OF THE TREATMENT OF SPACE AND TIME
IN JAMES JOYCE'S FICTION

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A dissertation submitted to the Faculty of Graduate Studies of
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Abstract

The study to follow examines some aspects of the treatment of space and time in James Joyce's fiction. The first chapter illustrates that space and time are used to achieve realistic particularization in Dubliners and A Portrait of the Artist as a Young Man. The second chapter examines the alteration in technique which occurred during the writing of Ulysses. Chapter three examines the function of space and time in Ulysses in detail and demonstrates that the early chapters of Ulysses reveal a very traditional use of space and time but the later chapters reveal a decrease in the emphasis upon the use of space and time to achieve particularization. The final chapter briefly examines the role of space and time in Finnegans Wake.

to

Eleanor and little Christopher

Table of Contents

Chapter	Page
Introduction	1
Chapter I	3
Chapter II	30
Chapter III	50
Chapter IV	132
Summary	155
Bibliography	158

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Introduction

The study to follow will examine some aspects of space and time in James Joyce's fiction. The first chapter will discuss Joyce's use of space and time for the purpose of achieving realism in his early fiction. The first chapter will demonstrate that Joyce's use of space and time in his early fiction corresponds with the function of space and time in the work of the early English novelists. It will be shown that in Dubliners and A Portrait of the Artist as a Young Man, space and time are used to achieve realistic particularization, to locate the events of the narrative in a particularized space and time setting.

The second chapter will examine the alteration in technique which occurred during the writing of Ulysses as documented by Walton Litz. The contemporaneity of Joyce's change in method with the popularization of Einstein's Theory of Relativity will be noted, and several implications of Einstein's theory which might have affected Joyce's treatment of space and time will be discussed.

Chapter three will examine the function of space and time in Ulysses in detail. It will demonstrate that the early chapters reveal a very traditional use of space and time, corresponding with the use of space and time in Joyce's earlier work. The chapter will then examine the decrease in the importance of the function of space and time as Ulysses developed and will demonstrate that in the later chapters of Ulysses,

written after the popularization of Einstein's theory, Joyce appears to have become less and less concerned with the use of space and time to achieve realistic particularization, and thus became free of the limitations of the traditional use of space and time to achieve realistic particularization.

The fourth chapter will examine the evidence of an Einsteinian influence upon Joyce in Finnegans Wake as documented in Our Exagmination Round his Factification for Incamination of Work in Progress, and will then consider some aspects of the relativistic treatment of space and time in Finnegans Wake.

Chapter I

The present study will examine some aspects of Joyce's use of space and time in his novels. There has been a good deal of confusion over whether James Joyce should be described as a realist or a symbolist.¹ In his early work Joyce displayed a passion for naturalistic detail, yet some critics claim that his aim was to transcend everyday reality through the technique of the epiphany.² The stream of consciousness technique in Ulysses has received much attention, but the detailed study of the external reality of the novel has been neglected. Joyce's last novel, Finnegans Wake, defies description as a realistic novel. It is to be hoped that this study will help to shed some light on the difficult and, at times, paradoxical problem of evaluating the realism of Joyce's fiction.

A study of Joyce's use of space and time in his novels may provide a greater understanding of the realism of Joyce's fiction. The creation of realism in any novel involves a conception of space and time. Man experiences the world around him in three dimensions of physical space, and he has a sense of the past, present and future. It is natural that a novelist should involve space and time in his attempt to portray reality in his novel. Thus at the base of the realism of a novel is a spatial-temporal orientation to reality, one which the reader generally accepts as factual.

This is not to say that an awareness of space and time constitutes a complete awareness of reality. Man's experience encompasses much more than perceptions of space and time; for example, man experiences emotions and feelings. But the most basic orientation to reality involves an awareness of position in space and time. This orientation to physical reality, involving the awareness of space and time, will be dealt with in detail in the following pages.

To establish some background on the role of space and time in creating realism in the novel, it is useful to examine the early eighteenth-century era in English literature and the emergence of realism in the work of those who first created the novel. Ian Watt states that the emergence of realism in early eighteenth-century prose writing was a manifestation of the

vast transformation of Western civilization since the Renaissance which has replaced the unified world picture of the Middle Ages with another very different one - one which presents us, essentially, with a developing but unplanned aggregate of particular individuals having particular experiences at particular times and at particular places.³

To develop a perspective for understanding this great change in man's view of reality Ian Watt examines the development of modern philosophical realism, which had its origins in Descartes and Locke.⁴ Medieval philosophers had held to the view that it was "universals, classes or abstractions, and not the particular, concrete objects of sense perception, which were the true 'realities'."⁵ Descartes upset medieval

philosophy by asserting the primacy of individual experience. He did this by adopting as his basic premise, "I think, therefore I am," (cogito, ergo sum). The pursuit of truth became an individual matter, independent of the pattern of past thought. This pursuit was further assisted when Descartes applied his method to produce the Cartesian co-ordinate system. By marking off an area of observation in dimensional units Descartes made it conceptually possible for man to observe the world systematically as an individual observer.

Following in the footsteps of Descartes, John Locke advocated empiricism as the basis of man's knowledge. He stated that at birth the mind of a man is like a blank sheet of paper, which acquires ideas through sensations; all knowledge was derived from experience. He described this concept in his "Essay Concerning Human Understanding" which became the most widely read philosophical book of its generation. Locke thought that since ideas became general by separating from them the circumstances of space and time, so they became particular only when both these circumstances were specified.⁶ Locke felt that the individuality of an object (or person) could be defined in terms of its existence at a particular point in space and time. An experience could only become an individual experience if set in a background of particularized space and time. Thus Locke had evolved the important concept of defining the individuality of existence through the specifying of space and time. In his discussion Ian Watt desig-

nates this new use of space and time to define the individuality of existence as the "realistic particularization of space and time."⁷

Descartes' faith in individual observation and John Locke's concern with particularization of space and time set the stage for a scientific study of motion, for any description of a moving object must involve space and time. Motion came to be considered as a series of particular positions through a duration of time. Thus a method was produced whereby man could observe the events of the world individually, systematically and logically. The success of individual observation in the sciences further reinforced the acceptance of the new view of reality described by Watt in the quotation above on page two. Isaac Newton had formulated his Laws of Motion as statements of what he had observed. Newton had stated the following principle:

Mechanical laws which are valid in one place are equally valid in any other place which moves uniformly relative to the first.⁸

This was of the greatest significance because it meant that all bodies moving at constant speed in the universe were subject to the same universal laws. A man could take a yardstick and a clock and measure any position or time in the universe in relation to his own position on the earth.

Newton wondered whether a point of observation which was unmoving might exist in the universe, in relation to which All motion in the universe might be measured. Before Newton,

Descartes had argued "that the mere separation of bodies by distance proved the existence of a medium between them."⁹ Newton felt that space itself might serve as a fixed frame of reference, compared with which all motion could be related, and that the same universal pace of time existed throughout the universe. Newton concluded that all events in the universe occurred within a single, uniform, sequential, Absolute frame of reference. In doing this Newton extended the validity of individual perception to any point in the universe. As further scientific work supported Newton's conclusion, Newton's conception of the physical universe continued to be accepted.

It is difficult to be certain whether the new philosophy of realism and the new scientific method were a contributing cause of realism in the novel. Ian Watt suggests that there was likely some influence through Locke.¹⁰ Newton's discoveries also likely had some influence because they illustrated the discovery of truth which could result from an individualist orientation to reality. In any event the same movement towards particularization of space and time which characterized philosophical realism and the new scientific method was also to be found in the work of the early novelists.

The novel became the form of literature which most reflected the individualist philosophical orientation of Descartes and Locke.¹¹ The early novelists became concerned with the realistic presentation of a concrete physical reality, achieved through the detailed particularization of space

and time. Under the influence of the new individualized view of reality the early novelists rejected formal classical conventions and traditional plots. Ian Watt states:

Defoe and Richardson are the first great writers who did not take their plots from mythology, history, legend or previous literature. In this they differ from Chaucer, Spenser, Shakespeare, and Milton, for instance, who, like the writers of Greece and Rome, habitually used traditional plots.¹²

Instead Defoe, Richardson and Fielding invented their own plots, often based in part on a contemporary incident.¹³

The early novelists moved toward realism, toward the individualization of characters and the detailed presentation of their environment.

The detailed presentation of environment was accomplished through what Ian Watt has called the realistic particularization of space and time. Space became particularized in the work of Defoe:

Defoe would seem to be the first of our writers who visualized the whole of his narrative as though it occurred in an exact physical environment.¹⁴

In the case of Richardson, one example of how space became particularized in his novels is through the considerable attention paid to interiors:

Pamela's residences in Lincolnshire and Bedfordshire are real enough prisons; we are given a highly detailed description of Grandison Hall;... the Harlowe mansion becomes a terrifyingly real physical and moral environment.¹⁵

Fielding also particularized space:

Many of the place names on Tom Jones's route to London are given by name, and the exact location of the others is implied by various other kinds of evidence.¹⁶

Thus the particularization of space played a central role in the realistic presentation of environment in the work of the early novelists.

The particularization of time was perhaps even more central to the development of the novel. Critics such as E.M. Forster and Northrop Frye have seen the new function of time as a defining characteristic of the novel.¹⁷ The classical world had viewed reality as "subsisting in timeless universals."¹⁸ In the medieval conception of history, the wheel of fortune turned out the same eternally applicable exempla.¹⁹ However, in the work of the early novelists, "characters are felt by the reader to be rooted in the temporal dimension."²⁰ The particularization of time is noticeable in Defoe:

At his best, he convinces us completely that his narrative is occurring at a particular place and at a particular time, and our memory of his novels consists largely of these vividly realized moments in the lives of his characters.²¹

Richardson achieved the particularization of time more completely:

He was very careful to locate all his events of his narrative in an unprecedentedly detailed time-scene: the superscription of each letter gives us the day of the week, and often the time of the day; and this in turn acts as an objective framework for the even greater temporal detail of the letters themselves.²²

Fielding also adopted a technique for the particularization of time:

Fielding seems to have used an almanac:... with slight exceptions, nearly all the events of his

novel are chronologically consistent, not only in relation to each other, and to the time that each stage of the journey of the various characters from the West Country to London would actually have taken, but also in relation to such external considerations as the proper phases of the moon and the time-table of the Jacobite rebellion in 1745, the supposed year of the action.²³

Therefore it would appear that the particularization of time played a central role in the achieving of realism in the novel.

From the above discussion it would seem that the use of a realistic method in a novel must involve the use of space and time for the purpose of achieving particularization within external reality. The foregoing discussion has shown that the particularization of space and time played a significant role in the development of realism in the English novel in the early eighteenth century. This suggests that it may be possible to consider the realism of a novel in terms of the use of space and time for the purpose stated above. The discussion above would therefore seem to suggest the possible merit of a detailed examination of the function of space and time in James Joyce's fiction.

An examination of the stories of Dubliners, Joyce's first fictional work, reveals that Joyce did use space and time to achieve particularization within external reality. To a surprising extent, Joyce is concerned with the particularization of space and time. In the first story of Dubliners, "The Sisters," casual references throughout the story keep the

reader conscious of time. We are told that it is vacation time, and each evening the boy passes the priest's window. He arrives home and at supper is told of the priest's death. The next day after breakfast the boy goes to the house and reads the message on the crepe bouquet tied to the door-knocker. The approximate time of each event has been carefully noted.

Details of the physical setting are also carefully specified. The house of the priest is described in detail:

It was an unassuming shop, registered under the vague name of "Drapery." The drapery consisted mainly of children's bootees and umbrellas; and on ordinary days a notice used to hang in the window saying: "Umbrellas Re-covered." No notice was visible now for the shutters were up.²⁴

In the evening when the boy's aunt takes him to view the body, even small details such as the light in the room are carefully described:

The room through the lace end of the blind was suffused with dusky golden light amid which the candles looked like pale thin flames. He had been confined.²⁵

These passages clearly display Joyce's intention of precisely capturing the physical reality of the setting in space and time. In fact, in "The Sisters," Joyce's focus upon the physical setting in space and time contributes substantially to the precision of realistic detail which makes the story effective. That this focus upon the physical reality of the story was a primary concern can be seen by comparing the two versions of this first story of Dubliners.

"The Sisters" was originally published as "Our Weekly Story" in the Irish Homestead on August 13, 1904, and Hugh Kenner compares that first version with the version later published in Dubliners.²⁶ The earlier version describes the visit to the corpse thus:

Nannie gave the lead and we three knelt down at the foot of the bed. There was no sound in the room for some minutes except the sound of Nannie's muttering, for she prayed noisily. The fancy came to me that the old priest was smiling as he lay there in his coffin.²⁷

The later version reads:

Nannie gave the lead and we three knelt down at the foot of the bed. I pretended to pray but I could not gather my thoughts because the old woman's mutterings distracted me. I noticed how the heels of her cloth boots were trodden down all to one side. The fancy came to me that the old priest was smiling as he lay there in his coffin.²⁸

The revision displays less narrative flow but a more intense picture of the shabbily-dressed woman. Through an intense focus on the physical reality of the story, Joyce creates in the reader the feeling of confinement, stagnation and paralysis, which is his goal throughout Dubliners. The story is effective in creating a feeling of moral decay because Joyce has made use of realistic details in the physical setting of the story which provide an illustration of that decay.

Joyce's attention to the particularization of space and time is especially effective in creating an environment of moral decay in "Ivy Day in the Committee Room." The physical setting, the dark, dismal committee room, is carefully de-

scribed:

The old man left the hearth, and after stumbling about the room returned with two candlesticks which he thrust one after the other into the fire and carried to the table. A denuded room came into view and the fire lost all its cheerful colour. The walls of the room were bare except for a copy of an election address. In the middle of the room was a small table on which papers were heaped.²⁹

This description of the physical setting helps to create an atmosphere of stagnation and desolation. The time is also exactly specified:

Mr. O'Connor had been engaged by Tierney's agent to canvass one part of the ward but, as the weather was inclement and his boots let in the wet, he spent a great part of the day sitting by the fire in the Committee Room in Wicklow Street with Jack, the old caretaker. They had been sitting thus since the short day had grown dark. It was the sixth of October, dismal and cold out of doors.

Mr. O'Connor tore a strip off the card and, lighting it, lit his cigarette. As he did so, the flame lit up a leaf of dark glossy ivy in the lapel of his coat.³⁰

The date has already been implied in the title, is stated, and is again implied in the reference to the ivy worn by the man, commemorating the death of Parnell. The time references relate the setting of the story to the collapse of the Irish independence movement as a result of the moral improprieties of Parnell and thus suggest an atmosphere of political and moral decay. The ending of the story brings a final realization of the personal isolation, constriction and the self-seeking of these representatives of Dublin's public life. This is achieved because Joyce has so effectively captured the evidence of desolation, constriction and stagnation in

his physical description of the setting in space and time. The examples discussed above lead to the conclusion that Joyce was concerned with the use of space and time to achieve particularization of external reality.

Joyce's realistic method may have been influenced by the nineteenth-century French realist, Gustave Flaubert.³¹ Frank Budgen has stated that "of all the great nineteenth century masters of fiction, Joyce held Flaubert in highest esteem,"³² and "knew by heart whole pages of Flaubert."³³ Richard Cross states that Joyce had "read every line of his (Flaubert's) works."³⁴ In Flaubert's work realism became impartial and objective,³⁵ and everyday occurrences were accurately set in a definite period of contemporary history.³⁶ Thus Flaubert made use of a particularized place and time setting to establish realism in his novels.

Flaubert was a man who worked extremely consciously and possessed a critical comprehension of his art.³⁷ His realism was characterized by "a self-forgetful absorption in the subjects of reality which transformed them and permitted them to develop to mature expression."³⁸ Flaubert displayed a rigorous, almost scientific objectivity in his work. He relied on exact physical realism, achieved through the precise particularization of space and time and conveyed effectively in exact language:

His opinion of his characters and events remains unspoken; and when the characters express themselves it is never in such a manner that the writer

identifies himself with it. We hear the writer speak; but he expresses no opinion and makes no comment. His role is limited to selecting the events and translating them into language; and this is done in the conviction that every event, if one is able to express it purely and completely, interprets itself and the persons involved in it far better than any opinion or judgement appended to it could do.³⁹

Flaubert's work displayed a faith in the power of realism which was admired and imitated by Joyce. In Joyce's work, as in Flaubert's, space and time bear the burden of creating a physical reality capable of revealing its own significance.

Like Flaubert, James Joyce believed that the writer's comment or opinion should be kept out of his work, that the most successful literary artist "presents his image in immediate relation to others."⁴⁰ Joyce explained this in detail in A Portrait of the Artist as a Young Man:

The personality of the artist, at first a cry or a cadence or a mood and then a fluid and lambent narrative, finally refines itself out of existence, impersonalizes itself, so to speak. The esthetic image in the dramatic form is life purified in and reprojected from the human imagination. The mystery of esthetic, like that of material creation, is accomplished. The artist, like the God of creation, remains within or behind or beyond or above his handiwork, invisible, refined out of existence, indifferent, paring his fingernails.⁴¹

Also Joyce's art was written with a definite purpose. Joyce had stated to his brother Stanislaus:

I am trying... to give people some kind of intellectual pleasure or spiritual enjoyment by converting the bread of everyday life into something that has a permanent artistic life of its own.⁴² for their mental, moral, and spiritual uplift.

In this statement Joyce emphasizes that his goal is to give

"a permanent artistic life of its own" to everyday reality. Thus Joyce did not intend to transcend reality. His purpose was to reveal that reality artistically.

Joyce used the term 'epiphany' to describe his purpose and explained the term in the manuscript Stephen Hero:

By an epiphany he meant a sudden spiritual manifestation, whether in the vulgarity of speech or of gesture or in a memorable phase of the mind itself.⁴³

A great deal of confusion has arisen over the use of the term 'epiphany', because it sometimes has been interpreted as the achievement of some sort of transcendence of reality, as something above or beyond the real experience which is described in the story. Also, the epiphany has been described as Joyce's 'method' and as his 'technique' in Dubliners. This confusion can be somewhat resolved if it is recognized that Joyce's purpose was to reveal the significance of reality, but his method was realistic. The epiphany was an end, not a means to an end; it was a goal, not a technique.

Joyce explains the moment of epiphany clearly in A Portrait of the Artist as a Young Man as Stephen discusses Aquinas's idea of 'claritas' with Lynch:

- The connotation of the word, Stephen said, is rather vague. Aquinas uses a term which seems to be inexact. It baffled me for a long time. It would lead you to believe that he had in mind symbolism or idealism, the supreme quality of beauty being a light from some other world, the idea of which it is but the symbol. I thought he might mean that 'claritas' is the artistic dis-

covery and representation of the divine purpose in anything or a force of generation which would make the esthetic image a universal one, make it out-shine its proper conditions. But that is literary talk. I understand it so. When you have apprehended that basket as one thing and have then analysed it according to its form and apprehended it as a thing you make the only synthesis which is logically and esthetically permissible. You see that it is that thing which it is and no other thing. The radiance of which he speaks is the scholastic 'quidditas', the 'whatness' of a thing.⁴⁴

The above quotation shows clearly that the moment of epiphany is not transcendent. Joyce was not concerned with transcendence of reality through symbolism or idealism, but with the revelation of reality. In Joyce's work the concept of the epiphany gave purpose and control to the technique of realistic particularization. There was, then, a harmony of purpose and technique, rather than a conflict of realism and symbolism.

In one of his letters Joyce declared his dedication to a realistic method in Dubliners:

I have written it for the most part in a style of scrupulous meanness and with the conviction that he is a very bold man who dares to alter in the presentment, still more to deform, whatever he has seen and heard. I cannot do any more than this.⁴⁵

Joyce's concern with realistic detail, which is to be seen in his letters to his brother and others in Ireland requesting the verification of small details, also suggests the use of a realistic method:

Please send me the information I ask you for as follows:

The Sisters" Can a priest be buried in a habit?

Ivy Day in the Committee Room - Are Aungier St and Wicklow in the Royal Exchange Ward? Can a municipal election take place in October?

A Painful Case - Are the police at Sydney Parade of the D division? Would the city ambulance be called out to Sydney Parade for an accident? Would an accident at Sydney Parade be treated at Vincent's Hospital?...⁴⁶

Joyce's apparent fanaticism regarding small details emphasizes his concern for exact realism.

Both of the stories of Dubliners which were discussed above have illustrated the extent to which precise realism contributes to the final effect of the stories of Dubliners. Throughout Dubliners Joyce displays a precision of realistic detail. Through careful attention to the realistic particularization of space and time Joyce creates a series of pictures of stagnation, decay and paralysis, which achieves his intended purpose. Joyce arranges his realistic materials in such a way that the symbolic significance reveals itself to the reader. Joyce describes the brown-coloured objects or the snow in "The Dead" with precise realism. Joyce seems to intend the reader to discover the significance of brown as a symbol for decay, or the snow as a symbol of death, but these symbols become significant for the reader because they have been set, through Joyce's conscious art, within an intense physical reality, achieved through the careful particularization of space and time.

In A Portrait of the Artist as a Young Man Joyce's use of the technique of realistic particularization of space and

time became increasingly complex. Part of the complexity of A Portrait of the Artist as a Young Man occurs because Joyce structured the novel in the form of a series of events experienced by the developing consciousness of Stephen, the novel's central character. In this way Joyce limited his representation of external reality to the perceptions of his central character. This technique imposes considerable restriction on the author. If he wishes to describe the setting, he must do so through the eyes of the central character. He cannot describe something which the central character would not perceive or comprehend. Thus the beginning of the story, where Stephen is but an infant, is written in a childish style and relies heavily on incidental details. Joyce could only describe what his central character is able to perceive.

