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Connection, Chance, and the Cosmos in *Ulysses*

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Throughout *Ulysses*, the wandering Leopold Bloom faces his role as an outsider, often not quite fitting in with his peers and struggling with his own identity of being both Irish and Jewish. Asked his definition of a nation, he replies, “A nation is the same people living in the same place” (12.1422-3). When everyone laughs at this response, he adds uncertainly, “Or also living in different places” (12.1428). Both definitions serve in describing his own identity, but his instinct to add to his original answer after his peers laugh at him demonstrates the hesitance Bloom has to define himself solely by his nationality. Bloom’s uncertain nature also appears in episode seventeen in a wordy question and answer. Joyce writes,

What, reduced to their simplest reciprocal form, were Bloom’s thoughts about Stephen’s thoughts about Bloom and about Stephen’s thoughts about Bloom’s thoughts about Stephen?

He thought that he thought that he was a jew whereas he knew that he knew that he knew that he was not. (17.527-31)

The roundabout nature of this question further illuminates Bloom’s hesitance to definitively label himself, as both the question and its response must be read closely before they can be comprehended.

The challenges of an incomplete identity further develop from the missing family relationships that both Bloom and Stephen Dedalus experience—Bloom with a son and Stephen with a father—which suggests a similarity between *Ulysses* and Homer’s *Odyssey* that goes beyond titles. In his *Ulysses*, Hugh Kenner addresses this as “The Search for a Father [that] has been a recurrent phrase in *Ulysses* criticism” (19) for many years. Though Stephen’s father is still alive and present in his life, he struggles with just how similar he and his father truly are, and whether or not they are consubstantial (3.49-50, 62). For Bloom, this missing connection arises from his identity as a sonless father, explaining early in the novel that his only son died

years ago: "...poor little Rudy wouldn't live...He would be eleven now if he had lived" (4.419-20).

Kenner's "The Search for a Father" (19) idea refers to the ways in which critics have likened Stephen to Telemachus and Bloom to Odysseus, which is true at least at a general level, as Stephen/Telemachus and Bloom/Odysseus are apart at the beginning of both works and come together at some point before the end. The key distinction between the father and son figures in the two texts stems from the fact that Bloom and Stephen are from different families and homes. Kenner goes on to state how Joyce presents the potentiality of a connection between *The Odyssey* and *Ulysses* besides through their similar titles:

Joyce himself while the book was in progress would invariably describe it to strangers in Homeric terms. 'I am now writing a book based on the wanderings of Ulysses,' he told Frank Budgen at their second meeting (summer 1918)...Later, if you were a critic struggling simultaneously with the queer book and with the need to describe it for readers who had not seen it, you would find the parallel more manageable than the text. Joyce, who knew the value of informed articles, prepared this famous *schemata* for just such contingencies. (22-3)

In implying a similarity to *The Odyssey* through his title and *schemata*, which contain episode titles suggesting further structural and thematic ties to Homer's epic, Joyce hints at the possibility that Bloom and Stephen's encounter holds great importance.

Joyce further suggests a grand significance in Stephen and Bloom's connection with abundant use of astronomy throughout the text. While Bloom faces difficulties in defining his identity, his eagerness towards the outer world of the cosmos and stargazing informs his sense of self and his worldview. In episode ten, M'Coy recounts a time when he once witnessed Bloom purchase an astronomy book: "I was with him one day and he bought a book...There were fine plates in it...the stars and the moon and comets with long tails. Astronomy it was all about" (10.525-8). This detail reminds Lenehan of a night when he was in a car with the Blooms,

blessed in his intimate proximity to Molly while her husband was too distracted to notice, “pointing out all the stars and the comets in the heavens” (10.567-8). These passages inform the reader of Bloom’s deep interest in astronomy and might aid in justifying the novel’s abundant cosmic references.

Additionally, not only is Bloom captivated by astronomy, but he also has a great deal of knowledge on the topic.¹ In episode seventeen, the reader discovers a list of complex meditations and observations he has pertaining to the sky, which include:

...of our solar system plunging towards the constellation of Hercules: of the parallax or parallactic drift of socalled fixed stars, in reality evermoving wanderers from immeasurably remote eons to infinitely remote futures in comparison with which the years, threescore and ten, of allotted human life formed a parenthesis of infinitesimal brevity. (17.1051-6)

This passage both demonstrates the depth of Bloom’s knowledge of space as well as illustrates how Bloom takes what he knows of astronomy and relates it to his understanding of the human experience. This provides ample reason to study the theme of astronomy and its abundance in *Ulysses*, as it does not cease to enthrall Bloom.