As a result of the narrative perspective Joyce had chosen, there were now two levels of reality to present. There was the internal reality of Stephen's emotions, thoughts and limited perceptions, and there was also the external reality of space and time through which Stephen's consciousness moved. Since Stephen could not be gifted with a perfect perception of all events, the author and the reader are placed in the position of continuously mediating between the presentation of external reality and Stephen's experience of that reality. This is a necessary condition if the reader is to form any opinion or make any judgement at all concerning Stephen's behavior. We sympathize with Stephen's nervousness

as he walks down "the low dark narrow corridor"⁴⁷ on his way to the Rector's office to complain about the unfair punishment he received from Father Dolan, partially because we have in fact been informed that he is in the administrative area of the college, a place where students would usually fear to go. We would feel very differently toward Stephen if he were nervous because he was perched precariously on a rock by the seashore. Unless the author keeps the reader informed of his character's physical existence in an external reality of space and time, the experience of the consciousness of the character decreases in significance for the reader. In the entire text of A Portrait of the Artist as a Young Man Joyce keeps the reader informed of Stephen's progress through an external reality of space and time. Though Stephen's reveries may last several pages, the reader is always aware of Stephen's position in an external physical reality.

Joyce displays exceptional skill in A Portrait of the Artist as a Young Man in linking the internal subjective reality of Stephen's consciousness to the external reality which surrounds him. Although Stephen's perspective is subjective, the reader is able to acquire an objective sense of space and time as the reality which surrounds Stephen. Joyce achieves realistic particularization by describing the external reality surrounding Stephen as it is experienced by the consciousness of Stephen. The first chapter of the novel provides an example. It deals with Stephen's life from his

earliest memories until his last term at Clongowes Wood College. It contains four separate episodes, each of which is given a specific place and time setting. Disjointed memories establish the first setting:

His father told him that story: his father looked at him through a glass: he had a hairy face. He was baby tuckoo. The moocow came down the road where Betty Byrne lived: she sold lemon platt.⁴⁸

The reader is able to conclude that Stephen is very young and at home. In the second episode, the place setting is realistically described:

The wide playgrounds were swarming with boys. All were shouting and the prefects urged them on with strong cries. The evening air was pale and chilly.⁴⁹

From the more objective and detailed description, the reader can establish that the narrator is one of the younger boys attending a boarding school. Realistic details in the third scene place Stephen at home again during Christmas vacation. Stephen's growth is again specifically noted, for Stephen is now old enough to join the adults:

It was his first Christmas dinner and he thought of his little brothers and sisters who were waiting in the nursery.⁵⁰

The fourth section describes Stephen back at school and indicates a more mature Stephen:

The fellows talked together in little groups.
One fellow said:
- They were caught near the Hill of Lyons.⁵¹

The time is indirectly noted again as Stephen is now one of the "fellows". Joyce notes Stephen's maturing sexual aware-

ness. Stephen takes note of a girl:

Eileen had long thin cool white hands too because she was a girl. They were like ivory; only soft.⁵²

As the above examples illustrate, Joyce was careful to keep the reader aware of the external reality which surrounds Stephen. The reader is able to respond to Stephen's subjective experience because he has been kept aware of Stephen's relationship to external physical reality.

Throughout the novel Joyce keeps the reader conscious of the existence of an external reality of space and time which provides a realistic external framework for the events experienced by Stephen's consciousness as it develops. Stephen's visit to Cork with his father forms a succession of specifically described locations, whether the Victoria Hotel, Queen's College or the bars. Stephen's mind wanders increasingly in this episode, yet the external reality of space and time is precisely described:

On the evening of the day on which the property was sold Stephen followed his father meekly about the city from bar to bar.⁵³

Stephen's exact age is specifically noted in the moment of Stephen's confession when he reveals that he is sixteen.⁵⁴ This again locates Stephen's consciousness within the time framework of the external reality which surrounds him. Joyce seems almost fanatically precise in maintaining the reader's awareness of the external reality of space and time when the days of the retreat are very precisely denoted by the rector:

- The retreat will begin on Wednesday afternoon in honour of saint Francis Xavier whose feast day is Saturday. The retreat will go on from Wednesday to Friday. On Friday confession will be heard all the afternoon after beads. If any boys have special confessors perhaps it will be better for them not to change. Mass will be on Saturday morning for the whole college. Saturday will be a free day...⁵⁵

The time of the events of the rest of the chapter, during which the retreat takes place, has been precisely described.

As the writing of A Portrait of the Artist as a Young Man progressed, Joyce developed sophistication in moving from one place and time to another within Stephen's consciousness, while maintaining a relationship to an external reality of space and time. When Stephen's friends force him to admit to having a girlfriend on the night of the play his mind jumps back to the caning he had received two years earlier from the same friends because of his defense of Byron:

The confession came only from Stephen's lips and, while they spoke the words, a sudden memory had carried him to another scene called up, as if by magic, at the moment when he had noted the faint cruel dimples at the corners of Heron's smiling lips and had felt the familiar stroke of the cane against his calf and had heard the familiar word of admonition:
- Admit.⁵⁶

Joyce has carefully bridged the gap in time to the flashback. It is the sight of Heron and the word "admit" that have moved the narrative now several years into the past. The external reality of space and time in the flashback is carefully delineated:

It was towards the close of his first term in the college when he was in number six. His sensi-

tive nature was still smarting under the lashes of an undivined and squalid way of life...⁵⁷

At the end of the flashback when Stephen is being beaten for defending Byron Joyce carefully brings the consciousness of Stephen back to the 'present' which first occasioned the memory and re-establishes Stephen's consciousness within the external reality of space and time:

While he was still repeating the Confiteor amid the indulgent laughter of his hearers and while the scenes of that malignant episode were still passing sharply and swiftly before his mind he wondered why he bore no malice now to those who had tormented him.⁵⁸

Joyce has guided the reader artfully from Stephen's present to his past and then back to the present. Throughout the episode the reader has been able to keep aware of Stephen's position in the frame of external reality of space and time which surrounds him.

Stephen's reminiscence while writing his poem to his sweetheart of ten years past is another occasion when Joyce is able to relate the experience of the internal reality of consciousness to an external reality of space and time. Having written part of the poem he waits to fall asleep. He recalls that the girl wore her shawl cowlwise in the same manner that Stephen now has the bedsheet over his head and by this device passes into the reminiscence:

Ten years before she had worn her shawl cowlwise about her head, sending sprays of her warm breath into the night air, tapping her foot upon the glassy road.⁵⁹

Joyce is artfully precise in establishing the location and time of the reminiscence within external reality.

As a final example of how Joyce's use of space and time developed, the walk along the seashore during which Stephen discovers his destiny as an artist illustrates Joyce's developing ability to range freely within the internal reality of his character's consciousness while maintaining an awareness of external reality. The scene of Stephen's artistic reverie is described in exact detail:

There was a long rivulet in the strand and, as he waded slowly up its course, he wondered at the endless drift of seaweed. Emerald and black and russet and olive, it moved beneath the current, swaying and turning. The water of the rivulet was dark with endless drift and mirrored the high-drifting clouds. The clouds were drifting above him swiftly and silently the sea-tangle was drifting below him and the grey warm air was still and a new wild life was singing in his veins.⁶⁰

At the end of Stephen's reverie, Joyce's first concern is to relocate Stephen in space and time:

He halted suddenly and heard his heart in the silence. How far had he walked? What hour was it? There was no human figure near him nor any sound borne to him over the air. But the tide was near the turn and already the day was on the wane. He turned landward and ran towards the shore and, running up the sloping beach, reckless of the sharp shingle, found a sandy nook amid a ring of tufted sand knolls and lay down there that the peace and silence of the evening might still the riot of his blood.⁶¹

Again, precision of realistic detail has re-established Stephen in relation to an external reality of space and time.

James Joyce is remembered for his ability to depict the internal experience of consciousness in A Portrait of the

Artist as a Young Man. Part of his success depended upon his ability to portray the external reality of space and time which surrounded that experiencing consciousness. The above discussion has attempted to illustrate that his method in his first two major works involved the mastery of the ability to use space and time to establish the external reality of his setting effectively. Though Joyce made use of the stream of consciousness technique in A Portrait of the Artist as a Young Man, this in no way impaired his ability to present the physical reality that surrounded the experiencing consciousness of his central character. The reader is always kept aware of the external physical reality through Joyce's technique of realistic particularization of space and time.

1. The conflict between realist and symbolist interpretations of Dubliners is well illustrated by the points of view of the various authors in Twentieth Century Interpretations of "Dubliners", Peter K. Garrett, ed., (Englewood Cliffs, N.J.: Prentice-Hall Inc., 1968). See for ex. footnote 2, p.86. See also W.Y. Tindall, A Reader's Guide to James Joyce, (N.Y.: Farrar, Straus & Giroux, 1959), p.127.
2. See Peter K. Garrett, "Introduction, IV," Twentieth Century Interpretations of "Dubliners".
3. Ian Watt, The Rise of the Novel, (Harmondsworth: Penguin Bks., 1970), p.32.
4. Ibid., p.12.
5. Ibid.
6. Ibid., p.22.
7. Ibid., p.18; see also p.22.
8. Isaac Newton in Lincoln Barnett, The Universe and Dr. Einstein, (New York: Harper, 1948), p.43.
9. Ibid., p.44-5.
10. Ian Watt, Rise of the Novel, p.32.
11. Ibid., p.13-14.
12. Ibid., p.14.
13. Ibid., p.15.
14. Ibid., p.27.
15. Ibid.
16. Ibid., p.28.
17. Ibid., p.22.
18. Ibid., p.23.
19. Ibid., p.24.
20. Ibid., p.25.
21. Ibid.

22. Ibid.
23. Ibid., p.26.
24. James Joyce, Dubliners, (New York: Modern Library, 1954), p.10.
25. Ibid., p.13.
26. James Joyce, "Our Weekly Story", as quoted in Hugh Kenner, "Dubliners," Twentieth Century Interpretations of "Dubliners", p.40.
27. Ibid.
28. James Joyce, Dubliners, p.12-13.
29. Ibid., p.151.
30. Ibid., p.149.
31. This opinion is dealt with in detail in Richard K. Cross, Flaubert and Joyce: The Rite of Fiction, (Princeton: Princeton Univ. Press, 1971).
32. Frank Budgen, James Joyce and the Making of "Ulysses", (Bloomington, Ind.; Indiana Univ. Press, 1960), p.179-80.
33. Ibid., p.176.
34. Richard K. Cross, Flaubert and Joyce, p.v.
35. Erich Auerbach, Mimesis, trans. by Willard R. Trask, (Princeton: Princeton Univ. Press, 1968), p.482.
36. Ibid., p.485.
37. Ibid., p.486.
38. Ibid.
39. Ibid.
40. James Joyce, A Portrait of the Artist as a Young Man, (New York: The Viking Press, 1968), p.214.
41. Ibid.
42. James Joyce in Richard Ellmann, James Joyce, (New York: Oxford Univ. Press, 1959), p.169.

43. James Joyce, Stephen Hero, Theodore Spencer, ed., (New York: New Directions, 1944), p.211.
44. James Joyce, A Portrait of the Artist, p.212-13.
45. James Joyce, Letters of James Joyce, vol.II & III, ed. Richard Ellmann, (London: Faber & Faber, 1966), II, p.134.
46. Ibid., p.109.
47. James Joyce, A Portrait of the Artist, p.55.
48. Ibid., p.7.
49. Ibid., p.8.
50. Ibid., p.30.
51. Ibid., p.40.
52. Ibid., p.42.
53. Ibid., p.93.
54. Ibid., p.144.
55. Ibid., p.107.
56. Ibid., p.78.
57. Ibid.
58. Ibid., p.82.
59. Ibid., p.222.
60. Ibid., p.170.
61. Ibid., p.172.

Chapter II

Most critics have neglected the presence of an external reality surrounding the characters and action of Ulysses. Edwin Burgum has suggested that the reputation of Ulysses as a novel employing the stream-of-consciousness technique has led to critical emphasis on the subjective aspect of the work:

One of the reasons, perhaps, why we refuse to face the fact of Joyce's essential objectivity in Ulysses has been its great influence as the most important, if not the first, novel in the English language using the 'stream-of-consciousness' technique... We are consequently led to forget, I dare say, that scarcely one-fifth of Ulysses is anybody's 'stream-of-consciousness.' For the greater part, what Bloom and Dedalus experience in their seventeen hours of a Dublin day is taken over by Joyce and presented in the style he thinks appropriate to convey the collective tone of the particular group (and its particular problem) in the particular chapter. Thus is established a complex but definite 'view of Dublin,' of which Leopold and Molly Bloom and Stephen Dedalus form only a part, although it must be admitted to be the principal part.¹

Burgum states that there is a definite picture of the external reality of Dublin in the novel. Just as Joyce had located the consciousness of Stephen in an external reality of space and time in A Portrait of the Artist as a Young Man, so the same technique is apparent in Ulysses. Joyce uses space and time for the purpose of realistic particularization in Ulysses, just as he had done in his previous work. In fact,

many of Joyce's technical experiments in the earlier chapters of Ulysses attempt greater effectiveness in the use of space and time to create an external reality in the novel. This would suggest that Joyce began Ulysses with the same dedication to a realistic method which was displayed in his earlier work.

However, the study of Joyce's technique in Ulysses is complicated by the fact that Joyce's methods appear to have altered radically over the years he spent writing Ulysses and, as a result, the structure of Ulysses became very complex. The study of the role of space and time in Ulysses is bound up with Joyce's alteration in method. Joyce's change in method has been studied by A. Walton Litz, who states:

During the writing of Ulysses Joyce's techniques and aesthetic ideals underwent a profound change... The notion of a technical revolution seems closer to the truth than that of evolution, for in the space of three or four years he travelled most of the distance from Dubliners to Finnegans Wake.²

From the above statement the date of Joyce's change in method would appear to be significant. If the date of Joyce's change in method could be fairly accurately established, this might help in gaining an understanding of the alteration in method which occurred.

Litz is quite specific about the date of what he has called Joyce's "technical revolution":

The final stage in the growth of Ulysses marked a turning-point in Joyce's artistic development. It was during the last three years of composition

(1919-1921) that he wrote the intricate later episodes and revised the opening chapters, seeking to fuse the entire work into an organic whole.³

Litz arrives at the above dates through comparison of the different extant versions of the chapters of Ulysses. Litz compares the final text of Ulysses with earlier published versions of the first chapters and observes:

When one reads the versions of the early episodes published between 1918 and 1920 in the Egoist and Little Review one is struck immediately by the absence of many of those elaborate 'correspondences' documented by Stuart Gilbert and outlined by Joyce on a chart he circulated among his friends.⁴

Litz therefore demonstrates that Joyce's change in method occurred after the writing of the earlier chapters.

The date of Joyce's change in method is further suggested by Joyce's use of 'notesheets' which first appeared when Joyce was in the process of adding correspondences and cross references as he revised the earlier chapters. Litz discusses the date when Joyce began to make extensive use of notesheets:

The burden of this evidence is that the sheets were used (and probably compiled) sometime after 1919, when Joyce was writing the final episodes and augmenting the earlier ones.⁵

The appearance of the use of notesheets "sometime after 1919" coincides with the dates already suggested. A further hint of the date of Joyce's change in method may be noted in the fact that the first reference to the chart, now referred to as the 'schema' by critics, which Joyce circulated among his friends occurs in Joyce's letter on 3 September 1920,

when Joyce names the chapters of Ulysses in three parts.⁶
The next reference to the 'schema' in the letters occurs soon after, on 21 September 1920:

I think that in view of the enormous bulk and the more than enormous complexity of my three times blasted novel it would be better to send you a sort of summary - key - skeleton - scheme (for your personal use only).⁷

By late 1920 the 'schema' was quite fully in Joyce's mind. Considering all of the above observations regarding Joyce's revisions of earlier episodes and his use of 'notesheets' and the 'schema', it seems quite reasonable to conclude that Joyce's change in method began early in 1920.

It would be natural to ask what inspired in Joyce such a radical alteration in method and revolution in technique at that particular time. It has already been indicated in the previous chapter that Joyce's technique up to the writing of Ulysses was realistic and involved the careful delineation of physical reality in his novels through the use of space and time to achieve realistic particularization. In November of 1919 the world awoke to the fact that Albert Einstein had changed man's understanding of space and time. It is possible that Einstein's new theory may have altered Joyce's conception of space and time and influenced Joyce's use of space and time in the later chapters of Ulysses.

Einstein's initial fame as a theoretical physicist dates to 1905, the year in which his paper "On the Electrodynamics of Moving Bodies" was published in the German scientific

journal, Anallen der Physik. Although what came to be called the Theory of Relativity was set forth in the pages of Einstein's paper, it did not bring Einstein instant world recognition, as Ronald Clark states:

As far as the outside world was concerned he remained totally unknown until 1912, when some aspects of relativity became headline news in Austria, and almost totally unknown until 1919.⁸

Nevertheless, Einstein's stature within the scientific community slowly increased. Publication of Einstein's expanded General Theory came in the same journal late in 1915, in a paper titled "The Foundation of the General Theory of Relativity."⁹ But again Einstein's discoveries were not made known to the average man. Clark states:

"Space-curvature," the renewed claim that light did not go straight, the idea that the universe could only be viewed from the earth through the distorting spectacles of gravity, would all have combined to create an immediate sensation had Europe been at peace.¹⁰

Einstein's discoveries remained within the scientific community.

Einstein's fame came suddenly, with proof of the General Theory in the summer of 1919. Einstein had suggested that a measurement of the deflection of starlight passing near the sun during a solar eclipse would prove or disprove his theory. A British expedition under Arthur Eddington, Secretary of the Royal Astronomical Society, set out to make accurate measurements of the eclipse of May 29, 1919. The results confirming Einstein's theory were made known at a

meeting of the Royal Astronomical Society on November 6, 1919. J.J. Thomson, then president of the Royal Society, praised Einstein's theory as "one of the greatest achievements in the history of human thought."¹¹ Einstein was instantly world famous. Newspaper headlines were filled with the news and implications of Einstein's theory. For example, The Times of London said on Nov. 7, 1919: "The scientific conception of the fabric of the universe must be changed."¹² The article concluded:

But it is confidently believed by the greatest experts that enough has been done to overthrow the certainty of ages, and to require a new philosophy that will sweep away nearly all that has hitherto been accepted as the axiomatic basis of physical thought.¹³

On November 15, 1919, The Times added:

The ideals of Aristotle and Euclid and Newton which are the basis of all our present conceptions prove in fact not to correspond with what can be observed in the fabric of the universe... Space is merely a relation between two sets of data, and an infinite number of times may coexist. Here and there, past and present, are relative, not absolute, and change according to the ordianes and coordinates selected.¹⁴

As well, two weeks later Einstein's own explanation of his theory appeared in The Times.¹⁵

Einstein's fame came so suddenly that after November 7, 1919 he was bothered by newspaper reporters nearly every day for the rest of his life. One correspondent reported the excitement in Berlin in November of 1919:

The talk here is of almost nothing but Einstein... and if he were to come here now I think he would

be welcomed like a victorious general.¹⁶

By the end of 1919, Einstein's name had virtually become a household word in the Western world.

James Joyce was particularly sensitive to the world around him and accumulated his materials from many sources. Frank Budgen has noted the wide range of influence to which Joyce was subject:

I have seen him collect in the space of a few hours the oddest assortment of material: a parody on the "House that Jack Built", the name and action of a poison, the method of caning boys on training ships, the wobbly cessation of a tired unfinished sentence...¹⁷

To become aware of Einstein and his theory in November of 1919 Joyce would only have had to read the newspapers. That Joyce could not have become aware of Einstein's theory at this time is virtually impossible. Even the local Zurich gossip about one of its former university lecturers would likely have brought Einstein's name to Joyce's ears. It is quite safe therefore to treat November 7, 1919, as the latest possible date after which Joyce can be presumed to have been aware of Einstein's Theory of Relativity, and it is quite possible that Einstein's Theory of Relativity may have been an influence on Joyce while he was writing the later chapters of Ulysses.

In order to discuss the possible influence of Einstein's theory on Joyce's treatment of space and time after 1919, it is necessary to turn briefly to a discussion of Einstein's

Theory of Relativity. After Newton had extended the measurement of space and time to the whole universe, gradually standard units of length and a standard unit of time were adopted. In measuring any motion in the universe, one only had to be sure that his unit of length or time agreed with the accepted standard. In this sense measurement of space and time came to be considered Absolute and consistent throughout the universe. For the next two centuries man's conception of reality was shaped by the philosophies and theories of Descartes, Locke and Newton. As scientific knowledge increased, so did belief in Newtonian Physics:

To eighteenth and nineteenth century physicists it was obvious that if light consisted of waves, there must be some medium to support them, just as water propagates the waves of the sea and the air transmits the vibrations we call sound. Hence when experiments showed that light can travel in a vacuum, scientists evolved a hypothetical substance called "ether" which they decided must pervade all space and matter. Later on Faraday propounded another kind of ether as the carrier of electric and magnetic forces. When Maxwell finally identified light as an electromagnetic disturbance the case for the ether seemed assured.

A universe permeated with an invisible medium in which the stars wandered and through which light travelled like vibrations in a bowl of jelly was the end product of Newtonian physics. It provided a mechanical model for all known phenomena of nature, and it provided the fixed frame of reference, the absolute and immovable space, which Newton's cosmology required.¹⁰

The ether was considered to be a fixed medium existing in space and was therefore thought to provide an Absolute frame of reference. Although no experiment had confirmed the presence of the ether, the ether theory was accepted, and there-

fore belief in the existence of an Absolute frame of reference continued.

The Michelson-Morley experiment, performed in 1881, was a sophisticated attempt to detect the presence of the ether. Michelson and Morley believed that the earth's motion through the ether should be detectable and their experiment was intended to detect that motion. The experiment was so carefully set up that there could be no doubt about the results. But surprisingly, the results showed that the earth's motion through the ether could not be detected. The dilemma which resulted has been summarized thus:

The Michelson-Morley experiment confronted scientists with an embarrassing alternative. On the one hand they could scrap the ether theory which had explained so many things about electricity, magnetism, and light. Or if they insisted on retaining the ether they had to abandon the still more venerable Copernican theory that the earth is in motion... It was a serious dilemma and one that split scientific thought for a quarter century.¹⁹

Einstein's solution to the problem came in 1905 in his paper titled "On the Electrodynamics of Moving Bodies." The paper focused upon two postulates which may be summarized as follows:

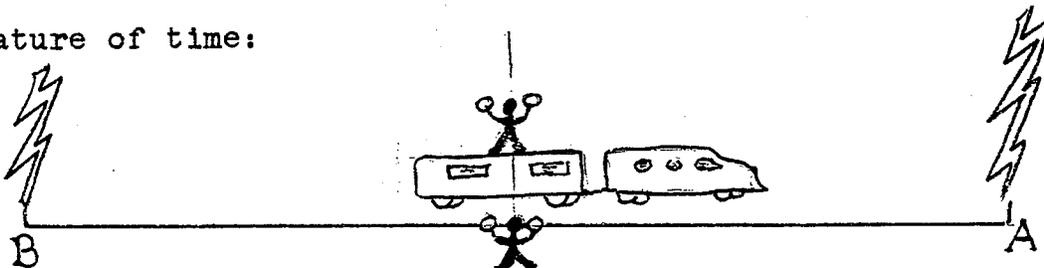
1. There is no way to tell whether an object is at rest or in uniform motion relative to a fixed ether.
2. Regardless of the motion of its source, light always moves through empty space with the same constant speed.²⁰

The first postulate was a further extension of Newton's law

which had said there was no mechanical experiment which could detect whether an object was at rest or in uniform motion. Einstein extended Newton's law to include optical as well as mechanical experiments. The second postulate followed from the Michelson-Morley experiment.

Although Einstein's postulates did not appear imposing, their implications revolutionized physics. One can conclude from the postulates that any perspective or frame of reference is a right frame of reference for observing events in the physical world. No experiment of any kind can prove any choice of a frame of reference wrong. In other words, there is no preferred point of observation when describing motion with constant velocity. There is only a relative motion. A choice of reference frame, or point of observation, must be made in order to measure the motion, but any choice is equally correct. Thus there could not be an Absolute frame of reference in the universe.

The Special Theory of Relativity revolutionized man's understanding of the concept of time. Einstein offered the following illustration, which revealed the new relativistic nature of time:



He envisaged a straight length of track...with an observer sitting on an embankment beside it. A

thunderstorm breaks, and two bolts of lightning strike the track simultaneously at separate points, A and B. Now, asks Einstein, what do we mean by "simultaneously"? To pin down this definition he assumes that the observer is sitting precisely half way between A and B, and that he is equipped with an arrangement of mirrors which enable him to see A and B at the same time without moving his eyes. Then if the lightning flashes are reflected in the observer's mirrors at precisely the same instant, the two flashes may be regarded as simultaneous. Now a train roars down the track, and a second observer is sitting precariously perched atop one of the cars with a mirror apparatus just like the one on the embankment. It happens that this moving observer finds himself directly opposite the observer on the embankment at the precise instant the lightning bolts hit A and B. The question is: will the lightning bolts appear simultaneous to him? The answer is: they will not. For if his train is moving away from lightning bolt B and toward lightning bolt A, then it is obvious that B will be reflected in his mirrors a fraction of a second later than A. Lest there be any doubt about this, one may imagine temporarily that the train is moving at the impossible rate of 186,284 miles a second, the velocity of light. In that event flash B, travelling at precisely the same velocity as Flash A, will never be reflected in the mirrors at all because it will never be able to overtake the train. So the observer on the train will assert that only one lightning bolt struck the track. And whatever the speed of the train may be the moving observer will always insist that the lightning flash ahead of him has struck the track first. Hence the lightning flashes which are simultaneous relative to the stationary observer are NOT simultaneous relative to the observer on the train.²¹

This example illustrates that it is false to assume that the time of an event is independent of the state of motion of the event in relation to a point of observation. Einstein showed that there is not one single sense of 'now' that can be applied to all parts of the universe as Newton had thought,

but rather many subjective and different 'nows,' each associated with a particular frame of reference or observation point. Einstein showed that time is a relative concept dependent on the choice of the point of observation. Einstein had demonstrated that

Man can no longer assume that his subjective sense of "Now" applies to all parts of the universe.²²

Newton's concept of one pace of time which was the same throughout the universe had been proven false.

Similarly, man's conception of space was drastically altered. Newton had assumed that a measured length would have the same value, whether measured in relation to a stationary system of reference or a moving system of reference, but Einstein's theory demonstrated that "there is no such thing as a space interval independent of the state of motion of the system of reference."²³ Distance could no longer be considered absolute for, according to Einstein's theory, the measurement of distance was dependent on the choice of the frame of reference. Distance in space was relative because the observed length of an object depended upon the motion of the object in relation to the frame of reference of the observer. Einstein demonstrated that it was physically possible, given exact enough instruments, to measure the same length from different observation points and arrive at different and equally correct results, which would differ according to the relative motion of the obser-

vation points from which the measurements were made. There was no such thing as absolute or 'correct' length. There was only length as measured from a specific frame of reference.

Einstein's theory specified the effect that relative motion between frames of reference would have on measurements of space and time:

A clock attached to any moving system runs at a different rhythm from a stationary clock; and a measuring rod attached to any moving system changes its length according to the velocity of the system. Specifically the clock slows down as its velocity increases, and the measuring rod shrinks in the direction of its motion... The slowing of the clock and the contraction of the rod are not mechanical phenomena; an observer riding along with the clock would not notice these changes. But a stationary observer, i.e., stationary relative to the moving system, would find that the moving clock had slowed down with respect to his stationary clock, and that the moving rod had contracted with respect to his stationary units of measurement.²⁴

Einstein also specified in equations the exact amount of the slowing of the clocks and the contraction of the measuring rods.²⁵

Einstein's relativistic conception of space and time may be summed up in this way:

Einstein asserted, therefore, that the scientist who wishes to describe the phenomena of nature in terms that are consistent for all systems throughout the universe must regard measurements of time and distance as variable quantities.²⁶

Relativity did not in any way deny the ability to construct relationships between points of observation that are moving



relative to each other. Relativity theory in fact made agreement of observations from different reference frames possible when the concept of variable measurements of space and time is accepted. Einstein's theory simply stated that the measurements of any interval of time or distance measured from one perspective cannot be more "correct" than different results obtained by measuring the same interval of time or distance from another perspective. Einstein showed that measurements of space and time were not absolute, but variable quantities, dependent upon the point of observation from which the measurements were made.

There are other aspects to Einstein's Theory of Relativity which are more complex. It is more to the purpose at this point to consider two important consequences of Einstein's theory which might possibly have had a noticeable effect on the novel. Firstly, as a result of Einstein's theory man's conception of the correctness of perspective was greatly changed. The legitimacy of any individual perspective was guaranteed. Einstein's Theory of Relativity made man much more conscious of the fact that his observed reality was just one subjective and individual perspective, different from every other perspective, and no more "correct" than any other perspective. No amount of physical observation, no matter how exact, could prove one man's perspective any more valid than another man's. As stated by José Ortega y Gasset:

The persistent error that has hitherto been made is the supposition that reality possesses in itself, independently of the point of view from which it is observed, a physiognomy of its own... Reality happens to be, like a landscape, possessed of an infinite number of perspectives, all equally veracious and authentic. The sole false perspective is that which claims to be the only one there is.²⁷

The novel was blessed by this support of an individualized view of reality, but it was also cursed because, by demonstrating that there was no objective point of view from which Absolutely correct perceptions could be arrived at, Einstein had destroyed the universality of the omniscient point of view, on which the novel had always relied. There could no longer be any such thing as an omniscient point of view. Any other point of view was equally valid. In fact, observations were dependent on and relative to the point of view chosen, for no matter how refined, any particular point of view had to be seen as only one subjective limited perspective upon a relativistic reality.

The second consequence of Einstein's theory which would have a noticeable effect on the novel was Einstein's destruction of man's traditional conceptions of space and time. The novelist had always depended on the Newtonian conception of space and time to locate his novel in some sort of external reality by relating the events of his novel to a framework of linear space and sequential time. As discussed in the previous chapter, the rise of the novel appears to have been linked with the development of realism in fiction, at-

tained through the realistic particularization of space and time, that is, through the placing of particular characters in a particular setting of space and time. In rejecting Newton's structure of space and time, Einstein's Theory of Relativity in effect destroyed that very view of reality which had had an apparently important influence in the development of the novel. Newton's view of reality had created a universal reference framework of space and time in which man could observe the same event from any part of the universe and obtain consistent results. Now Einstein claimed that measurements of space and time were variable quantities.

Einstein's conception of space and time was difficult for the novelist to visualize or understand, let alone use as the basis for a structure of particularization of reality. The earliest storyteller had always been able to say "once upon a time there was..." Einstein's theory stated that it was incorrect to assume that observations of space and time would be the same for everybody. One could not assume that everyone would see a particular event as occurring at the same place and at the same time from different points of view. This conclusion had not been proved through philosophy or psychology. It was a physical fact which could be demonstrated in actual experiments.

In fact, Einstein had destroyed man's trust in the validity of using space and time as instruments of particularization. Although any particular observations of an object

or event would yield measurements of space and time which could be used for the purpose of particularization of that object or event, Einstein's theory had shown that the results obtained would be of limited usefulness, since other equally valid and different observations resulting in different measurements of space and time could be made alternatively from a possible infinite number of other perspectives. Under the terms of Descartes's and Locke's philosophies and Newton's physics, space and time could establish the exact position of a character or event within a fixed framework of external reality, and establishing this carried a certain definite significance. After the acceptance of Einstein's theory, this Absolute significance was lost. After Einstein, space and time could still be used to establish the position of a character or event within an external reality as observed from a specific individual perspective, but establishing this was no longer of any Absolute significance outside of that specific individual perspective. Einstein's Theory of Relativity demonstrated that the use of space and time to achieve particularization was of no Absolute significance at all, outside of the specific individual perspective chosen. The sense of significance which had attached to the particularization of space and time when the novel had appeared no longer existed. Therefore, as a consequence of statements put forth in Einstein's theory, it was possible to conclude that the use of space and time to achieve realistic particulari-

zation in a novel was no longer a significant or necessary concern.

Once these problems confront the novelist, they lay him in a subjective void in which no objective observations are possible. From his earliest work onward, Joyce had attempted to achieve exact realism, through the use of space and time to create realistic particularization. In November of 1919 the news media published Einstein's theory which showed that space and time were no longer reliable instruments of particularization within an external reality. The concept of an objective external reality had ceased to exist. If Joyce became aware of Einstein's theory, he could have come to accept that importance no longer need be attached to the use of space and time to particularize reality, that in fact 'objective reality' did not really exist. If there was no objective sense of Here and Now, then the traditional novelist's use of the omniscient point of view could no longer be justified, and the use of space and time to create a particularized external reality would no longer be important or significant. It is possible that Joyce became aware of these new developments revealed by Einstein's Theory of Relativity and that this became a contributing factor in the revolution of technique which Joyce began to display after 1919, midway through Ulysses.

1. Edwin Burgum, The Novel and the World's Dilemma, (New York: Oxford Univ. Press, 1947), p.97.
2. A. Walton Litz, The Art of James Joyce, (London: Oxford Univ. Press, 1961), p.27.
3. Ibid., p.7.
4. Ibid., p.33.
5. Ibid., p.13.
6. James Joyce, Letters of James Joyce, ed., Stuart Gilbert, (London: Faber & Faber, 1957), p.145.
7. Ibid., p.146.
8. Ronald W. Clark, Einstein, the Life and Times, (New York: Avon Books, 1972), p.141.
9. Ibid., p.252.
10. Ibid., p.256-7.
11. Ibid., p.290.
12. Ibid., p.295.
13. Ibid., p.295-6.
14. Ibid., p.297.
15. Ibid., p.298.
16. Ibid., p.296.
17. Frank Budgen, James Joyce and the Making of Ulysses, p.172.
18. Lincoln Barnett, The Universe and Dr. Einstein, p.45.
19. Ibid., p.48.
20. Martin Gardner, Relativity for the Million, (New York: McMillan, 1962), p.40.
21. Lincoln Barnett, Universe and Dr. Einstein, p.56-7.
22. Ibid., p.57-8.
23. ibid., p.58.

24. Ibid., p.61-2.
25. Ibid., p.59.
26. Ibid., p.58.
27. Jose Ortega y Gasset, in Sharon Spencer, Space, Time, and Structure in the Modern Novel, (New York: New York Univ. Press, 1971), p.xviii.

Chapter III

Joyce's dedication to a realistic method does not appear to be consistent throughout Ulysses. As Ulysses was written, it seems that Joyce's emphasis upon exact realism decreased substantially. This can be demonstrated through a study of Joyce's use of space and time in Ulysses. In this novel it appears that there was a gradual break away from the use of space and time to achieve realistic particularization and the embracing of a much more flexible technique which was free of the traditional and limited use of space and time to locate the events of the novel and the consciousnesses of the characters in an external reality. The discussion to follow will demonstrate that, as Ulysses developed, Joyce began to experiment with the function of space and time and by the end of Ulysses managed to break the bonds which had tied him to a traditional realistic method.

The change in Joyce's method in Ulysses can be illustrated through an examination of the function of space and time in each chapter of the novel. To accomplish this, a chapter by chapter examination of Ulysses is employed. This approach is most useful for several reasons. Detailed study of the external reality of Ulysses has generally been neglected by critics, as Clive Hart has pointed out.¹ Therefore there is need of establishing the extent of the presence

of an external reality in many chapters of the novel before proceeding any further. As well, Joyce's experiments in technique vary from chapter to chapter, and often necessitate individual discussion. Finally, a chapter by chapter discussion will emphasize the decrease in the use of space and time for the purpose of particularization which occurred as the novel progressed.

There are at least two basic texts which must be consulted, the earlier serialized version published between March 1919 and December 1920 in The Little Review,² and the final published text. Joyce revised the earlier text, although the word 'revision' is rather a misnomer in this instance, because by far the greater number of Joyce's 'revisions' were additions to his earlier manuscript and not true revisions. In most instances these 'revisions' add to and emphasize the aims and methods of the earlier text. It is therefore possible to base this study upon examination of the final text and to note additions and alterations only when the change from the earlier text seems significant and pertinent.

The technique of the first chapters of Ulysses is of a piece with Joyce's earlier work. In fact, the first nine chapters of the novel clearly display a faith in a traditional realistic method, and a confidence in the use of space and time for the purpose of realistic particularization. Joyce's use of space and time in the early chapters of Ulysses is the same as in A Portrait of the Artist as a Young Man. Perhaps

this is partially the case because Joyce had conceived the idea for Ulysses early in his career. The story of Leopold Bloom was originally intended to form part of Dubliners.³ In 1907 Joyce decided to develop the story into a sequel to A Portrait of the Artist as a Young Man, so it is not surprising that a reader can finish A Portrait of the Artist as a Young Man and start Ulysses without encountering any change in technique. The early chapters display the use of space and time to establish the setting within an external physical reality.

In the first or "Telemachus" chapter of the novel the physical setting is established through the gradual accumulation of casual details. These are woven unnoticeably into the text and do not interrupt the action of the chapter or the unfolding of the themes which will occupy the characters and the reader in the pages to follow. The physical setting is established within the first few sentences:

Solemnly he came forward and mounted the round gunrest. He faced about and blessed gravely thrice the tower, the surrounding country and the awakening mountains.⁴

Far from a complete description, this initial statement encourages the reader's curiosity about the details of the setting. Further details add to the picture of external reality which surrounds Mulligan and Stephen. Their disagreement over Haines's staying in the tower establishes that all three are living there. Mulligan telling Stephen to look at the

sea establishes that they live along the seashore. The interior of the tower is carefully described:

In the gloomy domed livingroom of the tower Buck Mulligan's gowned form moved briskly about the hearth to and fro, hiding and revealing its yellow glow. Two shafts of soft daylight fell across the flagged floor from the high barbicans: and at the meeting of their rays a cloud of coal-smoke and fumes of fried grease floated, turning.⁵

When breakfast is finished they leave the tower, and Joyce again describes small details of setting:

Stephen, taking his ashplant from its leaning-place, followed them out and, as they went down the ladder, pulled to the slow iron door and locked it.⁶

As Stephen walks on, the new setting is described:

Behind him he heard Buck Mulligan club with his heavy bathtowel the leader shoots of ferns or grasses.⁷

Most of the movement in the remainder of the scene is Mulligan's and is carefully described by Joyce:

He tugged swiftly at Stephen's ashplant in farewell and, running forward to the brow of the cliff, fluttered his hands at his sides like fins or wings of one about to rise in the air.⁸

Mulligan's descent to the swimming hole is described and Stephen and Haines follow:

They followed the windy path down to the creek.⁹

Mulligan enters the water and Haines sits and watches:

The young man shoved himself backward through the water and reached the middle of the creek in two long clean strokes. Haines sat down on a stone, smoking.¹⁰

Stephen leaves them to go to his school:

He walked along the upward curving path.¹¹

The scene ends.

Although Joyce could not have written the first chapter of Ulysses without locating the events in some sort of reality, the manner in which he has done so in this scene is very skillful. The setting at no time impedes the flow of the action. In fact, Stephen's mind is preoccupied to a great extent with internal thoughts of his dead mother and of Mulligan usurping the tower which Stephen has paid the rent for. In these circumstances one might have expected very few details of setting at all. However, the details of the realistic setting are there, scattered through the chapter so that at its conclusion the reader has gained a full sense of external reality.

The time of day is also fairly accurately established.

The novel begins:

Stately, plump Buck Mulligan came from the stair-head, bearing a bowl of lather on which a mirror and a razor lay crossed. A yellow dressinggown, ungirdled, was sustained gently behind him by the mild morning air.¹²

The time of day has been implied through the use of realistic details. The reader concludes that the time must be morning because of the mention of the lather, razor and the dressinggown. This impression later proves to be correct when the three young men sit down to breakfast. As they prepare to eat, the time is almost exactly specified. Buck Mulligan has been preparing the food and says:

Where's the sugar? O, jay, there's no milk.

Stephen fetched the loaf and the pot of honey and the buttercooler from the locker.

Buck Mulligan sat down in a sudden pet.

- What sort of a kip is this? he said. I told her to come after eight.

- We can drink it black, Stephen said.¹³

The milk woman appears a few seconds later, which fairly accurately establishes the time. Interestingly, this was changed from the Little Review text which had said "before nine."¹⁴ It seems that, even in revision, Joyce remained concerned about the particularization of time.

The external framework of physical reality in this first chapter also provides reference points for the internal reality of Stephen's consciousness. An example will serve to illustrate. Buck Mulligan avoids Stephen's refusal to accept Haines's company as a lodger by directing Stephen's attention to the sea, and then Mulligan mentions the death of Stephen's mother. These comments arouse the memory of Stephen's mother in Stephen's consciousness. The passage is as follows:

Stephen, an elbow rested on the jagged granite, leaned his palm against his brow and gazed at the fraying edge of his shiny black coat-sleeve. Pain, that was not yet the pain of love, fretted his heart. Silently, in a dream she had come to him after her death, her wasted body within its loose brown graveclothes giving off an odour of wax and rosewood, her breath, that had bent upon him, mute, reproachful, a faint odour of wetted ashes. Across the threadbare cuffedge he saw the sea hailed as a great sweet mother by the wellfed voice beside him. The ring of bay and skyline held a dullgreen mass of liquid. A bowl of white china had stood beside her deathbed holding the green sluggish bile which she had torn up from her

rotting liver by fits of loud groaning vomiting.¹⁵ Joyce has used Stephen's sleeve and the colour of the sea as fixed points of reference in external reality with reference to which Stephen's consciousness operates. Stephen recalls the dream as he looks at his black coat sleeve, a natural associational process, and after the recollection of the dream, sees the cuff-edge of his sleeve again. That the dream still troubles Stephen is clear from the fact that the dull green colour of the sea reminds him of the contents of the bowl beside his mother's deathbed. Stephen is left with these thoughts as Mulligan continues the conversation.

This passage also yields a wealth of external physical detail. The reader has been told that Stephen still wears mourning; therefore his mother's death must have been fairly recent. Stephen is not well off financially, as indicated by the condition of his clothes. However, Mulligan is described as "well-fed." Stephen lives in sight of a bay of the dull-green coloured sea, in a granite tower. Some of these realistic details have then been used as the means of transferring the focus from external reality to the inner reality of Stephen's consciousness and back again.

Joyce pays careful attention to the external reality of the events throughout the "Telemachus" chapter. Although Joyce is very much concerned with establishing parallels with the Odyssey, with developing religious and political thematic overtones, and with introducing topics such as death, finan-

cial embarrassment and Shakespeare which will recur throughout the Dublin day of the novel, yet the external reality of space and time is carefully presented.

The second or "Nestor" chapter of Ulysses is also precisely located in an external reality of space and time. The setting has been prefigured in the previous chapter by Stephen mentioning that he would get paid:

- I get paid this morning, Stephen said.
- The school kip? Buck Mulligan said. How much? Four quid? Lend us one.
- If you want it, Stephen said.¹⁶

The setting of the second chapter was prefigured again when Buck Mulligan reminded Stephen to go to the school.¹⁷ It is therefore not surprising to find Stephen at the beginning of "Nestor" asking questions of his students. The time of this chapter is exactly noted. Talbot, one of the students, reminds Stephen: "Hockey at ten, sir."¹⁸ Another student adds: "Half day, sir. Thursday."¹⁹ When Mr. Deasy strikes the classroom door soon after and says: "Hockey,"²⁰ it must be ten a.m. Thursday. The reader does not yet know the date.