In their “Astronomical Allusions, Their Meaning and Purpose, in *Ulysses*,” Mark E. Littman and Charles A. Schweighauser note, “Joyce uses astronomical allusion...as a framework, like the *Odyssey* parallel, which further enlarges and universalizes the epic scope of the book” (238). In this way, the prominence of astronomy throughout *Ulysses* has the ability to

¹ By extension, Joyce too has a vast knowledge of astronomy. For example, in episode seventeen, he writes that Bloom and Stephen “both simultaneously observe” (17.1210) a shooting star cross the heavens (17.1211-3). According to Donald W. Olson and Marilyn S. Olson in their article “The June Lyrids and James Joyce’s *Ulysses*,” the shooting star that Joyce describes is part of the Lyrid meteor shower that occurs each June at the same time of night that Bloom and Stephen stand outside and view the phenomenon. The first “official” recorded observation of the Lyrids, however, did not occur until 1966 when Stan Dvorak saw the meteors while camping in California (Astronomer Giuseppe Zezioli provides an example of an earlier Lyrids sighting in 1869, but the shower was not officially recognized worldwide until 1966.). Though this does not mean that Joyce necessarily understood at the time that this shooting star was part of the Lyrid meteor shower, it does illuminate the preciseness with which he employs astronomical occurrences in *Ulysses*, as his shooting star travels the correct path at the correct time for a Lyrid meteor.

suggest whether Bloom and Stephen's relationship really is important. Joyce draws from astronomical phenomena in many ways throughout the novel, both formally and thematically: these connections to occurrences and principles such as double stars and parallax inform the reader of Bloom's sense of himself in the world and his relationship with Stephen, as well as illuminate the ways in which Joyce addresses whether the novel and the world it presents have meaning or if life is ruled by coincidence. Furthermore, with the theme of the cosmos, Joyce prompts the question of whether interpretations of Bloom and Stephen's connection, as well as the novel, actually hold significance or if they are solely results of the reader's mistaken perspective.



One of the astronomical topics Joyce heavily employs in *Ulysses* is that of binary star systems and optical doubles, which had been much-studied astronomical phenomena in centuries leading up to the writing of *Ulysses*. Continual advancements in telescopes and cosmic theories made this stellar topic important to science during the period in which Joyce wrote the novel.² Joyce uses astronomical language, Bloom's interest in the cosmos, and the dynamics of characters to suggest a relationship between Bloom and Stephen that has similarities with optical doubles and binary star systems.

In assessing the specific ways in which the dynamic between Bloom and Stephen relates to these star systems, it is integral to understand the defining qualities and differences between binary and double stars, as well as how nineteenth-century astronomers studied them. The general term for two stars that appear (and possibly are) close together in the sky is a double star.

² These astronomical developments were an important aspect of Irish culture in particular. According to Juliana Adelman in her article "The Grubbs: 19th-century Irish stargazers," Sir Howard Grubb, Parsons and Co, a telescope company that contributed significant technological advancements to the field, operated just outside of Dublin between 1826 and 1985 and built telescopes for observatories around the world.

There are two main types of double stars: optical doubles and physical doubles. Optical doubles are pairs of stars that have no direct relation to each other but appear close together solely due to the angle at which they are viewed, while physical doubles are binary stars, two stars that *are* actually close together and orbit around a common center of mass.

Joyce lists Robert Ball's *The Story of the Heavens* as one of the books on Bloom's bookshelf (17.1373), providing a context for Bloom's understanding of astronomy along with a history of astronomical discoveries relating to double stars. In this book, Ball lists Giovanni Cassini and William Herschel as two important astronomers who made significant discoveries in the field of double stars in the seventeenth and eighteenth centuries. In 1678, Cassini was one of the first astronomers to observe that some points of light that appeared to be single stars were actually comprised of two or more points of light. Later in the century, Herschel discovered hundreds of double stars and played an integral role in the scientific understanding of these systems. Though astronomers had, by this time, observed many instances of two stars that were close together from their vantage points, Ball mentions that it was not until Herschel measured the distances between the cosmic bodies in double star systems that astronomers began to understand the relationship that exists between a number of these double stars. Ball states,