The scene later in Mr. Deasy's study is gradually established, faithful to the experience of consciousness. The first details are far from a complete picture:

Stale smoky air hung in the study with the smell of drab abraded leather of its chairs... On the sideboard the tray of Stuart coins, base treasure of a bog...²¹

As Mr. Deasy types his letter Stephen has time to notice more details:

Framed around the walls images of vanished horses stood in homage, their meek heads poised in air: lord Hastings' Repulse, the duke of Westminster's Shotover, the duke of Beaufort's Ceylon, prix de Paris, 1866. Elfin riders sat them, watchful of a sign. He saw their speeds, backing king's colours, and shouted with the shouts of vanished crowds.²²

Stephen's consciousness then wanders to thoughts of his trip with Cranly to the horseraces. When Stephen leaves, his movements within the external surroundings are described in detail:

He went out by the open porch and down the gravel path under the trees, hearing the cries of voices and crack of sticks from the playfield. The lions couchant on the pillars as he passed out through the gate; toothless terrors.²³

The final image of the scene is of Mr. Deasy returning up the same path:

- She never let them in, he cried again through his laughter as he stamped on gaitered feet over the gravel of the path. That's why. On his wise shoulders through the checkerwork of leaves the sun flung spangles, dancing coins.²⁴

Though this chapter has dealt substantially with politics, Joyce has also remained faithful to the presentation of the external reality of space and time.

Stephen also thinks of the concepts of space and time once in the second chapter. While discussing the battle of Asculum, 279 B.C., Stephen thinks:

I hear the ruin of all space, shattered glass and toppling masonry, and time one livid final flame. What's left us then?²⁵

Space and time are treated as separate concepts. Perhaps

this statement serves as a link with the third chapter, when Stephen walks along the strand and thinks about his movement through space and time:

Stephen closed his eyes to hear his boots crush crackling wrack and shells. You are walking through it howsomever. I am, a stride at a time. A very short space of time through very short times of space.²⁶

The exchange of the words "space" and "time" seems to be a mental verbal exercise.

In the third chapter of Ulysses Stephen thinks about his relationship to the external world of space and time. He ponders about his perception of the external reality which surrounds him:

Signatures of all things I am here to read, sea-spawn and seawrack, the nearing tide, that rusty boot. Snotgreen, bluesilver, rust: coloured signs.²⁷

Although the third chapter follows the meanderings of Stephen's consciousness, it is one of the chapters of Ulysses which is most rich in realistic detail. Stephen's physical movement throughout the chapter is described in detail. A good example of this occurs when Stephen is thinking and walking closer to the water's edge:

He had come nearer the edge of the sea and wet sand slapped his boots. The new air greeted him, harping in wild nerves, wind of wild air of seeds of brightness. Here, I am not walking out to the Kish lightship, am I? He stood suddenly, his feet beginning to sink slowly in the quaking soil. Turn back.

Turning he scanned the shore south, his feet sinking again slowly in new sockets.²⁸

Stephen thinks of his loss of the key to Mulligan and he resolves not to sleep in the tower the coming night. He then moves back toward the drier shore:

He lifted his feet up from the suck and turned back by the mole of boulders... He climbed over the sedge and eely oarweeds and sat on a stool of rock, resting his ashplant in a grike.²⁹

Stephen has now been placed in the setting from which he will observe the rest of the events in the "Proteus" chapter, the man, woman and dog walking along the beach.

The thoughts of the inner reality of Stephen's consciousness are also set in a realistic physical setting established for the reader by Stephen's memory. Stephen describes for almost three pages a visit to his Aunt Sara's and Uncle Ritchie's which is so realistically described that the reader cannot distinguish the memory from Stephen's present until Stephen realizes that he has passed the way to Aunt Sara's.³⁰ When Stephen ponders his memories of Paris, the setting in Paris is rendered with careful realism:

Paris rawly waking, crude sunlight on her lemon streets. Moist pith of farls of bread, the froggreen wormwood, her matin incense, court the air...

Noon slumbers. Kevin Egan rolls gunpowder cigarettes through fingers smeared with printer's ink, sipping his green fairy as Patrice his white. About us gobblers fork spiced beans down their gullets. Un demi setier! A jet of coffee steam from the burnished caldron.³¹

The memories within Stephen's internal consciousness are set in a carefully described external reality.

Several references also establish the time of the

"Proteus" chapter. From the previous chapter the reader can conclude that it must be past ten a.m. Stephen recalls his letter from Mr. Deasy:

I mustn't forget his letter for the press.
And after? The Ship, half twelve.³²

It is not 12:30 yet, as Stephen still intends to meet Mulligan at that time. He also feels he has time to step in to the newspaper office before lunch. It is likely around eleven a.m. References in "Proteus" to the drowned man also help to suggest the time. As was stated in the second chapter, his body is expected to come to the surface at one p.m.:

It'll be swept up that way when the tide comes in about one. It's nine days today.³³

Since in the present chapter the tide is still coming in, it cannot be one p.m. yet. Also, Stephen speaks of the man's body coming up as an event still to occur:

The man that was drowned nine days ago off Maiden's rock. They are waiting for him now.³⁴

A second reference, very near the end of "Proteus", also indicates that it cannot be one p.m. yet.³⁵ A further reference to time in "Proteus" approximates the year of the present events as Stephen reminisces about his stay in France:

On the night of the seventeenth of February 1904 the prisoner was seen by two witnesses. Other fellow did it: other me.³⁶

The year cannot be earlier than 1904.

Although written using the stream-of-consciousness technique, the "Proteus" chapter is as realistic as any of Joyce's

fiction. Just as in A Portrait of the Artist as a Young Man Joyce had used space and time to achieve realistic particularization, so also in the "Telemachia" of Ulysses Joyce created a particularized external reality through the use of space and time.

The "Odyssey" portion of Ulysses begins with a new setting in place and time and follows the experiences of a different character, Leopold Bloom. The setting of the fourth chapter, "Calypso", is established in a few sentences:

Kidneys were in his mind as he moved about the kitchen softly, righting her breakfast things on the humpy tray. Gelid light and air were in the kitchen but out of doors gentle summer morning everywhere.³⁷

The reader is able to discern that he has been returned to morning again and another breakfast scene. Although the realistic details which Joyce describes appear in the text as the haphazard observations of Bloom as he cooks his wife's breakfast, buys a kidney for himself, and speaks with his wife, the external reality which surrounds Bloom in this chapter is carefully detailed. The interior of Bloom's house is accurately described, including such seemingly unimportant details as the fact that the Blooms' brass bed jingles when disturbed.³⁸ Joyce notes that Bloom is wearing black: "Be a warm day I fancy. Specially in these black clothes feel it more."³⁹ Bloom notices details of the route on his way to the butcher's:

He approached Larry O'Rourke's. From the

cellar grating floated up the flabby gush of porter. Through the open doorway the bar squirted out whiffs of ginger, teadust, biscuitmush.⁴⁰

In a brief glimpse Joyce has captured another detail of Dublin life. Joyce's precise description of the butchershop window is another example of his method of faithfulness to exact physical detail:

He halted before Dlugacz's window, staring at the hanks of sausages, polonies, black and white. Fifty multiplied by. The figures whitened in his mind unsolved; displeased, he let them fade. The shiny links packed with forcemeat fed his gaze and he breathed in tranquilly, the lukewarm breath of cooked spicy pig's blood.

A kidney oozed bloodgouts on the willowpatterned dish; the last.⁴¹ He stood by the nextdoor girl at the counter.⁴¹

The above description is characteristic of the "Calypso" chapter which displays a faithfulness to realism of setting, described through Bloom's conscious experience of the external reality surrounding him.

Even Joyce's revisions, which are few, and plentiful additions focus primarily on the realism of the chapter. Joyce added "On quietly creaking boots"⁴² when Leopold Bloom goes up the stairs at home. Bloom notices the creaking again later during the ride to the cemetery.⁴³ When Bloom picks up his hat to go to the butcher's, the 1918 text reads simply: "His hand took his hat from the peg."⁴⁴ The final text reads:

His hand took his hat from the peg over his initialled heavy overcoat, and his lost property office secondhand waterproof.⁴⁵

The additions increase the reader's knowledge of Bloom. The fact that Bloom's raincoat came from a lost-and-found office suggests that Bloom is not very wealthy. When Bloom crosses to the bright side of the street, the final text includes the additional realistic detail: "avoiding the loose cellar-flap of number seventy-five."⁴⁶ When Molly notices the smell of burning kidney the 1918 text read:

He fitted the book roughly into his inner pocket and hurried out towards the smell, stepping hastily down the stairs with a flurried stork's legs.⁴⁷

The final text includes the additional detail after "and": "stubbing his toes against the broken commode."⁴⁸ Joyce was definitely concerned with establishing Bloom's consciousness within a carefully particularized reality while he revised the "Calypso" chapter. It seems then that even in 'revision' Joyce added to the realism of the "Calypso" chapter.

In contrast to Stephen who seems little concerned about time, Bloom is very time conscious. His day is centered around events at specific times. Time occupies a larger part of Bloom's consciousness than of the younger Stephen's. Perhaps this is a fact of life to which Joyce was consciously faithful. Bloom's mind wanders into the past much more than Stephen's. Stephen's principal past thoughts are about his mother's death and his stay in Paris. Bloom thinks about Molly's, Milly's and his own past, gradually filling out details of the past lives of each for the reader. Bloom will

be conscious of the time of day throughout Ulysses.

In the "Calypso" chapter there is no direct reference to the exact time. The time is established, but indirectly. Bloom thinks the funeral is at eleven a.m.: "Eleven, I think, he answered. I didn't see the paper."⁴⁹ It is not close to eleven yet, because later in the chapter Bloom ponders: "Just had a wash and brushup. Wonder have I time for a bath this morning."⁵⁰ Yet Bloom has dressed in black, as noted above, so he does not expect to have enough time to come home and change before the funeral. As if to spite the reader, Joyce ends the chapter with the time rung out by the bells of St. George's church. Bloom listens and says:

Quarter to. There again: the overtones following through the air, third.
Poor Dignam.⁵¹

Bloom, thinking of the time, thinks of the funeral. The reader knows it is "quarter to" but does not know to what hour. He is left secure only in the knowledge that it is now after breakfast time in the Bloom household.

Joyce's neglecting to provide the exact hour in this chapter by a direct reference was clearly not an error of omission. Just before the bells ring Bloom wonders: "What time is the funeral? Better find out in the paper."⁵² Joyce would have had ample opportunity to insert the exact hour as the bells ring, had he wished to do so. Mention of the time at that point would have been consistent with Bloom's conscious thoughts at that moment. That Joyce does not have

Bloom state the exact time is significant. Rather than knowing the exact time in this chapter, the reader becomes aware of Bloom's consciousness of time. Refusing to tell the reader the exact time only serves to heighten the fact that Bloom does know the time, as he is generally aware of the time throughout Ulysses. In fact, Bloom will later appear very time-conscious, so the introduction of this aspect of Bloom's character at this point, early in the reader's acquaintance with Bloom, is very appropriate. Joyce succeeds in emphasizing at this point that Bloom is a time-conscious man.

Joyce does remind the reader of the day of the week. Bloom observes: "Thursday: not a good day either for a mutton kidney at Buckley's."⁵³ Joyce was consciously precise about this detail for the 1918 text had read: "Thursday: good day for a mutton kidney at Buckley's."⁵⁴ Joyce intended the day of the week being mentioned, for he altered a detail to correspond with the day of the week he had chosen. The reader is able to conclude from the mention of the day that the present action likely occurs on the same morning as the previous three chapters.

One other unusual and indirect reference to the time is made in the "Calypso" chapter which may establish the time of the action precisely. David Daiches has pointed out that Joyce subtly intends Bloom's trip to the butcher's to be simultaneous with Stephen's conversation with Mulligan at the

Martello tower in the "Telemachus" chapter.⁵⁵ When Bloom is returning home he notices a cloud: "A cloud began to cover the sun wholly slowly wholly. Grey. Far."⁵⁶ Stephen had apparently watched the same cloud: "A cloud began to cover the sun slowly, shadowing the bay in deeper green."⁵⁷ The use of almost identical wording strongly suggests that Bloom and Stephen witnessed the same cloud covering the sun. This would place the time of "Calypso" at the same time as "Telemachus", some time shortly "after eight"⁵⁸ in the morning.

The use of space and time by Joyce in this instance is very unusual. Joyce has established the activities of Stephen and Bloom within an external physical reality as expected, but he has also used an event in space and time as a means of relating the actions of both men. He has been able to relate the time of the activity of both men through their observing the same event. Joyce has used an event in space and time as a means of suggesting a relationship between two characters.

The fifth or "Lotuseaters" chapter of Ulysses was described by Joyce as "much amplified"⁵⁹ from the earlier published version. It is perhaps significant that Joyce's additions to the 1918 version are most often details which add to the already accurately-rendered picture of the external reality surrounding Bloom. "Lotus eaters" begins with a description of Bloom's movement:

By lorries along Sir John Rogerson's Quay Mr. Bloom

walked soberly past Windmill lane, Leask's the linseed crushers, the postal telegraph office.⁶⁰

A passage of stark realism, not present in the 1918 publication, emphasizes the external reality of decay which surrounds Bloom:

By Brady's cottages a boy for the skins lolled, his bucket of offal linked, smoking a chewed fagbutt. A smaller girl with scars of eczema on her forehead eyed him, listlessly holding her battered cask-hoop. Tell him if he smokes he won't grow. O let him! His life isn't such a bed of roses! Waiting outside pubs to bring da home. Come home to ma, da.⁶¹

Here is a fine example of the dedication to realism with which Joyce began his career. Another example of precise realism is found a few pages later. The original 1918 publication had read:

He turned into Cumberland street and, going on some paces, halted in the lee of the station wall. No-one. Meade's timberyard. Ruins and tenements. He opened the letter within the newspaper.⁶²

The final version includes added details of description:

He turned into Cumberland street and, going on some paces, halted in the lee of the station wall. No-one. Meade's timberyard. Piled balks. Ruins and tenements. With careful tread he passed over a hopscotch court with its forgotten pickeystone. Not a sinner. Near the timberyard a squatted child at marbles, alone shooting the taw with a cunnythumb. A wise tabby, a blinking sphinx, watched from her warm sill. Pity to disturb them. Mohammed cut a piece out of his mantel not to wake her. Open it. And once I played marbles when I went to that old dame's school. She liked mignonette. Mrs. Ellis's. And Mr? He opened the letter within the newspaper.⁶³

The additions add substantially to the picture of external reality surrounding Bloom. In "Lotuseaters" Joyce focused his efforts upon a realistic presentation of the external world

surrounding Bloom.

Throughout the "Lotuseaters" chapter Bloom continues to be a time-conscious man. As he passes the undertaker's he remembers the time of the funeral. "At eleven it is. Time enough."⁶⁴ He thinks of time as he recalls the definition of weight which he learned in high school:

What is weight really when you say the weight?
Thirtytwo feet per second, per second. Law of
falling bodies: per second per second. They all
fall to the ground. The earth. It's the force of
gravity of the earth is the weight.⁶⁵

Bloom mentions the time of the funeral to M'Coy: "E...eleven, Mr Bloom answered."⁶⁶ As Bloom thinks about his father he mentions the date of his own birth: "Year before I was born that was: sixtyfive."⁶⁷ If it is 1904, then Bloom is thirty-eight. As Bloom ruminates over his letter from Martha he thinks: "Go further next time. Naughty boy: Punish: afraid of words, of course. Brutal, why not? Try it anyhow. A bit at a time."⁶⁸ Even seemingly trivial details contain references to time: "lord Ardilaun has to change his shirt four times a day, they say."⁶⁹ On his way to the chemist's, Bloom thinks of the time:

How goes the time? Quarter past. Time enough yet. Better get that lotion made up. Where is this? Ah yes, the last time. Sweny's in London place. Chemists rarely move.⁷⁰

Joyce places time references throughout "Lotuseaters" to keep the reader conscious of Bloom's sensitivity to time.

The time in "Lotuseaters" is not exactly specified.

The time is not eleven yet, for Bloom tells M'Coy he is going to the funeral which is at eleven.⁷¹ The time, as quoted above, is "Quarter past," near the end of the chapter. Again the reader is not told the exact hour. However, the reader can conclude that it must be either quarter past nine or quarter past ten. The exact time would depend on how long Bloom spends at the chemist's and in the bath before the funeral at eleven.

The sixth or "Hades" chapter of Ulysses describes the journey of the funeral carriages from the Dignam home to the cemetery chapel where a service takes place, and then to the graveside. It ends as Bloom and his companions leave the cemetery. The carriage ride establishes a mobile perspective for Joyce from which to describe the city of Dublin and its inhabitants. As the four friends travel together they comment on the sights before them and related events. As might be expected a realistic and detailed picture of Dublin is presented.

Details such as the boy with the slop bucket described in "Lotuseaters" have suggested a less than ideal picture of Dublin. In "Hades" the details Joyce chooses to describe and the comments and thoughts they provoke strongly support the sense of decay that Joyce associates with Dublin. In "Proteus" Stephen, reflecting on his drinking Uncle Ritchie, thought: "Houses of decay, mine, his and all."⁷² In this chapter, the realistic details add the weight of proof to Stephen's thoughts.

For example, the poorer section of Dublin is not kept in proper repair:

The carriage, passing the open drains and mounds of rippedup roadway before the tenement houses, lurched round the corner.⁷³

Several pages later the carriage passes a man selling bootlaces and this conjures thoughts of the man's past in Bloom's mind:

Oot: a dullgarbed old man from the curbstone tendered his wares, his mouth opening: oot.

-Four bootlaces for a penny.

Wonder why he was struck off the rolls. Had his office in Hume street. Same house as Molly's namesake: Tweedy, crown solicitor for Waterford. Has that silk hat ever since. Relics of old decency. Mourning too. Terrible comedown, poor wretch! Kicked about like snuff at a wake. O'Callaghan on his last legs.⁷⁴

The sentences underlined were added in revision⁷⁵ and indicate that Joyce intended the picture of decay to be emphasized. Also, the above passage is the stimulus for Bloom's reflections about Mr. Power, one of the men in the carriage: "Nice fellow. Who knows is that true about the woman he keeps? Not pleasant for the wife."⁷⁶ This detail adds to the picture of decay in Dublin.

As Bloom's companions talk about the deceased, Paddy Dignam, Bloom remembers his red face and reflects:

Blazing face: redhot. Too much John Barley-corn. Cure for a red nose. Drink like the devil till it turns adelite. A lot of money he spent colouring it.⁷⁷

The realistic detail of Dignam's face is therefore another indication of decay in Dublin. As they approach the grave-

yard, Mr. Power points out a house where a murder supposedly took place:

They looked. Murderer's ground. It passed darkly. Shuttered, tenantless, unweeded garden. Whole place gone to hell. Wrongfully condemned.⁷⁸

Again, Joyce's revisions, which are underlined, added to the realistic detail.⁷⁹ A final example of realism which underlines the theme of decay occurs near the end of "Hades".

Leaving the cemetery, Bloom hears a noise:

Rtststr! A rattle of pebbles. Wait. Stop. He looked down intently into a stone crypt. Some animal. Wait. There he goes. An obese grey rat toddled along the side of the crypt, moving the pebbles. An old stager: greatgrandfather; he knows the ropes. The grey alive crushed itself in under the plinth, wriggled itself in under it. Good hidingplace for treasure.⁸⁰

The picture of the rat feeding on the corpses of buried Dubliners sums up Joyce's intention of providing a realistic picture of Dublin which leads the reader to view the city as an environment characterized by decay.

Joyce's physical realism in "Hades" also helps to establish the omniscient perspective view of Dublin that will be used in the "Wandering Rocks" chapter of the novel. Several details presented in "Hades" now will reappear again in "Wandering Rocks". The carriage crosses the royal canal, along which a turfbarge is moving:

A man stood on his drooping barge between clamps of turf. On the towpath by the lock a slack-tethered horse.⁸¹

Father Conmee will notice the barge, horse and man as he walks

past Charleville Mall.⁸² As another example, the carriage passes billboards:

They went past the bleak pulpit of Saint Mark's under the railway bridge, past the Queen's theatre: in silence. Hoardings. Eugene Stratton.⁸³

The same face will smile down on Father Conmee as he rides on a tram in the "Wandering Rocks" chapter.⁸⁴ Also, the general technique of detailed observation from an objective point of view which is used in parts of this chapter will be used later in most of the "Wandering Rocks" chapter.

The time in "Hades" is specified exactly, first by Bloom's companions:

-Are we late? Mr Power asked.
-ten minutes, Martin Cunningham said, looking at his watch.⁸⁵

It is likely 11:10 a.m., as the funeral was to start at eleven. Later in the chapter Bloom thinks of Molly and looks at his watch: "And Madame. Twenty past eleven. Up."⁸⁶ The day of the week, Thursday, is also mentioned again.⁸⁷ A hint of the month is given, as Bloom thinks at the graveside: "Burying him. We come to bury Caesar. His ides of March or June."⁸⁸ The month may be June.

Through an event in the "Hades" chapter Joyce is also able to establish the exact time of the events in the "Proteus" chapter. Bloom notices Stephen walking along the sea-shore:

Mr Bloom at gaze saw a lithe young man, clad in mourning, a wide hat.
-There's a friend of yours gone by, Dedalus,

he said.

-Who is that?

-Your son and heir.⁸⁹

On the next page the time is referred to as being 11:10 a.m. This reference therefore establishes the time of Stephen's walk on the strand in the "Proteus" chapter.

In addition to the reader's awareness of the external reality of the "Hades" chapter, the concept of time once again occupies Bloom's consciousness to a large extent. This is perhaps natural in the context of the action of attending a funeral. Bloom recalls the death of his father⁹⁰ and his son Rudy.⁹¹ He thinks of his past life with Molly⁹² and Milly.⁹³ However, although Bloom's consciousness wanders through the past, the reader never loses his sense of Bloom's location in the external reality which surrounds him.

The form of the next chapter of Ulysses was altered by Joyce in revision. In a letter to Harriet Shaw Weaver in October, 1921, Joyce wrote: "Eolus is recast."⁹⁴ Comparison of the final text with the serialized publication of October, 1918 reveals that the text of "Eolus" remained virtually unchanged. The first two episodes of the final version were added in 'revision', as were the description of the contents of the newspaper: "It's the ads and side features sell a weekly... More Irish than the Irish,"⁹⁵ and the paragraph describing the electric tram cars stalled during the power failure.⁹⁶ Very few changes were made. Quite a few words or phrases or short sentences were added with the apparent

intention of refining the existing text. The substantial alteration is the addition of titles inserted throughout the text, which appear as newspaper headlines. A technical trick which makes the appearance of the text correspond with its setting, the titles do not affect the existing text, except to add an occasional note of humour. The "recast" chapter is substantially the same as the earlier version.

"Eolus" is governed by the same use of space and time as the previous chapters. The actions of the characters take place in a particularized external reality of place and time. The first two episodes of the chapter describe scenes on the streets of Dublin. The third and following episodes principally describe the newspaper office setting as Bloom attempts to secure a newspaper advertisement. Details of setting accompany Bloom throughout this chapter of Ulysses:

He pushed in the glass swingdoor and entered, stepping over strewn packing paper. Through a lane of clanking drums he made his way towards Nannetti's reading closet.⁹⁷

Bloom leaves the "Freeman" office and goes to the "Evening Telegraph" office, where he intends to use the telephone. Other details throughout the chapter describe various scenes in a newspaper office, from a typesetter reading type backwards to clowning newsboys. The time is also indirectly specified on two occasions. When Bloom meets Hynes he drops a hint about a debt Hynes owes him:

-If you want to draw the cashier is just going to lunch, he said pointing backward with

his thumb.⁹⁸

The time must be close to twelve noon. Near the end of "Eolus" the second time reference, added during Joyce's revision, occurs:

'Tis the hour, methinks, when the winejug, metaphorically speaking, is most grateful in Ye ancient hostelry.⁹⁹

The reader is able to infer that drinks are cheaper during the lunch hour, and therefore it is likely now a little past twelve noon. In revision Joyce also added the title: "Horatio is Cynosure this fair June day,"¹⁰⁰ which enables the reader to definitely establish the date of the novel as Thursday, June 16. The year is still uncertain.

Evidence in the "Eolus" chapter shows that Joyce is experimenting with point of view. The consciousness rendered shifts during "Eolus". During the first two episodes the perspective is objective. The perspective then shifts to Bloom's consciousness and remains so until Bloom leaves.¹⁰¹ An objective perspective is employed again until Stephen enters. Then the narrative shifts to Stephen's consciousness,¹⁰² and remains such until Bloom returns.¹⁰³ The conscious thoughts in the K.M.A. section are clearly Bloom's: "Wonder is that young Dedalus the moving spirit..."¹⁰⁴ A final conscious thought: "Poor Penelope. Penelope rich,"¹⁰⁵ is likely Stephen's, because this thought is more typical of Stephen's personality and Bloom has been left behind weighing the point of Myles Crawford's final statement to him. There-

fore the point of view of the "Eolus" chapter alternates among an objective perspective, Bloom's consciousness and Stephen's consciousness. The use of an alternation of perspective within a single chapter of Ulysses shows that Joyce is experimenting with the narrative point of view of the novel.

"Eolus" also contains a very brief but extraordinary passage, which may be a direct comment from Joyce himself. During the pause while J.J. O'Molloy is taking out his cigarette case, another person in the room lights a cigar with a match. The text states:

I have often thought since on looking back over that strange time that it was that small act, trivial in itself, that striking of that match, that determined the whole aftercourse of both our lives.¹⁰⁶

Perhaps this is Joyce himself describing one of those moments of epiphany which helped him to choose his own future as a novelist. In any event, this passage cannot be explained as the conscious observations of any character in the scene, and suggests that Joyce is further experimenting with the narrative point of view by introducing an unspecified external perspective, which in fact disorients the reader.

Stephen's "Parable of the Plums" and the movement of the characters toward a hotel at lunch hour in "Eolus" anticipates Bloom's thoughts of food in the following chapter. During the "Lestrygonians" chapter Bloom's hunger keeps him food-conscious and time-conscious. The chapter begins with Bloom watching a salesgirl selling candy to a Christian brother, establishing

the topic of food in Bloom's mind from the very start of the chapter. Many of Bloom's food-laden thoughts were inserted by Joyce into the final text and did not appear in the earlier published version of "Lestrygonians", which appeared in the Little Review between January and March of 1919. A few of the food references added during revision are: "Bring your own bread and butter,"¹⁰⁷ "Potatoes and marge, marge and potatoes,"¹⁰⁸ "No accounting for tastes. Wonder what kind is swanmeat,"¹⁰⁹ "eat pig like pig,"¹¹⁰ "Appetite like an albatross. Get outside of a baron of beef,"¹¹¹ "Our staple food,"¹¹² "Have a finger in the pie,"¹¹³ "Pillar of salt,"¹¹⁴ "They like buttering themselves in and out,"¹¹⁵ "Are you feeding your brother's family,"¹¹⁶ "Luncheon interval,"¹¹⁷ "Flapdoodle to feed fools on,"¹¹⁸ "Best moment to attack one in pudding time. A punch in his dinner,"¹¹⁹ "or I was souped,"¹²⁰ "Vinegar hill. The Butter exchange band,"¹²¹ "Drop him like a hot potato,"¹²² "Built on bread and onions,"¹²³ "Eaten a bad egg. Poached eyes on ghost,"¹²⁴ "Salty too. They cook in soda,"¹²⁵ "before Whitbread ran the Queen's,"¹²⁶ "See the animals feed,"¹²⁷ "I hate dirty eaters,"¹²⁸ "Ham and his descendents mustered and bred there,"¹²⁹ "Milly too rock oil and flour. Raw pastry I like myself,"¹³⁰ "if you're worth your salt,"¹³¹ "Vintage wine for them, the year marked on a dusty bottle."¹³² There are many other additions, often several to a page.

Often several sentences dealing with food or eating were added within a paragraph. In several instances, long

paragraphs which deal in some way with food or eating were added. As one example, the passage which follows is one of the shorter passages added:

Jugged hare. First catch your hare. Chinese eating eggs fifty years old, blue and green again. Dinner of thirty courses. Each dish harmless might mix inside. Idea for a poison mystery.¹³³

It is apparent that Joyce's purpose in revision was to add to the food references. Some of the food references add to the external reality of the chapter but most display Joyce's verbal wit and add to the psychological realism of the portrayal of Bloom's consciousness. The nature of the additions suggests a significant change, from Joyce's strict insistence upon rendering external reality at the beginning of 1919 which is evident in the original text, to the decreased emphasis upon external reality which is evident in Joyce's revisions incorporated into the final text. Exact realism does not appear to be as central a concern in these revisions as compared with revisions of earlier chapters.

The revisions do not interfere with the external reality of "Lestrygonians." The reader can easily discern the external setting of the chapter which consists of the details of Bloom's surroundings that he observes as he travels through the streets of Dublin, has lunch and then goes to the library. The chapter is set in a particularized external setting of space and time. The chapter often displays a focus upon realistic detail, particularly when Bloom enters the first

restaurant:

Perched on high stools by the bar, hats shoved back, at the tables calling for more bread no charge, swilling, wolfing gobfuls of sloppy food, their eyes bulging, wiping wetted moustaches...¹³⁴

The exact detail establishes an intensely realistic setting.

Bloom is portrayed as an increasingly time-conscious man in the "Lestrygonians" chapter. Joyce establishes an external reality of time through Bloom's continual references to time. Early in the chapter Bloom notices that it is "After one."¹³⁵ Later Bloom notes that it is five minutes since he fed the birds early in the chapter.¹³⁶ Approximately two thirds of the way through the chapter Bloom notes that it is five minutes to two,¹³⁷ and it is "After two"¹³⁸ when Bloom steps in to the museum at the end of the chapter. Bloom also states his attitude to the time of day: "This is the very worst hour of the day. Vitality. Dull, gloomy; hate this hour."¹³⁹ The reader is reminded of the month as Bloom thinks of Molly's birthday in the fall: "For her birthday perhaps. Junejulyaug-september eighth. Nearly three months off."¹⁴⁰ From this information it is again made clear that it is the month of June. Very near the end of the chapter Bloom notices a placard:

Hello, placard. Mirus Bazaar. His excellency the lord lieutenant. Sixteenth today it is. In aid of funds for Mercer's hospital.¹⁴¹

The reader has again been reminded of the date.

In "Lestrygonians" Bloom's consciousness of time can

sometimes be attributed to his fears concerning the meeting of Boylan and Molly which is to occur later in the afternoon. In one instance, the thought of the meeting causes Bloom to notice the time:

Mr Bloom moved forward raising his troubled eyes. Think no more about that. After one. Time-ball on the ballast office is down. Dunsink time.¹⁴²

Later in the chapter a similar situation occurs as Bloom is eating, when Nosey Flynn asks:

Isn't Blazes Boylan mixed up in it?
A warm shock of air heat of mustard haunched on Mr Bloom's heart. He raised his eyes and met the stare of a bilious clock. Two. Pub clock five minutes fast. Time going on. Hands moving. Two. Not yet.¹⁴³

The "Not yet" can refer to Bloom's having compared the pub clock with his watch and noticing that it is not yet two o'clock, or the "Not yet" can refer to Molly and Boylan having not met yet. "Two" can refer to the time. "Two" can also refer to Boylan and Molly together. The clock reminds Bloom of his fears.

In "Scylla and Charybdis" the discussion of Shakespeare and Hamlet occupies the main focus of the chapter and does not substantially advance the action of Ulysses. As a result there is less need for an external reality of space and time. Details of the setting are surprisingly sparse. The reader is able to infer that the setting is a library because the first character to speak is a librarian. Also the librarian is called away to assist Bloom and another person,

which also reminds the reader of the library setting. There is no exact statement of the time. However, the time must be after 12:30 because Stephen has not been able to keep his appointment with Mulligan at that time and has sent a telegram to Mulligan instead. Later Mulligan arrives with the telegram, suggesting that it is perhaps early afternoon. As Bloom's destination was the library and it was "after two" at the end of "Lestrygonians" the reader is able to infer when Bloom appears that this is approximately the time of the present episode. There is a reference to the month when Stephen, in setting the scene for his tale of Shakespeare, says: "It is this hour of a day in mid-June."¹⁴⁴ Best also refers to the day of the week: "I don't know if I can. Thursday. We have our meeting."¹⁴⁵

The inner reality of Stephen's consciousness is portrayed in detail in this chapter. The text of the discussion is interspersed with the reflections of Stephen: "Local colour. Work in all you know. Make them accomplices,"¹⁴⁶ "Wait. Five months. Molecules all change. I am other I now. Other I got pound,"¹⁴⁷ "Nookshotten. Now your best French polish."¹⁴⁸ As the argument progresses, the reader is kept aware of the inner reality of Stephen's consciousness.

Stephen's inner thoughts reveal a traditional conception of space and time, for Stephen's thoughts include statements about the nature of space and time. Early in "Scylla and Charybdis" Stephen thinks:

Unsheathe your dagger definitions. Horse-
ness is the whatness of allhorse. Streams of
tendency and eons they worship. God: noise in
the street: very peripatetic. Space: what you
damn well have to see. Through spaces smaller
than red globules of man's blood they creepy-
crawl after Blake's buttocks into eternity of
which this vegetable world is but a shadow.
Hold to the now, the here, through which all
future plunges to the past.¹⁴⁹

Here Stephen displays his attitude to realism. The present visible reality is what matters, Stephen feels. This passage recalls the concept of "quidditas" or "whatness" discussed by Stephen with Lynch in A Portrait of the Artist as a Young Man.¹⁵⁰ The external reality which confronts man is the true reality. Stephen's conception of reality has not changed since his earlier statement in A Portrait of the Artist as a Young Man. Time is seen by Stephen as a historical progress from past to future. This conception of reality reveals Joyce's primary use of space and time to create an external reality up to the present chapter of Ulysses. Stephen discusses the nature of time again, later in the chapter:

And as the mole on my right breast is where it was when I was born, though all my body has been woven of new stuff time after time, so through the ghost of the unquiet father the image of the unliving son looks forth. In the intense instant of imagination, when the mind, Shelley says, is a living coal, that which I was is that which I am and that which in possibility I may come to be. So in the future, the sister of the past, I may see myself as I sit here now but by reflection from that which then I shall be.¹⁵¹

Stephen thinks of time as continually progressing and advances the concept of a person accumulating his past as mem-

ory as his life progresses so that the man of the future is also the man of his past. Again, this appears to be Joyce's own view, for this is consistent with Joyce's treatment of time so far in Ulysses.

In the "Wandering Rocks" chapter Joyce maintains a traditional omniscient view of external reality but his major achievement in the chapter results from a use of space and time which goes beyond the use of space and time to achieve realistic particularization. This is not to deny that the traditional use of space and time is present as well. In this chapter Dublin is presented and each of the characters form only a small facet of the picture. Place and time are presented in detail as part of Joyce's realism. In the "Wandering Rocks" chapter Joyce does use space and time to achieve realistic particularization in locating all of the characters in the external reality of Dublin on June 16, 1904. Frank Budgen states that:

Joyce wrote the "Wandering Rocks" with a map of Dublin before him on which were traced in red ink the paths of the Earl of Dudley and Father Conmee. He calculated to a minute the time necessary for his characters to cover a given distance of the city.¹⁵²

Joyce's concern for exact realism is evident.

The time is exactly specified in this chapter at the very beginning:

The Superior, the very Reverend John Conmee S.J., reset his smooth watch in his interior pocket as he came down the presbytery steps. Five to three.¹⁵³

Later in the chapter the time is mentioned again:

What's the time by your gold watch and chain?
 M'Coy peered into Marcus Tertius Moses' sombre
 office, then at O'Neill's clock.
 - After three, he said.¹⁵⁴

One time reference was added in revision. Joyce added "at four"¹⁵⁵ to Miss Dunne's telephone conversation with Blazes Boylan. The reader is thus made aware of the time Lenehan is to meet Boylan in the Ormond Hotel. Also, the only full statement of the date in the novel appears in this chapter in Miss Dunne's typewriter: " - 16 June 1904."¹⁵⁶

In the "Wandering Rocks" chapter Joyce uses space and time to indicate the simultaneity of different events. In doing so Joyce displays a new use of space and time. Many examples of the use of simultaneity occur in the chapter. In the first episode Father Conmee boards a tram at Newcomen bridge:

At Newcomen bridge Father Conmee stepped into an outward bound tram for he disliked to traverse on foot the dingy way past Mud Island.¹⁵⁷

A few pages later the same event is described in similar words as Corny Kelleher leans against a doorframe:

Father Conmee stepped into the Dollymount tram on Newcomen bridge.
 Corny Kelleher locked his largefooted boots and gazed.¹⁵⁸

By inserting the brief reference to Father Conmee Joyce indicates to the reader that the event he is reading about at present is occurring at the same time that Father Conmee boards the tram. The two events are simultaneous. In the

second description the reader also learns the name of the tram. The new perspective provides additional information not known before. In another instance, Father Conmee encounters a young man and woman:

The young man raised his cap abruptly: the young woman abruptly bent and with slow care detached from her light skirt a clinging twig.¹⁵⁹

Several episodes later as Ned Lambert and J.J. O'Molloy discuss the Reverend Hugh C. Love, the following passage is interjected: "The young woman with slow care detached from her light skirt a clinging twig."¹⁶⁰ This is done with the intention of indicating that the conversation of Lambert and O'Molloy is simultaneous with Father Conmee meeting the young man and woman. In another instance Father Conmee walks through a field: "His thinsocked ankles were tickled by the stubble of Clongowes field."¹⁶¹ The reader is able to determine that the above event is simultaneous with a later event when Katey and Boody Dedalus arrive home, because a passage similar to the above is interjected into their conversation with their sister:

- They wouldn't give anything on them, she said.

Father Conmee walked through Clongowes fields, his thinsocked ankles tickled by stubble.

- Where did you try? Boody asked.¹⁶²

In another instance Boylan, while buying a basket of fruit for Molly, sees Bloom: "A darkbacked figure under Merchants' arch scanned books on the hawker's car."¹⁶³ Farther on in "Wandering Rocks" Bantam Lyons and Lenehan see Bloom at ap-

proximately the same time: "They went up the steps under Merchants' Arch. A darkbacked figure scanned books on the hawk-er's cart."¹⁶⁴ They then begin to talk about Bloom. A few pages later, Bloom is described as he looks over the books, at approximately the same time as the two previous observations of the same activity. There are other examples but these few suffice to indicate Joyce's method and his achievement. Through the use of simultaneity of action Joyce creates the impression that all of these actions are in some way related to each other. They are the interwoven paths of the lives of the citizens of Dublin. This feeling is intensified as the vice-regal cavalcade observes each of the characters in turn at the end of the chapter. The reader has become aware of interrelationships between the characters, of which the characters themselves are not aware. Most of the characters see themselves as separate individuals. The reader, from an external perspective, sees them as one community.

The "Wandering Rocks" chapter may be considered as the culmination of the use of space and time in a traditional manner in Ulysses. In this chapter Joyce has been masterful in creating the external reality of Dublin which has formed the background for all of the events of the novel. In this way Joyce satisfied the demands of realism in the chapter. But his greatest achievement is the sense of community which pervades the chapter. As has been shown above, this was

achieved primarily through the use of simultaneity of action, rather than through the primary use of space and time merely to achieve realistic particularization. Thus, in the "Wandering Rocks" chapter, Joyce appears to have gone beyond the technique of realistic particularization. Joyce's goal in this chapter is reached through the use of simultaneity.

In the remaining chapters of Ulysses Joyce began to experiment with the presentation of the external reality of his novel. It is difficult to ascertain what motivated his experiments. Perhaps Joyce felt that the traditional representation of external reality was too limiting. Joyce may have felt that he had gone as far as possible in that direction in the "Wandering Rocks" chapter and had already begun to step beyond the confines of a traditional realistic method. It is possible that Joyce may have already become aware of the new interpretation of the nature of space and time set forth in Einstein's theories, and that as a result Joyce began to experiment with the function of space and time in his novel. In any event, the remaining eight chapters of Ulysses display a significant decrease in the use of space and time to establish an external reality.

In the "Sirens" chapter Joyce appealed to the art of music to convey the sense of the scene effectively, and consequently the dazzle of Joyce's musical technique tends to obscure the external reality of space and time which exists in this chapter. The physical setting has already been pre-

figured twice in the previous chapter as being the Ormond Hotel:

Bronze by gold, Miss Kennedy's head by Miss Douce's head, appeared above the crossblind of the Ormond hotel.¹⁶⁵

Miss Kennedy and Miss Douce peer through the window to observe the passing of the vice-regal cavalcade. The second time the same words occur in a different order.¹⁶⁶ The beginning of "Sirens": "Bronze by gold heard the hoofirons,"¹⁶⁷ therefore establishes that the setting is the Ormond Hotel. After the overture introduction of "Sirens" the setting is established again as the narrative of the chapter begins:

Bronze by gold, Miss Douce's head by Miss Kennedy's head, over the crossblind of the Ormond bar heard the viceregal hoofs go by, ringing steel.¹⁶⁸

The setting in external reality has been made clear.

The bar where Boylan, Lenehan, Miss Kennedy and Miss Douce converse, the saloon where Simon Dedalus and Father Cowley sing their songs, and the dining-room where Ritchie Goulding and Leopold Bloom have their dinner are described through the gradual accumulation of detail. For example, Simon Dedalus notices the location of the piano in the saloon:

He set down his glass.
He looked towards the saloon door.
- I see you have moved the piano.¹⁶⁹

As various details are noticed by the characters a fairly detailed picture of the Ormond is created. The time is precisely noted in this chapter. From the "Wandering Rocks"

chapter the reader knows that Boylan is supposed to meet Lenehan at four p.m. Lenehan enters the Ormond early in the chapter asking for Boylan.¹⁷⁰ The reader can surmise that it is near four p.m. Shortly after, Boylan arrives. Soon after that the hour of four o'clock strikes:

- What time is that? asked Blazes Boylan.
Four?
O'clock.¹⁷¹

Beneath the glittering verbal surface of "Sirens" a precise reality of space and time is established.

In this chapter Joyce again uses simultaneity. Simultaneous details of movement in space and time counterpoint the activities of Bloom and Boylan. During the first part of the scene Bloom is walking toward the Ormond. Occasional references to Bloom's movements, inserted between Miss Douce's and Miss Kennedy's conversation, keep the reader aware of Bloom's movements. Some of these references are: "Bloowho went by Moulang's pipes...",¹⁷² "But Bloom,"¹⁷³ "By Cantwell's offices roved Greasabloom."¹⁷⁴ Occasional references to Boylan's simultaneous movement toward the Ormond are also inserted: "Jingle,"¹⁷⁵ "Jingle, jaunty, jingle,"¹⁷⁶ "With patience. Lenehan waited for Boylan with impatience, for jingle jaunty blazes boy."¹⁷⁷ The jingle refers to the harnesses of the jaunting car in which Boylan is riding. After Boylan leaves, the movements of Boylan and Bloom are again indicated through occasional simultaneous references, as in the following example:

Jingle jaunted down the quays. Blazes
 sprawled on bounding tyres.
 Liver and bacon. Steak and kidney pie. Right,
 sir. Right, Pat.¹⁷⁸

This example describes Boylan on his way to see Molly, and the waiter taking Bloom's and Goulding's orders. Through the use of simultaneity Joyce keeps the reader aware of the activities of both men in the chapter.

The "Cyclops" chapter of Ulysses displays Joyce's increasing preoccupation with verbal technique and a noticeable decrease in emphasis upon the realistic particularization of space and time. The style of writing imitates the personality of a local Dubliner, a "collector of bad and doubtful debts,"¹⁷⁹ and steady drinker. Joyce adds further complexity by expanding sequences of the narrative to mock-heroic proportions. Study of this chapter is also complicated by the substantial additions made to the final text, most of which can best be described as catalogues of names, places and things which often interfere with the progress of the action. Several narrative digressions also appear and these were often expanded in the later revision. The result is a chapter that displays more similarity of technique to Finnegans Wake than to the rest of Ulysses.