When, in the course of years, his observations were repeated, Herschel found that in some cases the relative position of the stars had changed. He was thus led to the discovery that in many of the double stars the components are so related that they revolve around each other...It had been imagined that the proximity of the two stars forming a double must be only accidental. It was thought that amid the vast host of stars in the heavens it not unfrequently happened that one star was so nearly behind another (as seen from the earth) that when the two were viewed in the telescope they produced the effect of a double star. No doubt many of the so-called double stars are produced in this way. Herschel's discovery shows that this explanation will not always answer, but that in many cases we really have two stars close together, and physically connected. (394)

This passage illuminates the surprise brought by the discovery of an actual, physical relation between some double stars. Before Herschel found evidence of a connection between some of

these stellar systems, many astronomers assumed that the apparent proximity of various stars was mere chance and mainly determined by their vantage points from earth. However, once Herschel discovered what would come to be known as binary stars, a new field of study developed in which astronomers knew enough to observe double stars and determine whether they were simply optical doubles or actually binary stars.

Not only does Ball's description of Herschel's discoveries illuminate the series of advancements made in the study of double stars, it also provides an example of the types of texts that inform Bloom's knowledge of astronomy. As mentioned above, Robert Ball's *The Story of the Heavens* sits on Bloom's bookshelf, which the reader glimpses in episode seventeen.

Additionally, Bloom mentions the astronomer and his book in episode eight as he ponders parallax, remarking, "Fascinating little book that is of sir Robert Ball's" (8.110), and again in episode fifteen as he imagines Ball and his wife as his own friends: "I was just chatting this afternoon at the viceregal lodge to my old pals, sir Robert and lady Ball, astronomer royal" (15.1010-1). These instances, particularly in the dream-like state of episode fifteen, suggest the astronomer's definite presence in Bloom's mind throughout the day, and provide context for the various other astronomical references and language present in *Ulysses*.³

As he figures Bloom and Stephen's relationship in astronomical terms, Joyce is aware of the optical illusions present in the study of double stars. He utilizes this ambiguity to question the nature and significance of their connection, placing abundant language of chance and coincidence into the minds of Bloom and Stephen. Though the two men do not spend a significant amount of time together until the second half of the novel, Joyce's language suggests the theme of pairs, which alludes to the concept of double stars and binaries. For example, the

³ In implying that Bloom has read Ball's book, which assumes he has specifically read the chapter on double stars, Joyce also presents the question of whether Bloom himself sees any parallels between his connection to Stephen and double stars (optical and/or binary) or if the author implies this connection separate from Bloom's own thoughts.

word “double” appears many times in various contexts. Early in the day, Bloom walks through the city on his way to buy breakfast and the word “double” appears twice in his mind: “Doing a double shuffle with the town travellers...Ahbeesee defeegee kelomen opeecue rustyouvee doubleyou” (4.132-3, 137-8). In episode seven, Lenehan’s limerick also contains an instance of “double” with the phrase “*As he mostly sees double*” (7.580). Though seemingly unrelated to astronomy and double stars, these various mentions of the word “double” throughout the novel keep it in the reader’s mind and lay the foundation for the cosmic significance that the word carries once astronomical concepts become more evident.

Often, the usage of the word “double” in *Ulysses* denotes two beings or two parts of one being, which connects to the concept of the two individual stars that together make up one binary star. In episode eight, the word appears in describing Mrs Purefoy and her child during her seemingly endless labor: “Doubled up inside her trying to butt its way out blindly” (8.375-6), an instance of one form becoming two. Additionally, according to Don Gifford in his *Ulysses Annotated*, in the “Cyclops” episode, the narrator’s mention of an “etheric double” (12.341) refers to “the two bodies, once fused, [that] shape the limits within which the human being as a conscious entity will have to live and work” (330). In episode fifteen, Bloom mentions what the reader may assume as the alternate name, Henry Flower, that he has taken on in letters to Martha, as “my brother Henry. He is my double” (15.1769-70). This instance suggests Bloom as the owner of two identities—Henry Flower and Leopold Bloom—that together form a whole. Just as thoughts of Robert Ball seem to inhabit Bloom’s mind throughout the course of the day, Joyce employs these various uses of the word “double” to deploy themes of doubleness in the reader’s mind even before Bloom and Stephen physically come together.