A realistic setting in space and time is presented in the chapter through the details given by the narrator. The setting and action are described. The narrator meets Joe Hynes at the corner of Arbour Hill¹⁸⁰ and together they pro-

ceed to Barney Kiernan's. They arrive at the tavern and meet the citizen:

So we turned into Barney Kiernan's and there sure enough was the citizen up in the corner having a great confab with himself and that bloody mangy mongrel, Garryowen, and he waiting for what the sky would drop in the way of drink.¹⁸¹

The exact identity of the "citizen" is not established. The location of the events of the rest of the chapter remains at the tavern. The time is approximately specified twice in the chapter. The first reference to the time occurs as the narrator describes Bob Doran leaving: "And off with him and out trying to walk straight. Boosed at five o'clock."¹⁸² The second reference to the time was added by Joyce in revision and occurs later in the chapter in the stylized description of a legal judgement: "And he sat him there about the hour of five o'clock to administer the law..."¹⁸³ An external reality of space and time therefore exists in the "Cyclops" chapter.

It is significant that the external reality of space and time serves no essential purpose in this chapter. The setting, though accurately described, is not essential to the action of the chapter. Even the action at the end of the chapter when the citizen throws the biscuit tin at Bloom and Bloom escapes in the carriage is described in a mock-heroic style which makes the realistic external setting nonessential. The time does not advance, nor does the time of the action matter. The events of the chapter do not require a specific external time setting. A passage such as:

In Inisfail there lies a land, the land of holy Michan. There rises a watchtower beheld of men afar. There sleep the mighty dead as in life they slept, warriors and princes of high renown. A pleasant land it is in sooth...¹⁸⁴

does not require a realistic external place and time setting. It creates its own spaceless and timeless reality, where 'realistic' detail is not added to establish an external reality of space and time, but to add decorative detail to a fanciful vision.

That Joyce is experimenting is evident. Often a passage is rendered both in Joyce's former realistic method and his later non-realistic method. For example, one passage is as follows:

And lo, as they quaffed their cup of joy, a godlike messenger came swiftly in, radiant as the eye of heaven, a comely youth, and behind him there passed an elder of noble gait and countenance, bearing the sacred scrolls of law, and with him his lady wife, a dame of peerless lineage, fairest of her race.¹⁸⁵

This fanciful passage is followed by a realistic colloquial description of Alf Bergin appearing in the tavern and pointing out to those inside the comical sight of "Denis Breen in his bath slippers with two bloody big books tucked under his outer and the wife hotfoot after him."¹⁸⁶ In most other cases the fanciful description follows the realistic version as, for example, the realistic description of Irish sport: "So off they started about Irish sport... violent exercise was bad"¹⁸⁷ which is followed by a fanciful description a page long of the same event.¹⁸⁸ Perhaps another clue to Joyce's true focus

in "Cyclops" is suggested in the fact that the later additions were made predominantly to the fanciful passages, rather than to the realistic passages. It is evident that in much of "Cyclops" Joyce laid aside the use of space and time to create external realism. Instead he adopted a verbally-oriented technique independent of an external reality of space and time. The "Cyclops" chapter therefore appears to represent a further step away from Joyce's earlier technique of precise realism.

In the "Nausicaa" chapter Joyce retains the use of space and time to achieve realistic particularization, but the function of space and time seems to be much less significant in this chapter than in the earlier chapters of the novel. The narrative of the first part of the chapter is presented through the eyes of Gerty MacDowell, a good-looking seventeen year old. The setting in space and time are described in detail at the beginning of "Nausicaa", as seen through Gerty's romanticizing eyes:

The summer evening had begun to fold the world in its mysterious embrace. Far away in the west the sun was setting and the last glow of all too fleeting day lingered lovingly on sea and strand.¹⁸⁹

The characters of the scene, Cissy Caffrey, Edy Boardman, the twins, Tommy and Jacky Caffrey, and the baby and their activities on the seashore are described. As the scene develops, Bloom, the "gentleman in black",¹⁹⁰ is noticed sitting and observing their actions. The exact time is noted

several times in "Nausicaa", at first approximately when Bloom tells the girls that "it must be after eight because the sun was set."¹⁹¹ A reference to the "Nine o'clock post-man"¹⁹² also approximates the hour, and a little later Bloom thinks: "Must be getting on for nine by the light."¹⁹³ The exact hour is specified by the clock on the mantelpiece in the priest's house next to the church. Its nine cuckoos establish the hour at the end of the chapter as nine o'clock exactly.

Simultaneity is used early in the chapter to counterpoint Bloom's adoration of Gerty with the church ceremony in honour of the Blessed Virgin. The technique is accomplished by joining the description of both events in a single sentence. The reader is shifted without warning from one setting to the other and realizes that both events are occurring at the same time. There are several alternations from church to beach and the reverse in the following example:

Queen of angels, queen of patriarchs, queen of prophets, of all saints, they prayed, queen of the most holy rosary and then Father Conroy handed the thurible to Canon O'Hanlon and he put in the incense and censed the Blessed Sacrament and Cissy Caffrey caught the two twins and she was itching to give them a ringing good clip on the ear but she didn't because she thought he might be watching but she never made a bigger mistake in all her life because Gerty could see without looking that he never took his eyes off of her and then Canon O'Hanlon handed the thurible back to Father Conroy and knelt down looking up at the Blessed Sacrament and the choir began to sing 'Tantum Ergo' and she just swung her foot in and out in time as the music rose and fell to the 'Tantumer gosa cramen tum.'¹⁹⁴

The singing is taking place in the church at the same time as Gerty swings her foot for Bloom's adoring gaze. This indication of the simultaneity of events on the beach and in the church is continued through most of the first half of "Nausicaa" until the point of view changes to that of Bloom. The point of view changes as Gerty walks away and Bloom notices that she is lame.

The "Nausicaa" chapter seems to display an unusual preoccupation with time. "Nausicaa" is the most time-conscious chapter of Ulysses. Often several references to time occur on a single page and over half the pages of the chapter contain references to time, such as "The shepherd's hour: the hour of holding: hour of tryst."¹⁹⁵ Bloom continues to be aware of time:

Funny my watch stopped at half past four. Dust.
Shark liver oil they use to clean could do it myself. Save. Was that just when he, she?
O, he did. Into her. She did. Done.
Ah!¹⁹⁶

Thoughts of the hour of four thirty recall the meeting of Boylan and Molly to Bloom. Joyce's preoccupation with the concept of time in "Nausicaa" might possibly be considered as characteristic of Bloom's consciousness. However, the number of references to time is much greater than in earlier chapters and the time is much less significant to Bloom in this chapter than in previous chapters such as "Sirens."

Walton Litz has stated that Joyce planned the "Nausicaa" chapter in the latter part of 1919 and finished writing the

chapter early in 1920.¹⁹⁷ It has been noted in Chapter II of this thesis that Joyce must have been aware of the sudden popularization of Einstein's theory after November 7, 1919. Of the many references to time in the chapter, one particularly seems to suggest that Joyce may have been thinking of time in terms of Einstein's theory. Walton Litz compares the earliest manuscript version of the passage with the final text. The text is as follows (the original elements are in plain type; the later additions are underlined):

Very strange about my watch. Wristwatches are always going wrong. Wonder is there any magnetic influence between the person because that was about the time he. Yes, I suppose at once. Cat's away the mice will play. I remember looking in Pill lane. Also that now is magnetism. Back of everything magnetism. Earth for instance pulling this and being pulled. That causes movement. And time? Well, that's the time the movement takes. Then if one thing stopped the whole ghesabo would stop bit by bit. Because it's arranged. Magnetic needle tells you what's going on, in the sun, the stars. Little piece of steel iron. When you hold out the fork. Come. Come. Tip. Woman and man that is. Fork and steel. Molly, he.¹⁹⁸

Joyce's additions reveal an interest in movement, time and gravitation. Comparison with the text published in the Little Review reveals that Joyce made all the additions except "Wristwatches are always going wrong" before August, 1920.¹⁹⁹ These additions were likely made early in 1920 as Joyce prepared his first manuscript for the Little Review publication. If so, then Joyce's additions perhaps suggest an interest in Einstein's discoveries which became widely publicized at this time. It is possible that the presence of so many references

to time is an indication of Joyce's awareness of and interest in the concepts of Einstein's theory. It is possible that Joyce may have been deliberating in his own mind about the nature of time while writing this chapter of Ulysses, and that consequently, a great number of time references appeared in the "Nausicaa" chapter.

The "Nausicaa" chapter may display Joyce's preoccupation with and confusion regarding the function of space and time. Examination of the use of time in the "Nausicaa" chapter suggests that there may have been confusion within Joyce's own mind regarding the significance of the use of time in the chapter. Although the chapter is definitely set within a particularized external reality it is questionable whether any real significance may be attached to Joyce's use of time in the chapter. As compared with the "Sirens" chapter or even the earlier chapters of the novel, the time in "Nausicaa" is of practically no significance. The effect achieved by the use of simultaneity in this chapter is not nearly as significant as in the "Wandering Rocks" chapter. While writing the "Nausicaa" chapter of Ulysses Joyce may have lost faith in the use of simultaneity as a technique for revealing the significance of events in his novel. Recalling the illustration of Einstein's destruction of the concept of simultaneity in the previous chapter, one may well wonder whether this occurred at least partly because of the influence of Einstein's theory. Nevertheless, it is interesting

to note that the use of simultaneity as a technique for revealing the significance of events does not recur after the present chapter of Ulysses.

The questioning which seems to be indicated by the use of space and especially time in the "Nausicaa" chapter is followed by a decrease in emphasis upon the function of space and time in the remaining chapters of Ulysses. The compulsion to root the narrative in a carefully particularized external reality of space and time is much less apparent in the chapters which follow "Nausicaa" than in the earlier chapters of Ulysses or any of Joyce's earlier fiction. After the "Nausicaa" chapter, Joyce continues to display the use of space and time for the purpose of realistic particularization, but it seems that Joyce does so as a matter of form in order to maintain a consistency with the earlier chapters of Ulysses, rather than to fulfill an essential purpose. The remaining chapters of Ulysses display a decrease in emphasis upon the particularization of space and time. In the remaining chapters of the novel, as Joyce abandoned the concern for realistic particularization with which he began his career, Joyce became free of the limitations of a realistic method.

The "Oxen of the Sun" chapter of Ulysses displays Joyce experimenting with time. Joyce adopts an objective perspective in this chapter but alters the style to imitate the progress of English literature in the historical development of prose writing style. On the whole the narrative remains

located in the present of the action, although the style suggests past ages. The overall effect is a feeling of timelessness of the events which are described. The reader is made to feel that the events described could have occurred in the past, and only the style of narration would have been affected. As a result, the events themselves, the birth of the baby, the rowdy dining and drinking and bawdy discussion, and the visit to the local tavern appear to be the typical activities of any society at any time in history.

Within this sense of timelessness, the external reality of space and time are specifically detailed. The chapter begins with Mrs. Purefoy's condition and confinement in the lying-in hospital. Bloom arrives to inquire about her condition and is persuaded by the young doctor Dixon to join in the party. The setting in the room is described in a medieval style which nevertheless creates an accurate picture of external reality:

And in the castle was set a board that was of the birchwood of Finlandy and it was upheld by four dwarfmen of that country but they durst not move for enchantment. And on this board were frightful swords and knives that are made in a great cavern by swinking demons out of white flames that they fix in the horns of buffalos and stags that there abound marvellously. And there were vessels that are wrought by magic of Mahound out of seasand and the air by a warlock with his breath that he blaes into them like to bubbles.²⁰⁰

The reader is able to discern that the room contains a Finnish birchwood table with ornately carved legs on which are laid cutlery with horn handles and blown glassware. From the

above example which is typical of the chapter, it is clear that Joyce limits his fanciful description to the confines of the external reality which surrounds the characters.

The time is specified several times in the chapter. It is "past ten of the clock,"²⁰¹ when the thunderclap sounds, which has been described a little earlier.²⁰² It is before eleven p.m., closing time, when the young men set out for Burke's tavern. It is "ten to"²⁰³ or 10:50 p.m. when they get to the tavern, and "closing time, gents,"²⁰⁴ or eleven p.m. at the end of the chapter.

An outstanding feature of the "Oxen of the Sun" chapter is the accumulation of references to earlier events of the day. Although Joyce has used this technique before in Ulysses, his earlier use of the technique typically involved several sentences referring in detail to a past thought or a memory in a character's consciousness, or to an event that had occurred in an earlier chapter. In "Oxen of the Sun" the references are short sentences, words, or economical phrases which pointedly remind the reader of earlier events, and so help to create the sense of timelessness discussed above. As an example, in the statement: "There Leop. Bloom of Crawford's journal sitting snug with a covey of wags,"²⁰⁵ Joyce is able through the brief phrase "of Crawford's journal" to remind the reader of the whole "Eolus" chapter, of Myles Crawford, of Bloom's attempts to get the Keyes' add, and of Myles Crawford's K.M.R.I.A. response to Bloom near

the end of "Eolus." As another example, the brief phrase "and with a kiss of ashes hast thou kissed my mouth"²⁰⁶ succinctly sums up the influence of his mother's death upon Stephen and recalls the dream that troubled Stephen that morning in "Telemachus." Repetition of a phrase such as "he who stealeth from the poor lendeth to the Lord,"²⁰⁷ or "for life ran very high in those days,"²⁰⁸ or words such as "adiaphane"²⁰⁹ or "Agenbuyer"²¹⁰ recall the context in which the words or phrases occurred earlier. A twist of a phrase such as "Greater love than this, he said, no man hath that a man lay down his wife for his friend"²¹¹ recalls the many times Bloom has feared Boylan's pursuit of Molly in "Lestrygonians", "Sirens" and "Nausicaa". This interrelationship of events goes beyond the normal associative behavior of any individual character's consciousness. The consciousness of Joyce is at work, and the weaving of phrases which interrelate all past with present events is a step outside of the external reality of the novel. In constructing interrelationships between past and present events which are not the workings of a single character's consciousness, Joyce displays a new freedom from the constraints of realism which relied on the particularization of space and time. From the above examples it may be observed that in "Oxen of the Sun" Joyce has been experimenting with a technique of interrelating events which is free of the traditional constraints of particularization and which is an embryonic form of the technique that was used

in Finnegans Wake.

The "Circe" chapter of Ulysses reveals a final development of Joyce's technique. Joyce's fanciful passages in earlier chapters had been generally limited by the external reality of the actual events which occurred in the space and time frame of the chapter. In "Circe" Joyce's imagination surmounts the normal limitations of the external physical reality of the setting. This may be illustrated by the fact that there are over one hundred non-realistic occurrences in "Circe". Events such as Bella Cohen's fan conversing with Bloom, or Father Dolan's head popping up from within a piano and speaking are events which in the normal space and time frame of external reality in the novel could not occur. It appears that Joyce has surmounted the limitations of external physical realism in the "Circe" chapter.

There are certain parts of the "Circe" chapter which do display Joyce's use of an external realistic framework of space and time. It can be argued that the chapter is set within an external reality of space and time. The setting at the beginning of "Circe" is established as "The Mabbot street entrance of nighttown."²¹² Lynch and Stephen walk the street and are met by several different characters. Shortly after, Bloom appears and is described in a realistic manner:

On the farther side under the railway bridge Bloom appears flushed, panting, cramming bread and chocolate into a side pocket.²¹³

After Bloom has met several characters he continues to search

for Stephen and Lynch:

Wildgoose chase this. Disorderly houses. Lord knows where they are gone. Drunks cover distance double quick. Nice mixup. Scene at Westland row. Then jump in first class with third ticket. Then too far. Train with engine behind. Might have taken me to Malahide or a siding for the night or collision. Second drink does it. Once is a dose. What am I following him for? Still, he's the best of the lot.²¹⁴

The activities of Bloom, Lynch and Stephen from their departure for nighttown at the end of "Oxen of the Sun" to their arrival at the beginning of "Circe" has been precisely described by Joyce and located in external reality. As the trial scene recedes Bloom finds himself before the 'house' of Mrs. Cohen and is accosted by Zoe: "Are you looking for someone? He's inside with his friend."²¹⁵ Several pages later the midnight chimes are heard from the distant steeples.²¹⁶ This time is consistent with the events which have been described since the closing of Burke's at eleven p.m., near the end of "Oxen of the Sun". Bloom follows Zoe into the house and into the musicroom, which is realistically described in detail:

A shade of mauve tissuepaper dims the light of the chandelier. Round and round a moth flies, colliding, escaping. The floor is covered with an oil-cloth mosaic of jade and azure and cinnabar rhomboids... The walls are tapestried with a paper of yewfronds and clear glades.²¹⁷

Bloom observes Lynch sitting on the hearthrug and Stephen standing at the piano. Bloom hears the sounds of a person leaving and Bella Cohen enters. Bella brings up the question

of who is paying²¹⁸ and Stephen pays. A reference to the time, "it's long after eleven,"²¹⁹ is a reminder of the hour. Bloom takes charge of Stephen's remaining money.²²⁰ Stephen talks about Paris,²²¹ and dances with the girls. Stephen sees a vision of his mother²²² and, in response, smashes the shade of the chandelier with his ashplant.²²³ Stephen leaves and Bloom follows. In the street Stephen encounters two soldiers, Privates Carr and Crompton, with Cissy Caffrey. Private Carr knocks Stephen down,²²⁴ Bloom and Corny Kelleher dismiss the two constables who arrive, and Bloom is left to assist Stephen.

However, suggesting that the external reality of space and time is the primary reality in "Circe" would ignore most of the events in the chapter. More non-realistic than realistic events occur in "Circe". For example, virtually every character in Ulysses appears in Nighttown, including Boylan, Gerty, Mrs. Breen, Ritchie Goulding, Myles Crawford, Paddy Dignam and the blind stripling, to name but a few. It is highly unlikely, for example, that Tommy and Jacky Caffrey, the twins in "Nausicaa", would be climbing gaslamps at midnight in any part of Dublin, let alone in the setting presented in "Circe". It is a contradiction of reality when Bloom "bears eight male yellow and white children," and "they appear on a redcarpeted staircase adorned with expensive plants."²²⁵ The exchange of sexes of Bella and Bloom is a physical impossibility.²²⁶ The actions of Bloom with either

Mrs. Breen,²²⁷ the prostitute Zoe,²²⁸ or his wife²²⁹ are extreme and out of character when compared with the Leopold Bloom the reader has known up to this point in the novel.

In this chapter Joyce uses the findings of psychoanalysis as the basis upon which some of the events of the chapter are constructed, but it is not possible to explain the entire chapter in terms of psychoanalysis alone. Clive Hart has dealt with this problem and concludes:

A proper appreciation... is impossible if one tries to interpret the fantasy-sequences in terms of depth psychology alone. There is a great deal here that depends on modern concepts of the unconscious, but Joyce is not attempting to create an accurate rendering of what might have been in the minds of his characters in these particular circumstances.²³⁰

Examples from "Circe" will serve to illustrate the problem. In one instance, Bloom's grandfather, Virag Lipoti, appears in the conversation, suggesting that the consciousness rendered is Bloom's.²³¹ However, during this sequence Stephen's conscience in the persons of Philip Drunk and Philip Sober also speak,²³² suggesting that the consciousness experiencing the events is Stephen's. It is therefore impossible to determine whether the experiencing consciousness in this passage is either Bloom's or Stephen's. In another example, considering the several pages following the arrival of Bloom at Bella Cohen's,²³³ it is again impossible to determine whether the events recorded occur in Bloom's consciousness or Stephen's. Stephen takes part in a conversation with Lynch's cap:

THE CAP

(With saturnine spleen) Bah! It is because it is. Woman's reason. Jewgreek is greekjew. Extremes meet. Death is the highest form of life. Bah!

STEPHEN

You remember fairly accurately all my errors, boasts, mistakes.²³⁴

Stephen is thinking about his errors. It would seem that the experiencing consciousness must be his, for Bloom would have only a very limited awareness of Stephen's "errors, boasts, mistakes." Yet soon after, Elijah announces: "God's time is 12:25."²³⁵ It is Bloom whose thoughts during the past day included Elijah. It would therefore be inconsistent to assume that either Bloom's or Stephen's consciousness experiences the events of the episode. It is possible that the experiencing consciousness shifts rapidly and without warning from Bloom to Stephen and back again many times throughout the "Circe" chapter. This would then suggest a relationship between Bloom and Stephen. This is no doubt part of Joyce's purpose. However, to interpret the technique of the "Circe" chapter in terms of psychoanalysis alone would cause even more confusion and the evidence would tend to work against the purpose of rendering the events through an experiencing consciousness in the first place, and this would still leave other passages where the experiencing consciousness could be either Bloom's or Stephen's. The clearest interpretation is obtained if the reader assumes that all objects and characters

actually do or say the things recorded. If Elijah really does appear on the scene, his statement then helps to re-establish the exact time of the episode in external reality as 12:25 a.m. This approach leads to the conclusion that in "Circe" Joyce adopted a primarily non-realistic perspective, using the external reality of the chapter only as reference points for his fanciful vision.