As Stephen and Bloom spend time together in episode seventeen, the continual references to doubles and pairs in Joyce's language bind the two characters together in a type of double star system. Though the question "Did [Bloom] see only a second coincidence in the second scene narrated to him, described by the narrator as *A Pisgah Sight of Palestine* or *The Parable of the Plums?*" (17.639-41) does not contain the word "double," Ball mentions coincidences in *The Story of the Heavens* as he describes how astronomers originally thought that double stars were accidental cosmic occurrences. The concept of accidents, as well as that of pairs, echoes in this passage with the phrases "second coincidence" and "second scene," further solidifying the presence of doubles in the novel. Another mention of doubles occurs in explicitly describing Bloom and Stephen, "emerg[ing] silently, doubly dark, from obscurity by a passage from the rere of the house into the penumbra of the garden" (17.1037-8), which further suggests cosmic concepts with the term "penumbra" that is traditionally used to describe the shadows of astronomical bodies. Here Stephen and Bloom are bound together as a double in their similarly dark appearances. The term "doubly dark" also suggests an even greater darkness about them as a pair than they have as individuals.

Though the abundance of double language throughout the novel (and particularly during Bloom and Stephen's extended encounter in episode seventeen) may further point to a binary star as the model for their relationship, this may only appear to be the case due to the reader's limited glimpse—just one day—into Bloom's and Stephen's lives. After all, unlike Homer's Odysseus and Telemachus, the two are not actually father and son, and have only met two times (17.466-7) before June 16, 1904. However, with the prominence of language that suggests double stars, Joyce does appear to hint that these cosmic pairings inform the nature and significance of

Stephen and Bloom's relationship. As David Chinitz writes in his "All the Dishevelled Wandering Stars: Astronomical Symbolism in 'Ithaca,'"

The stars have gradually come to embody the narrative technique itself. They have shone dimly in the novel a few times before, each time prefiguring the dialectic of 'Ithaca'; and now, finally making their spectacular appearance, they serve as a significant vehicle of commentary...on the relationship between the two protagonists. (432)

As astronomical concepts gain prominence when Bloom and Stephen spend time together in episode seventeen, the theme of double stars also suggests that determining what type of stellar system their relationship most closely represents will begin to uncover the nature of the world that the novel presents. In theory, a relationship that echoes a binary star system is one in which the two members, even if they are very different individuals, are bound together and affect one another. By no means are the two stars in binaries necessarily identical. Ball employs the example of the star Sirius and its companion to demonstrate this point, as "There is a remarkable contrast between the brilliancy of Sirius and his companion" (389), Sirius being incredibly intrinsically bright and its companion comparatively much fainter. Like Sirius and its companion, Stephen and Bloom are different in many ways, which they demonstrate, for example, with their dissimilar thoughts even while the two "doubly dark" (17.1037) figures are both urinating, "their sides contiguous, their organs of micturition reciprocally rendered invisible by manual circumposition, their gazes, first Bloom's, then Stephen's, elevated to the projected luminous and semiluminous shadow" (17.1187-90):

To Bloom: the problems of irritability, tumescence, rigidity, reactivity, dimension, sanitariness, pilosity.

To Stephen: the problem of the sacerdotal integrity of Jesus circumcised...and the problem as to whether the divine prepuce, the carnal bridal ring of the holy Roman catholic apostolic church, conserved in Calcata, were deserving of simply hyperduly or of the fourth degree of latria accorded to the abscission of such divine excrescences as hair and toenails. (17.1201-3, 17.1205-9)

Here, the two are suggestive of doubles in their identical, simultaneous actions, while at the same time differing in the nature of their thoughts. With the model of a stellar binary, however, these differences are accepted—the two characters can still be bound together even in their dissimilarity, just as two stars of different masses, compositions, and luminosities can be bound together in a binary star system based on the common center of mass around which they orbit.

Joyce uses this language of simultaneous similarity and difference abundantly in episode seventeen. As Bloom mentally compares Milly and his cat, Joyce poses the question, “Why similarly, why differently?...In other respects were their differences similar?” (17.889, 17.893). Additionally, Joyce describes Stephen’s and Bloom’s final separation in terms of both togetherness (similarity) and separateness (dissimilarity): “What sound accompanied the union of their tangent, the disunion of their (respectively) centrifugal and centripetal hands?” (17.1224-5). This parting image of the two characters together highlights the fact that there has been a union between the two, but it is certainly not because they are identical beings. Joyce further illuminates their dissimilarities in listing their different interpretations of the bell chime the two hear when saying goodbye:

What echoes of that sound were by both and each heard?