It is possible that Joyce was freed by Einstein's new conception of space-time, and that consequently Joyce began to concern himself more fully with his art and less with the problem of placing that art within the limitations of an external framework of space and time. There are several statements involving time in the "Circe" chapter which may suggest that Joyce was aware of the Theory of Relativity. Time is referred to by Bloom in an unprecedented manner in "Circe":

I wanted then to have now concluded. Night-dress was never. Hence this. But tomorrow is a new day will be. Past was is today. What now is will then tomorrow as now was be past yester.²³⁶

Bloom's reference to time implies an equivalence of past, present and future, rather than a progress of events from past to future. This suggests a relativistic conception of time. Another similar reference occurs later in "Circe" when Bella's fan speaks to Bloom:

Is me her was you dreamed before? Was then she him you us since knew? Am all them and the same now we?²³⁷

This reference to time also suggests an equivalence of past and present rather than a rigid marking of time which distinguishes past from present. A relativistic conception of time is again implied. Several other references are perhaps even more significant. Bloom as Mayor of Dublin associates time with light:

Ticktacktwo wouldyousetashoe? (He performs juggler's tricks, draws red, orange, yellow, green, blue, indigo, and violet silk handkerchiefs from his mouth.) Roygbiv. 32 feet per second.²³⁸

Bloom's consciousness associates the colours of the spectrum with the rate of acceleration of the force of gravity. In associating light with gravity Joyce illustrates one of the better known and most startling concepts of the Theory of Relativity, the influence of the force of gravity upon the path of a beam of light. Such a relationship was unthinkable before the popularization of Einstein's theory and strongly suggests an awareness of Einstein's theory.

An awareness of Einstein's theory may also be suggested in a complex relationship of light, space and time near the end of "Circe" when Stephen smashes the chandelier. The action is described in the text thus:

He lifts his ashplant high with both hands and smashes the chandelier. Time's livid final flame leaps and, in the following darkness, ruin of all space, shattered glass and toppling masonry.²³⁹

Light, space and time seem to be related in this description. Time is described metaphorically as a flame, relating time

and light. When the light of time goes out, the darkness brings the ruin of all space. It seems that time, light and space are interrelated. This is a relativistic concept; Einstein was the first to demonstrate an interdependent relationship of space, time and light. This new interrelationship of space, time and light contrasts with most of Stephen's earlier statements about space and time which have been discussed earlier, especially Stephen's statement in "Nestor" in which space and time are separate concepts, not related through light as appears to be the case in the present instance in "Circe". The relationship of space and time through light which Joyce demonstrates in "Circe" may be coincidental, or it may be intended by Joyce as an indication that he is using the conception of space and time shown forth in Einstein's theory.

A change in Joyce's attitude toward realism may be suggested in one of Stephen's remarks in "Circe":

God, the sun, Shakespeare, a commercial traveller, having itself traversed in reality itself, becomes that self. Wait a moment. Wait a second. Damn that fellow's noise in the street. Self which it itself was ineluctably preconditioned to become.
Ecco!²⁴¹

Stephen's comment "Damn that fellow's noise in the street" refers to the gramophone playing outside, but it also recalls and contrasts with his conversation in "Nestor" with Mr. Deasy, where Stephen had referred to the sound of the students on the playground, "A shout in the street,"²⁴² as being the ultimate reality. In "Circe" Stephen seems to be saying that

the self exists, irrespective of anything external to that self. Stephen seems to be saying that external reality is no longer of essential concern. In "Circe" Joyce still uses external realism when it suits his purpose, but, as suggested in Stephen's statement, the artistic wizardry of this chapter is created by an author who is no longer limited by the technique of realistic particulatization.

Since the writing of the "Eumeus" chapter preceded the writing of "Circe", it is not surprising that Joyce appears to have returned to a more traditional use of space and time in "Eumeus". The setting of "Eumeus" is realistically described. The movement of Bloom and Stephen from Nighttown to the cabman's shelter is described in detail and the shelter and its occupants are also detailed as part of the realistic physical setting. The sailor, who is the centre of attention during the first part of "Eumeus", establishes the chapter within the "schema" Joyce had devised. His tales and the response of his audience are described in a realistic manner. When Bloom and Stephen leave, their movement is again described in detail, even their passing between the chains of a sweeper's horse.

References to time establish the hour approximately. As Bloom is helping Stephen up he refers to the lateness of the hour: "in view of the hour it was."²⁴³ Another reference soon after notes that "all traffic was suspended at that late hour."²⁴⁴ Bloom notes the forwardness of Corley "intercept-

ing people at that hour of the night or morning."²⁴⁵ Bloom mentions that it is after twelve as they discuss Stephen's eating habits. Shortly thereafter the time is almost exactly specified: "getting on for one as it was, it was high time to be retiring for the night."²⁴⁶

An interesting fact of "Eumeus" is the inclusion and number of references to both space and time together, which suggest a relationship between space and time as demonstrated in the Theory of Relativity. Three references occur. The first is early in the chapter. When Stephen mentions Boylan's name to Bloom, Bloom's reaction is noted: "Mr Bloom gazed abstractedly for the space of half a second or so."²⁴⁷ Joyce appears to be consciously using space and time together in this instance. The second reference occurs approximately midway through the chapter: "after a brief space of time during which silence reigned supreme."²⁴⁸ The third reference occurs near the end of the chapter: "for any lengthy space of time."²⁴⁹ The last two references do not stand out because they are cast in the form of normal usage. It is unusual, and probably more than coincidence, that "Eumeus" is the only chapter of Ulysses which contains three space-time references. Each of these references may hint at a relationship of space and time, as demonstrated by Einstein's Theory of Relativity. By means of the above references, Joyce may possibly have intended to keep the reader aware of his freedom from the constraints imposed by the traditional

use of space and time to achieve realistic particularization.

In "Ithaca" Joyce adopted a catechetical question-and-answer form. There is no doubt that Joyce's use of space and time is realistic in that space and time are used to create a particularized reality. The journey home is described accurately. Bloom entering his house through the kitchen on the lower level is described in detail. Bloom makes cocoa and, after a discussion on a wide range of topics, Stephen leaves by the back garden. Bloom then prepares for bed and describes the events of his day to Molly. At the end of the chapter he falls asleep. The time of the events is almost exactly specified. When Bloom and Stephen are in the garden, the bells of St. George's church sound the half hour. The time is likely 1:30 a.m.²⁵⁰ This time later proves to be correct when Molly mentions the time in "Penelope". One other reference to the time is made in "Ithaca". The soap Bloom takes from his pocket is specified as having been "bought thirteen hours previously for fourpence and still unpaid for."²⁵¹ This is either an error on Joyce's part or a misprint, for Bloom purchased the soap in "Lotuseaters" at a quarter past nine or quarter past ten a.m.²⁵² The time at this point in "Ithaca" cannot be earlier than a quarter past one, an interval of either fifteen or sixteen hours. Discounting this one error, the time in "Ithaca" is definitely established in external reality.

However, the significance of the realistic details which

are presented is questionable. For example, Joyce describes the whole water supply system for the city of Dublin in response to the simple question of whether or not the water flowed when Bloom opened the water faucet in his kitchen. In another instance, Joyce provides an exact description of the contents of the shelves of the kitchen dresser²⁵³ which adds little to the chapter. Yet immediately afterward Bloom notices the fragments of two betting tickets on the apron of the dresser²⁵⁴ which virtually confirm the presence of Boylan in Bloom's home during the past day, and yet this highly significant detail is so briefly mentioned by Joyce that it appears to have no significance at all. Admittedly, many details are revealed which are helpful to the reader, such as the various dates which are finally exactly specified, but these details are merely useful in retrospect and not essential so late in the novel. The reader has done just as well without the knowledge that Bloom and Molly were married on October 8, 1888,²⁵⁵ for the reader has managed to approximate this date from the age of Milly. This information given now is therefore not essential to the novel. Although it is possible to argue that Joyce continued to use a traditional realistic method because he still believed in the goal of realism or that perhaps Joyce merely was relaxing and using a traditional conception of reality because it was easier to work with, it is difficult to conceive the technique of the penultimate chapter of Ulysses as either a relaxation or re-

lapse of technique.

It is possible that, by the lack of significance of the use of space and time in the chapter, Joyce intended to reveal the limitations of a realistic method, of which he had become free. The "Ithaca" chapter of Ulysses appears as a collage of separate and largely independent observations, which cumulatively are intended to present the action of the chapter. It may be likened to the "Wandering Rocks" chapter which used a multiplicity of omniscient perspectives to capture the reality of life in Dublin. Here, however, the effect seems strangely different. The use of realistic particularization seems intended to fail. The various limited perspectives used capture insignificant observations as often as significant ones. It is possible that the narrow individual slices of reality presented in "Ithaca" reveal a fragmentation of the omniscient perspective. The technique of "Ithaca" seems intended by Joyce to reveal the limitations of a realistic method. The "Ithaca" chapter may be intended by Joyce to fail in capturing the significance of the events it describes, and in so doing, to reveal the limitations of the technique of realism, achieved through the realistic particularization of space and time.

The "Penelope" chapter of Ulysses is the only chapter which was not assigned a specific time in Joyce's 'schema'. This suggests that the particularization of external reality may not have been as significant to Joyce in the last chapter

as in the early chapters of the novel. Joyce does include specific references to the place and time of the chapter. Molly is aware of the physical setting which surrounds her. She notices the whistle of the train,²⁵⁶ she adjusts her blanket,²⁵⁷ she gets up and goes to the chamber pot,²⁵⁸ and shortly returns to bed.²⁵⁹ In her memory Molly relives the settings of her girlhood in Gibraltar and Dublin and the settings of the events of her married life in Dublin. Molly is also conscious of time. She recalls the thunderclap²⁶⁰ which occurred at about ten p.m. and was referred to in the "Oxen of the Sun" chapter.²⁶¹ She recalls seeing two of Stephen's sisters at 3:15 p.m.²⁶² before they arrived home in "Wandering Rocks."²⁶³ Molly refers to her age: "I'll be 33 in September."²⁶⁴ This incidentally conflicts with Bloom's earlier recollection of the date of Molly's birth as "8 September 1870."²⁶⁵ According to Bloom, Molly would be thirty-four in September. Molly notes that it is Friday,²⁶⁶ she hears St. George's bell toll two a.m.,²⁶⁷ she recalls the birth and death of her son Rudy eleven years ago,²⁶⁸ she ponders Stephen's age²⁶⁹ and she recalls the age of Milly²⁷⁰ and the year of her marriage.²⁷¹ Very near the end of the chapter she notes that it is 2:15 a.m.,²⁷² and her last thoughts are of the day Bloom proposed to her,²⁷³ and of her first lover, Mulvey.²⁷⁴

Although there are specific references to the external reality of space and time which surrounds Molly in "Penelope",

the role of space and time in creating a particularized external reality continues to be of decreasing significance in this last chapter of the novel. In "Penelope" there is little significance or emphasis upon the use of space and time to create a particularized external reality, a marked contrast with the early chapters of the novel, but in keeping with Joyce's new freedom from the restraints of the traditional use of space and time. Part of this change of emphasis can be ascribed to the fact that there is little physical movement and the hour is not important in the chapter. Part of the decreased emphasis on the function of space and time can also be ascribed to the use of the stream of consciousness technique which would involve a fuller concentration on the internal reality of memory and a corresponding neglect of the external reality. It is also possible that Joyce's further shift from emphasis upon rendering the external reality to creating the internal reality of consciousness was influenced by his awareness of Einstein's Theory of Relativity and his consequent freedom from the constraints imposed by a traditional use of space and time. In "Penelope" the space and time details which are included and create the external reality are insignificant when compared with Joyce's primary concern in the chapter. An external reality of space and time is no longer of essential importance and therefore cannot inhibit Joyce's efforts. What concerns Joyce more than external realism in "Penelope" is the accurate creation of a fe-

male emotional psyche which is free to wander in any space or time frame of reference.

The end of "Penelope" suggests Joyce's refusal to assert a conclusion and in so doing perhaps displays a final influence of Einstein's Theory of Relativity. In both Dubliners and A Portrait of the Artist as a Young Man the significance of the events presented was fairly clear. The significance which the reader ultimately assigns to Ulysses is his own, not the author's. Joyce's conclusion is not the omniscient comment on the events of the novel which most readers would like and which his earlier work to at least some extent displays. The conclusion of Ulysses is a relativistic conclusion in that it allows each individual reader to form his own valid conclusion.

Although an attempt has been made in the above discussion to demonstrate the possibility that Einstein's Theory of Relativity did influence Joyce's use of space and time in the latter chapters of Ulysses, it may well prove impossible to establish with certainty the exact moment in the writing of Ulysses when Joyce became aware of or began to be influenced by Einstein's Theory of Relativity. If an exact answer does exist, it must lie in very detailed analysis of the various manuscripts of Ulysses, particularly the Rosenbach M.S., which was the basic first manuscript and from which the Little Review serial publication was developed. Although the Little Review text appears to give a good indication of the first

manuscript in the early chapters, Walton Litz's study reveals additions, especially to the later chapters published in the Little Review which were not originally present in the Rosenbach M.S. Therefore, the later chapters published in the Little Review must be considered an intermediate text. Also, the date of the sudden popularization of Einstein's theory as described in the previous chapter represents only the latest date, although the likeliest, up to which Joyce could have remained unaware of the Theory of Relativity. It is possible that Joyce may have become aware of Einstein's theory in the spring or summer of 1919, when the Eddington expedition set out and performed its experiments, or there is a slight possibility that Joyce may even have heard of Einstein in Zurich up to several years earlier. In any event, it does seem likely that Einstein's theory did influence the function of space and time in Ulysses to at least some extent.

Joyce may have been influenced by Einstein's theory to create a novel whose structure does not depend on a series of chronological events portrayed through the realistic particularization of space and time. This interpretation seems consistent with Joyce's earlier and later artistic development. It suggests an affinity between the technique used in Dubliners, A Portrait of the Artist as a Young Man, and the earlier chapters of Ulysses. It provides a partial explanation and generally coherent picture of the progressive technical experiment and development which occurs in the

later chapters of Ulysses. It also allows for some anticipation of the more radical departure from traditional fictional technique which occurred in Finnegans Wake.

It has definitely been possible to demonstrate that, whatever the cause, Joyce's use of space and time did alter as Ulysses developed. Joyce began his career as a novelist dedicated to the achievement of realism, which had been achieved by novelists since the eighteenth century through the realistic particularization of space and time. In his earlier work Joyce reflected this traditional use of space and time. The present study has indicated that during the course of writing Ulysses Joyce began to experiment with and gradually became free of the constraints of the traditional use of space and time to achieve realistic particularization. The traditional role of space and time in creating a particularized external reality became less prominent and less important. The foregoing detailed examination of the role of space and time in Ulysses would therefore seem to indicate that an alteration in technique occurred as Ulysses developed. It would appear that as Ulysses progressed Joyce became less concerned with the relationship of his characters to the external reality which surrounded them.

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Chapter IV

There are many indications that Einstein's Theory of Relativity was an influence upon Joyce in Finnegans Wake. Critics usually list Einstein as one of the influences upon Joyce in his last novel, but they have rarely gone into any specific detail. The best study of Einsteinian influence to date is Clive Hart's Structure and Motif in "Finnegans Wake,"¹ which mentions Joyce's use of the space-time concept² and the suitability of the Theory of Relativity to Joyce's purpose.³ There are several references to Einstein in the text of Finnegans Wake.⁴ The first occurs in the question period chapter when the professor mentions "the whoo-who and where's hairs theorics of Winestain."⁵ The "theories of Einstein" seems suggested. Reference to Einstein, space and time is made in the beginning of the "Mookse and Gripes" story: "Eins within a space and a wearywide space it wast..."⁶ This statement is a parody of the traditional beginning of children's stories and is also a parody of the beginning of A Portrait of the Artist as a Young Man, which begins: "Once upon a time and a very good time it was..."⁷ The equivalence of space and time, which is part of Einstein's theory, is indicated by the replacement of "time" by "space" in the Finnegans Wake version. Another reference about halfway through the novel refers to "the Great Ulm."⁸ Adaline Glasheen considers this

a reference to Einstein because Einstein was born in Ulm, Germany. The text immediately following may also be a reference to Einstein: "heaving all jawbreakical expressions out of old Sare Isaac's universal of specious arismystical unsaid..."⁹ This statement may refer to Einstein's theory "heaving out old Sir Isaac Newton's universal spatial arithmetic." Another reference to Einstein follows several pages later, in the mention of "Eyeinstye."¹⁰ A further suggestion of an Einsteinian influence is contained in the brief comment: "mentally strained from reading work on German physics."¹¹ This comment strongly suggests that Joyce was aware of Einstein's theories, which first appeared in a German journal of physics. In Finnegans Wake Joyce uses the word "tesseract"¹² which is a four-dimensional figure.¹³ The number of references to Einstein and his theory demonstrate Joyce's interest in Einstein and some of the implications of his Theory of Relativity while writing Finnegans Wake.

Further references to Joyce's awareness and use of Einstein's theory occur in surprising number in Our Exagmination Round his Factification for Incamination of Work in Progress,¹⁴ which is a collection of articles about Finnegans Wake written by Joyce's associates and friends. The volume may be seen as one of Joyce's efforts to explain what he was attempting in Finnegans Wake. Bernard Benstock states that its purpose was to "open the floodgates of critical understanding in advance of Joyce's last and most difficult work."¹⁵ It is quite cer-

tain that Joyce helped in the production of Our Exagmination. Joyce admitted to Valery Larbaud that "I did stand behind those twelve marshals more or less directing them what lines of research to follow up."¹⁶ Joyce also chose the title for the volume,¹⁷ and Stuart Gilbert, a contributor to Our Exagmination, suspected that the final 'letter of protest' was written by Joyce himself.¹⁸ It therefore seems reasonable to agree with Sylvia Beach, who states that Our Exagmination

is most valuable, indeed indispensible to readers of Finnegans Wake; they would do well to hear what these writers, friends and collaborators of Joyce, followers of his new work as it progressed, have to say on the subject.¹⁹

Our Exagmination will now be examined in detail for references to Joyce's treatment of space and time in Finnegans Wake.

Marcel Brion is familiar to some extent with Einstein's Theory of Relativity and relates Einstein's theory to Joyce. Brion seems to have had some understanding of the Theory of Relativity. He is familiar with examples of theoretical relativistic situations and confident in quoting examples.²⁰ Brion makes specific references to Relativity and to Einstein. Discussing the role of time in Ulysses, Brion states:

We can easily imagine that Ulysses might have been ten times as long, a hundred times as long, extended to infinity, that one of Bloom's minutes might have filled a library. This is the mystery of the relativity of time.²¹

A few pages later Brion echoes himself in an almost identical passage:

To reduce the decades of the Iliad, the Odyssey,

of Telemachus to eighteen hours in the life of a man... is one of the Einsteinian miracles of the relativity of time.²²

Later Brion adds:

But still more than to Ulysses these remarks apply to the book which "Transition" is publishing and of which we as yet know only a part.²³

Brion mentions Einstein once more in his conclusion:

And if the books of Joyce are as difficult for many to read as those of Einstein it is perhaps because both of these men have discovered a new aspect of the world.²⁴

Brion specifically links the influence of Einstein to the treatment of space and time in both Ulysses and Finnegans Wake.

Brion describes the kind of reality Joyce has created in Finnegans Wake as "the Joycean world, which obeys its own laws and appears to be liberated from the customary physical restraints."²⁵ The physical restraints he has in mind involve the traditional use of space and time. Freed from using space and time for the purpose of realistic particularization within the framework of reality of a Newtonian universe, Joyce has created an individualized reality which does not require a relationship to an external framework of space and time:

And we have, indeed, the impression of a very individual world, very different from our own, a world of reflections that are sometimes deformed, as in concave or convex mirrors, and imprinted with a reality true and whole in itself. I do not speak here only of the vocabulary which Joyce employs... but especially of his manners of treating time and space.²⁶

In other words, according to Marcel Brion, Joyce does not rely on a traditional conception of space and time used to achieve realistic particularization in Finnegans Wake. Joyce creates realism in Finnegans Wake through his use of a relativistic conception of space and time, which involves a relativistic and therefore individualized point of view. Brion says that the highly individualized reality of Finnegans Wake is created through Joyce's treatment of space and time, which can be explained by Einstein's Theory of Relativity.

Elliot Paul also discusses Joyce's new treatment of time:

Many indications aside from the fact that the book begins in the middle of a sentence point out that its design is circular, without the beginning, middle and ending prescribed for chronological narratives. The idea of past, present and future must be laid aside if one is to grasp the composition.²⁷

Elliot Paul then goes on to explain how we might understand Joyce's new treatment of time, and why the chronological treatment of time must be laid aside:

This is not impossible, given the slightest familiarity with modern developments in physics or mathematics or even a moderate appreciation of recent tendencies in painting.²⁸

The reference to mathematics is to the work of Hermann Minkowski, which Einstein used in the General Theory of Relativity. The reference to modern physics is a precise reference to post-Newtonian or Einsteinian physics. In other words, Elliot Paul states that if we are even slightly familiar with Einstein's theory, then Joyce's treatment of time in

Finnegans Wake can be understood. Paul states that we must look for "the happenings of all the years... arranged, not in numerical order, but according to a design dictated by the mind of Joyce."²⁹ We must not look for a chronological treatment of time. Paul also discusses the treatment of space:

The treatment of space is equally elastic. Phoenix Park, Dublin becomes interchangeable at one time with the Garden of Eden, again with the Biblical universe.³⁰

Elliot Paul discusses space and time in terms of Einstein's physics and states that both are elastic. This shows his understanding of the relativistic conception of space and time in Einstein's Theory of Relativity, and gives weight to his view that an understanding of relativity is needed to understand the relativistic use of space and time in Finnegans Wake. Paul states that space and time in Finnegans Wake function in a new way, and an understanding of this new way is to be found in Einstein's Theory of Relativity.

Robert Sage deals with the influence of Einstein's theory in Finnegans Wake in detail. Sage emphasizes that the reader must understand space and time in Finnegans Wake in terms of Einstein's theory:

instead of observing the traditional chronological scheme, with the narrative fibres sharply separated and treated as individual units, he has telescoped time, space, all humanity and the universe of gods and heroes. This latter fact - consistent with his own development but in opposition to all previous literary canons - should be emphasized in order that the uninitiated reader will understand at the outset that he is faced with a revolutionary four-dimensional conception of the universe, that the

'characters' who bob up briefly, disappear and reappear in various forms and unexpected company are composite,... that Joyce reaches out into all space to take what he for the moment requires.³¹

As Robert Sage explains, in Finnegans Wake the use of a known perspective or frame of reference has disappeared, for relativity theory states that there can be no fixed, Absolute frame of reference from which to measure space and time. Space and time are not measured relative to any fixed perspective, but can be seen from any perspective which Joyce at that time requires. Space and time can expand, contract, become simultaneous or reverse simply by changing the point of view or perspective. We must understand then, that in this new work Joyce is using a relativistic yardstick to measure space and time.