By Stephen:

*Liliata rutilantium. Turma circumdet.
Iubilantium te virginum. Chorus excipiat.*

By Bloom:

*Heigho, heigho,
Heigho, heigho. (17.1228-34)*

That Joyce concludes the day’s connection between Stephen and Bloom with these two incredibly different interpretations of the bell chime suggests that though their paths may appear intertwined on June 16, 1904, it is simply an illusion that they are bound together. The

connection between them is not that of Odysseus and Telemachus in Homer's epic, but rather it is that of two passing strangers whose courses briefly intersect. This is an instance of temporary togetherness that, in this aspect, might more closely resemble an optical double.

Despite their differences, Bloom and Stephen share details of their lives that are equivalent to a binary star system's common center of mass, also called a barycenter. For example, the two make up a "premeditatedly (respectively) and inadvertently, keyless couple" (17.80-1), both having left their keys behind as they set off for the day that morning. Then in episode fifteen, Bloom and Stephen admit to scarred and injured hands:

BLOOM

(points to his hand) That weal there is an accident. Fell and cut it twentytwo years ago...

...STEPHEN...

...*(he winces)* Hurt my hand somewhere. (15.3712-4, 15.3717, 15.3720-1)

This passage, particularly Stephen's lack of context for his hurting hand that immediately follows Bloom observation of an old wound on his own hand, further binds the two in physical likeness (like father and son). Additionally, though the particular content of their thoughts differs, the two both experience a temporary shift in mood when "a matutinal cloud (perceived by both from two different points of observation...)" (17.40-1) passes overhead, suggesting that Stephen and Bloom are bound together in that they both react to similar elements of the natural world around them.

Another key aspect of stellar binaries to consider when examining the connection between Stephen and Bloom is the ways in which an individual star within the binary can, at times, have a great affect on its companion star. In his article "A Short History and Other Stories of Binary Stars," V. Niemela states,

The evolution of binary stars is more complex than that of single stars. When a component of a binary system begins to evolve, complicated interactions between the components take place. In addition, at the massive end of the early type stars, their

powerful stellar winds whirl around and collide with the neighbours. Therefore, whenever a star has been observed to behave oddly, it is suspect of belonging to a binary system. (26)

Extraordinary phenomena sometimes occur to stars because they are in a binary, Niemela explains. These events can happen, for example, when one of the stars in a binary leaves the main sequence, meaning that it has stopped fusing elements in its core and moved on to the next stage of its "life" by expanding into a red giant. Depending on the proximity of the stars in the binary, when one of the celestial bodies leaves the main sequence and forms a red giant, it may spill some of its exploding material onto the other star in the binary, changing this second star's composition. This is to say that in describing Stephen and Bloom's relationship in terms of a binary star system, there is likely an unusual change in one or both characters' lives that would not have taken place had their lives not become intertwined.

Joyce makes evident the ways in which Stephen's presence affects Bloom: as this sonless father cannot help but think of his deceased son Rudolph throughout the day, his interactions with Stephen aid in bringing out parental aspects of his character that alter the course of his day. For example, Bloom's parental feelings towards Stephen are so strong that in episode fifteen, he follows him for reasons that are not apparent to him, asking at one point "What am I following him for?" (15.639-40). As Bloom questions his actions, Joyce highlights that the character's day would have differed had he not encountered Stephen: Stephen's presence draws Bloom in like the barycenter that binds binary stars to each other.

Bloom also affects the course of Stephen's day, as he presumably would not have ended up at 7 Eccles Street in episode seventeen if the two had not run into each other. Littman and Schweighauser assert that this episode brings "the climax of the paternity theme, written in the heavens" (242), as Bloom and Stephen simultaneously view a shooting star that "precipitate[s]

with great apparent velocity across the firmament from Vega in the Lyre...towards the zodiacal sign of Leo” (17.1211-3). According to Littman and Schweighauser,

The Lyre is of course to be associated with Stephen the bard, Leo (the Lion) is of course Leopold Bloom...What does this sign mean? Obviously it means that a spiritual contact has been established between the two men...Bloom’s search for a lost son and Stephen’s quest for a father resolve under astronomical signs. (242-3)

In this way, the passage from *Ulysses* provides an actual, physical occurrence to suggest a connection—mapped out by the path of a shooting star—between Bloom and Stephen.

Furthermore, Littman and Schweighauser appear to suggest that the pair’s qualities modeling a relationship between a father and son are more significant because they are represented in reference to the grand scale of the cosmos.