Robert McAlmon acknowledges the influence of Einstein's theory but also goes on to suggest the effect of a relativistic perspective upon literature in general, and the consequent change in our expectations which must occur when we look at Finnegans Wake. The beginning of his article clearly refers to Einstein's theory:

In a period post-dating the admission of the subconscious as important to individual and general human destinies, and when an acceptance of relativity forces the realization that facts and ideas are neither as hard nor as logical as some minds wish them, it is natural that a literature should emerge which is evocative rather than explanatory, more intent upon composite types, plots and situations, than on particularized meanings.³²

McAlmon explains that relativity has forced an adjustment in

modern man's thinking, and consequently has had an influence upon modern literature, freeing it to some extent from a single narrow particularized perspective. He then discusses other art forms:

music and the ballet are less inhibited by the demands of meaning than literature has been. Audiences do not insist upon a story or a situation to appreciate the movements of a dance or the strains of music. Critics allow there can be a pure art in these mediums.³³

McAlmon compares these art forms with literature:

As yet literature is unfreed, because to most people it is bound up with the idea of storytelling, the drama of single lives or a group of lives. It is still under the shadow of medieval philosophies, religion, and reasoning, to such an extent that its scope is limited.³⁴

Robert McAlmon is advocating a freer perspective, an acceptance of a literature which is not constrained by traditional conceptions and use of space and time. He feels that with the new perspective offered by the Theory of Relativity literature need not be constrained by Newtonian conceptions of space and time or constrained to a single perspective, and he observes that Joyce's new work has incorporated this new relativistic approach.

McAlmon discusses the meaning of Joyce's new work, and again, the influence of relativistic thinking is apparent:

What is important is the sensations evoked, the sensibilities made susceptible to response, by his writing, and that necessarily varies with each individual reader. The question "but what does it all mean" need not be asked; it means variously, to Joyce himself and to each reader, as a Mozart,

or a Beethoven or a Strawinsky symphony means variously to the same persons in various moods and circumstances.³⁵

McAlmon's perspective is definitely relativistic. He admits many different possible interpretations of Joyce's work, and states that the same passage might mean different things even to Joyce himself at different times. A relativistic attitude is certainly being put forward. McAlmon feels that only with this type of attitude may we most easily comprehend Finnegans Wake:

His readers who take him with least effort are probably the younger generation, who have grown up with machinery, the radio, the aeroplane, with psycho-analysis enough accepted as a progressing study so that fewer laymen swallow it hook and sinker, with relativity a theory that can be accepted for the time-being as was Newton's in the past.³⁶

Our major difficulty then is to be able to understand Finnegans Wake as a work influenced by Einstein's theory. If we can do so, then Finnegans Wake becomes an esthetic experience, and one which is different for each individual reader.

Even authors in Our Exagmination whose topic is not specifically related to space and time reveal the influence of Relativity theory when they mention space and time. For example, Eugene Jolas, whose topic is Joyce's language, states that Joyce "attempts to hammer out a verbal vision that destroys time and space."³⁷ Jolas again mentions space and time together when he states: "In his super-temporal and super-spatial composition, language is being born anew before

our very eyes."³⁸ Space and time are again related as Jolas describes "an imagination that has whirled together all the past, present, and future, as well as every space related to human and inorganic evolution."³⁹ A relationship between space and time is again implied, revealing the influence of Einstein's theory, and implying that to understand Joyce's use of space and time in Finnegans Wake requires an understanding of Einstein's theory. Thomas McGreevy also toys with the space-time interrelationship:

Much, perhaps all, art consists in seeing the funeral of one's past from the emotionally static point of artistic creation - emotion recollected in tranquillity - time recollected in space.⁴⁰

The evident awareness of the relativistic interdependence of space and time reveals that these authors were acquainted with some of the implications of Einstein's theory and the necessity of understanding space and time in Finnegans Wake in terms of Einstein's theory.

It is surprising to look back upon the number of references to Einstein or the Theory of Relativity or modern physics in Our Exagmination. The authors of Our Exagmination appear to be the most space, time and Einstein conscious group of critics in English literature. Although the different authors are often inconsistent in their interpretation of the details of the theory, their intent is clear. In Our Exagmination many references are made to space and time which clearly indicate that the two are considered interrelated and

therefore meant to be dealt with together. The authors discussed above most often reflect this relativistic influence. They repeatedly state that an understanding of Einstein's theory will aid in understanding Finnegans Wake. They attempt to make clear that space and time function in Finnegans Wake according to the principles of the Theory of Relativity and that this is how we should be guided in reading and understanding Finnegans Wake. The nature of space and time, their presence or non-presence in the work, and the role that they play are discussed in terms of Einstein's theory.

The difficulty of gaining an understanding of some of the larger implications of Einstein's theory is immense. Einstein's Special Theory of Relativity, which first appeared in 1905, dealt with the interdependent relationship of space and time as already discussed and can be understood with a minimum of mathematical support. Einstein's General Theory of Relativity, which appeared in 1915, postulated the Principle of Equivalence, which stated that gravity and inertia are one and the same. Einstein demonstrated that even for accelerated motion there is no Absolute frame of reference. The General Theory was an extension or generalization of the Special Theory, and today both are implied together when the term "Einstein's Theory of Relativity" is used.

One of the most difficult concepts of the General Theory is the conception of reality as a four-dimensional space-time continuum. In developing his General Theory Einstein

turned to the work of a mathematician named Hermann Minkowski. Minkowski had worked on a mathematical relationship of space and time, and as early as 1908 had said:

Henceforth space by itself, and time by itself, are doomed to fade away into mere shadows, and only a kind of union of the two will preserve an independent reality.⁴¹

Minkowski's mathematics was complex and, when adopted by Einstein, gave man a new picture of the universe in which space and time were interdependent. Einstein's view of the universe involved what has been mathematically described as a four-dimensional general Riemannian geometry. Since it is possible in mathematics to construct a frame of reference with any number of dimensions, the concept of a four-dimensional world did not cause Einstein any great concern.

What is difficult for the person unfamiliar with mathematical science is that Einstein's four-dimensional conception of the universe is real. As Lincoln Barnett has pointed out:

It must not be thought, however, that the space-time continuum is simply a mathematical construction. The world is a space-time continuum; all reality exists both in space and in time, and the two are indivisible. All measurements of time are really measurements in space, and conversely measurements in space depend on measurements of time.⁴²

Bertrand Russell has summed up the interdependent relationship of space-time as follows:

In the old (Newtonian) theory, it was possible to consider a number of bodies all at the same instant, and since the time was the same for all of them it could be ignored. But now we cannot do that if we are to obtain an objective account of physical occurrences. We must mention the date at which a

body is to be considered, and thus we arrive at an 'event' that is to say, something which happens at a given time. When we know the time and place of an event in one observer's system of reckoning, we can calculate its time and place according to another observer. But we must know the time as well as the place, because we can no longer ask what is its place for the new observer at the 'same' time as for the old observer. There is no such thing as the 'same' time for different observers, unless they are at rest relatively to each other. We need four measurements to fix a position, and four measurements fix the position of an event in space-time.⁴³

Einstein had shown that measurements of space and time were interrelated and interdependent and that the physical world must be understood as a four-dimensional space-time continuum.

This cardinal principle of Einstein's theory, the interdependent relationship of space and time, was made apparent by Joyce in Finnegans Wake, perhaps as a continual reminder throughout the text of Joyce's adoption of a relativistic conception of reality in his final novel. Joyce presented space and time in Finnegans Wake as a duality, as the Mookse and Gripes, Ondt and Gracehopper, Burrus and Caseous, Butt and Taff, Browne and Nolan, or Shem and Shaun dualities. Through presenting space and time as a duality, Joyce illustrated the relativistic nature of space and time which is basic to an understanding of Finnegans Wake. To keep the reader conscious of this new conception of space and time, or more properly 'space-time', Joyce scattered dualistic references to space and time throughout Finnegans Wake which emphasize that space and time are interrelated and interdependent. There are a great number of references which demonstrate that

space and time are interrelated and interdependent:⁴⁴

What a warm time we were in there but how keling
the air is here the airabouts (p.10:25)

at this timecoloured place where we live (p.29:20)

for the space of his occupancy of a world at a
time (p.52:08)

their hours to date link these heirs to here but
wowhere are those yours of Yesterdays (p.54:02-3)

timesported (p.56:03 'transported' is movement in
space)

There was once upon a wall (p.69:06-7)

What subtler timeplace of the weald (p.80:13)

when and where (p.87:35)

When he pleased? Win and place. (p.88:36-89:01)

for the space of the time being (p.109:22)

to= introduce a notion of time upon a plane(?)
su''fac'e' by punct! ingh oles (sic) in iSpace?!
(p.124:11-12)

having plenxy off time on his gouty hands and
vacants of space at his sleepish feet (p.143:05-6)

Eins within a space (p.152:18 a parody of 'Once
upon a time')

Is this space of our couple of hours too dimensional
for you, temporiser? (p.154:25-6)

The more stolidly immobile in space appears to me
the bottom which is presented to us in time by the
top primo-mobilisk (p.163:20-2)

Of course the unskilled singer continues to pervert
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 (p.164:32-5)

Next place you are up town pay him a visit (p.172:05
'place' is used instead of 'time')

A space. Who are you? The cat's mother. A time.
(p.223:23)

as it was mutualiter foretold of him by a timekiller
to his spacemaker (p.247:02)

from space to space, time after time (p.254:26-7)

a little farther, a little soon (p.339:36)

elve hundred and therety and to years how the Krow
flees end in deed (p.347:04-5)

at no spatial time (p.358:05)

the rathure's evelopment in spirits of time in all
fathom of space (p.394:10)

on this ourherenow plane (p.394:34)

Methought as I was dropping asleep somepart in non-
land of where's please (and it was when you and they
were we) (p.403:18-19)

with the very timeplace in the ternitary (p.416:24-5)

Your genus its worldwide, your spacest sublime!
But, Holy Saltmartin, why can't you beat time?
(p.419:07-8)

so you can keep your space and by the power of
blurry wards I am loyable to do it (I am convicted
of it!) any time ever I liked (p.425:12-14)

a matter of maybe nine score or so barrelhours
distance off (p.429:08-9)

at this rate of growing our cotted child of yester-
eve will soon fill space and burst in systems, so
speeds the instant! (p.429:11-13)

if I came any quicker I'll be right back before I
left (p.442:12-13 Notice the shift in tense)

Mark Time's Finist Joke. Putting Allspace in a
Not shall (p.455:29)

just in time as if he fell out of space (p.462:31)

something in his blisters was telling him all along
how he had been in that place one time (p.475:25-7)

The place where Ealdermann Fanagan? The time when Junkermann Funagin (p.503:08-10)

Will you swear all the same you saw their shadows a hundred foot later (p.518:03-4)

changed feet several times (p.518:16-17)

Of course I know you are a viry vikid girl to go in the dreemplace and at that time of the draym (p.527:04-6)

Verily! Verily! time, place! (p.546:24)

But really now whenabouts? Expatiate then how much times we live in. Yes? (p.555:03-4 'when' is used instead of 'where', and 'space' is the root of 'expatiate' which replaces 'extemporize')

Where are we at all? and whenabouts in the name of space? (p.558:33)

All in fact is soon as all of old right as anywas ever in very old place (p.586:20-1)

Much obliged. Time -o'-Thay! But wherth, o clerk? (p.599:03)

at the place and period under consideration (p.599:15)

Father Times and Mother Spacies boil their kettle with their crutch. (p.600:02-3)

It was allso agreenable in our sinegear clutchless touring the no placelike no timelike absolent (p.609:01-2 'absolent' has replaced 'absolute', which would have suggested that time and place are absolute)

Sometime then, somewhere there, I wrote me hopes and buried the page (p.624:03-4)

a last a loved a long the (p.628:15-16 'a last' normally would have been 'at last')

Naturally not all references to space or time in Finnegans Wake are dualistic; there are very many, likely thousands, of separate references either to space or time. But, unlike

anywhere else in Joyce's work, except the latter chapters of Ulysses as discussed earlier, in Finnegans Wake Joyce treats space and time dualistically in references inserted throughout the novel.

To the reader even slightly familiar with Einstein's Theory of Relativity the periodic recurrence of the dualistic space-time references serves as a continual reminder of the relativistic conception of space and time, or space-time, which Joyce has used in the novel. As Joyce was creating one of the very first novels based on a relativistic conception of space and time, he may have felt it necessary to remind the reader continually of the relativistic, and to the reader certainly new and unexpected, conception of space-time on which the work was based. The dualistic space-time references serve to remind the reader that he is not to expect a chronology or an exact description of a place or movement, that the novel is not located in a traditional Newtonian framework of space and time. Joyce's concern through most of Ulysses to keep the reader aware of the specific place and time of the action seems replaced in Finnegans Wake with an equal concern to keep the reader aware that the novel does not occur in specific and traditionally realistic places and at specific, sequential times. Joyce is concerned to remind his reader that his novel is based upon a relativistic physical reality. This latter concern is demonstrated and accomplished by the presence of the space-time dualistic refer-

ences throughout the text of Finnegans Wake.

The presence of a relativistic physical reality in Finnegans Wake sheds light on other often discussed aspects of the novel. The relativistic mutability of space and time coincides with philosophical concepts which appear in the novel, notably the "coincidence of contraries" concept of Giordano Bruno and Nicholas of Cusa. James Atherton notes that

Joyce uses this theory to strange effect in Finnegans Wake where, for example, an arguing pair like Butt and Taff can suddenly become 'one and the same person' (354:8) because they are 'equals of opposites... and polarised for reunion by the symphysis of their antipathies' (92:8).⁴⁵

The union of the opposite Butt and Taff does not appear quite so strange when compared with the relativistic principle of the union of space-time. The union of space-time suggests a clue to and typifies the nature of many of the other dualisms which also are united in some way in the novel. As the Theory of Relativity unites space and time in space-time, so the Browne-Nolan dualism has its union in the Dublin bookstore of Browne and Nolan and also in the name of Giordano Bruno of Nola. We are led to suspect that other dualisms such as the Butt-Taff or Shem-Shaun dualisms are to be seen as aspects of each other, as has been demonstrated by the Theory of Relativity in the case of space-time. The apparent and shifting sameness or oppositeness of the elements of the dualism may be only different aspects of the same relativistic reality.

The use of space and time as a dualism to serve as a re-

minder that Joyce's conception of reality is relativistic and to hint at the true unity of apparent opposites and the coincidence of contraries is perhaps only an introduction to the significance of Einstein's space-time in Finnegans Wake, but space and time certainly do not function as a traditional Newtonian framework of an external reality. This is indicated by the floundering attempts to find out the plot of Finnegans Wake,⁴⁶ the sense of non-structure which mystifies many critics, the attempt by critics to impose the Viconian or other structural models as a controlling design upon so all-encompassing and diverse a text and the insufficiency of geometric structural interpretations of circles intersecting circles or ellipses.⁴⁷ If the relativistic use of space-time does at all hint at a structure within Finnegans Wake, then perhaps the structure of Finnegans Wake is similar to that which Joyce appears to have adopted in the final chapters of Ulysses, a structure of many different interwoven relationships between characters, which in Finnegans Wake embrace all space and time. In Finnegans Wake the concept of space-time is just one of the many relationships, special only in the sense that understanding the nature of the new space-time interrelationship, because of the novel's previous reliance on a traditional use of space and time, yields an understanding of the nature of other interrelationships in Finnegans Wake. Perhaps in the absence of an Absolute framework of external reality, Joyce felt that this was the only type

of structure that could exist. If so then the purpose of space-time in Finnegans Wake is to reveal the relativistic reality of relatedness. The bulk of critical work on Finnegans Wake appears to have moved in this, admittedly very general, direction. The study of structural influences⁴⁸ and especially the examination of correspondences and motifs⁴⁹ are aspects of this search for relatedness, in which every reader of Finnegans Wake finds himself participating. As one reads and rereads Finnegans Wake, the discovery that the maze is not a maze but an intricate network of relationships yields considerable delight.

1. Clive Hart, Structure and Motif in "Finnegans Wake", (London; Faber & Faber, 1962).
2. Ibid., p.64.
3. Ibid., p. 65-6.
4. See the listing under "Einstein, Albert" in Adaline Gla-sheen, A Second Census of "Finnegans Wake", (Northwestern Univ. Press, 1963), p.73.
5. James Joyce, Finnegans Wake, (New York; The Viking Press, 1968), p.149:28.
6. Ibid., p.152:18.
7. James Joyce, A Portrait of the Artist as a Young Man, p.7.
8. James Joyce, Finnegans Wake, p.293:14.
9. Ibid., p.293:26-8.
10. Ibid., p.305:06.
11. Ibid., p.543:24-5.
12. Ibid., p.100:35.
13. Joesph Campbell and Henry Morton Robinson, A Skeleton Key to "Finnegans Wake", (New York; Harcourt, Brace & Co., 1944), p.94, note 27.
14. Samuel Beckett et al, Our Exagmination Round his Factifi-cation for Incamination of Work in Progress, (London; Faber & Faber, 1972).
15. Bernard Benstock, Joyce-Again's Wake, (Seattle; Univ. of Washington Press, 1965), p.3.
16. Letters of James Joyce, Stuart Gilbert, ed., p.283.
17. Sylvia Beach, "Introduction," Our Exagmination, p.viii.
18. Ibid., p.vii.
19. Ibid.
20. Marcel Brion, Our Exagmination, p.25.
21. Ibid., p.28.

22. Ibid., p.30.
23. Ibid., p.31.
24. Ibid., p.33.
25. Ibid.
26. Ibid.
27. Elliot Paul, "Mr. Joyce's Treatment of Plot," Our Exagmination, p.132.
28. Ibid.
29. Ibid.
30. Ibid., p.133.
31. Robert Sage, "Before Ulysses - and After," Our Exagmination, p.155-6.
32. Robert McAlmon, "Mr. Joyce Directs an Irish Word Ballet," Our Exagmination, p.105.
33. Ibid.
34. Ibid., p.107.
35. Ibid., p.108.
36. Ibid., p.111.
37. Eugene Jolas, "The Revolution of Language and James Joyce," Our Exagmination, p.79.
38. Ibid., p.89.
39. Ibid., p.91.
40. Thomas McGreevy, "The Catholic Element in Work in Progress," Our Exagmination, p.127.
41. Hermann Minkowski, in Martin Gardner, Relativity for the Million, p.100.
42. Lincoln Barnett, The Universe and Dr. Einstein, p.76.
43. Bertrand Russel, The ABC of Relativity, (London; Allen & Unwin Ltd., 1969), p.47.

44. James Joyce, Finnegans Wake. Page references are in parentheses after each quotation. Space and time references have been underlined.
45. James S. Atherton, The Books at the Wake, (New York; The Viking Press, 1960), p.36.
46. Bernard Benstock, Joyce'Again's Wake, p.37.
47. Clive Hart, Structure and Motif in "Finnegans Wake", p.95, p.117.
48. See James S. Atherton, The Books at the Wake.
49. See Clive Hart, Structure and Motif in "Finnegans Wake."

Summary

In his early work Joyce relied on the traditional Newtonian conception of space and time as a means of creating realism, just as all other novelists had since the eighteenth century. In his early novels Joyce adopted a realistic method in which space and time were used to achieve realistic particularization. His central purpose was to reveal the significance of everyday reality by turning moments of epiphany into literature. The traditional treatment of space and time in Dubliners served the purpose of achieving realistic particularization, of locating essentially timeless and spaceless epiphanies in a particularized reality. A Portrait of the Artist as a Young Man portrayed the development of consciousness, with the significant moments in the development of that consciousness treated much as Joyce had treated the epiphanies in Dubliners. In A Portrait of the Artist, as in Dubliners, space and time served to locate the events in the development of that consciousness within a particularized reality. Space and time functioned in A Portrait of the Artist to create realistic particularization.

As Ulysses developed, Joyce's use of space and time altered greatly, although his purpose was still to reveal the significance of common life. At the beginning of Ulysses Joyce felt it necessary to carefully particularize the exter-

nal reality surrounding his characters, through the use of space and time to create an external structural framework of reality for the novel. However, as Ulysses developed, Joyce began to experiment with the function of space and time. After 1919, when Einstein's Theory of Relativity destroyed man's faith in the traditional Newtonian conception of space and time, Joyce began to display a new freedom from the constraints of the use of space and time to achieve realistic particularization, although he continued to retain an external reality of space and time until the novel's conclusion.

In Finnegans Wake Joyce's conception and use of space and time became clearly relativistic. Joyce felt it important in Finnegans Wake to keep the reader aware that the relativistic reality of space-time had replaced the Newtonian framework of space and time. Joyce introduced the use of space-time dualistic references into the text of Finnegans Wake to serve this purpose. In this way the reader was reminded that the reality of space and time he was experiencing was not a traditional Newtonian reality but a relativistic reality.

It could justifiably be said that, as in Joyce's early novels, in Finnegans Wake Joyce remained true to a realistic method, but in Finnegans Wake it was a relativistic realism which was presented. A relativistic reality of freedom from the constraints of a traditional use of space and time was presented through Joyce's relativistic use of space and time

in Finnegans Wake. However, relativistic space-time did not serve an essential structural function in Finnegans Wake. Rather, the dualistic references to space-time in Finnegans Wake showed that space and time were less important in a relativistic reality than in a traditional realistic novel using a Newtonian conception of space and time. In Finnegans Wake the space-time dualism functioned as merely one type of relationship in the novel. Finnegans Wake was a maze of interrelationships in which space-time was only one relationship among many other relationships.

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