In these aspects, Stephen and Bloom’s connection is certainly comparable to a stellar binary. However, centuries before Joyce wrote *Ulysses*, astronomers were already aware of the existence of the great multitude of double stars in space, which questions just how much meaning can be placed on the binary-like connection between Stephen and Bloom (as well as whether the path of a “simultaneously observed” (17.1210) shooting star holds actual significance or if it is an instance of mistaken perception). In *The Story of the Heavens*, Ball notes, “The sidereal heavens contain few more interesting objects for the telescope than can be found in the numerous class of double stars. They are to be counted in thousands; indeed, *many* thousands” (393). Joyce was surely aware of the commonness of double star systems, as well as the fact that though they are common, they yield unique occurrences in their gravitational bond. The simultaneous qualities of commonness and uniqueness suggest that Bloom and Stephen’s relationship can be both meaningful and meaningless in the grander scheme of their lives.



Again, Bloom and Stephen are not actually father and son like Odysseus and Telemachus in Homer's *Odyssey*. Therefore, whether Stephen and Bloom's connection more closely mirrors an optical double or a binary star is partially up to the reader's interpretation. Interpretation and perception are, placed in astronomical terms, concepts that Joyce explores both thematically and formally through his use of parallax in the text. In the field of astronomy, trigonometric parallax solves the distance from a (seemingly) fixed object, like a star, to another point that moves over time, like the viewer on a spinning earth. To find an accurate answer, one must record distances calculated from multiple locations of the moving body. According to Robert Ball in *The Story of the Heavens*, Friedrich Bessel was the first to successfully use parallax to calculate the distance of a star in 1840 (406).

Bloom performs a simple version of parallax multiple times in *Ulysses* by holding his finger out in front of him and covering the sun, demonstrating that the principle floats through his mind throughout the novel. The first instance of this occurs in episode eight: "He faced about and, standing between the awnings, held out his right hand at arm's length towards the sun. Wanted to try that often. Yes: completely. The tip of his little finger blotted out the sun's disk" (8.564-7). In this passage, he reflects that he often wishes to demonstrate parallax, illuminating that it is indeed a principle that runs through his mind regularly. He further demonstrates this when he briefly performs parallax in his dream-like state in episode fifteen as he "*eclipses the sun by extending his little finger*" (15.1850-1).

For Bloom, though the above passages exemplify that he does have a basic understanding of how to perform parallax, the principle is inseparable from the concept of time, as the first mention of parallax in *Ulysses* stems directly out of his thoughts of standardized time: "After one. Timeball on the ballastoffice is down. Dunsink time. Fascinating little book that is of sir

Robert Ball's Parallax. I never exactly understood" (8.108-11).⁴ Bloom's thought progression from time to parallax, which is an equation that traditionally uses physical position as the distance variable, is significant, as it both establishes time as a distance variable, as well as demonstrates the fact that time and position are interchangeable variables throughout the novel, particularly when addressing parallax. In this sense, it is true that Bloom "never exactly underst[ands]" (8.111) the principle in an astronomical sense.

Throughout the novel, Joyce continues to employ time as a distance variable when mentioning and alluding to parallax, which he does in order to define Bloom's sense of self and of the unpreventable passing of time. In episode eight, just after Bloom first ponders Robert Ball and parallax, he thinks simply, "Happy. Happier then" (8.170). Soon after, he returns to this thought in more detail: "I was happier then. Or was that I? Or am I now I?" (8.608). As Bloom asks himself when, exactly, he is (or was, or will be) his truest, happiest self, he attempts to solve a parallax equation in which the distance variable is time within his own lifetime. He continues this thought with a distant memory of him and Molly, remarking, "Twentyeight I was. She twentythree. When we left Lombard street west something changed...Can't bring back time. Like holding water in your hand. Would you go back to then? Just beginning then. Would you? Are you not happy in your home...?" (8.608-12). Here Bloom recognizes that his life has changed with time, as well as the fact that his fond memories are locked in an unattainable past to which time forbids he return. Though he ponders whether he would go back to those halcyon days if he could, he understands that his answer does not matter much because he is stuck in the present.

⁴ Dunsink time, or Dublin Mean Time, is so named after the Dunsink Observatory near Dublin, which was, as Gifford states in *Ulysses Annotated*, "the most reliable public timepiece in [Dublin]" (160). Twenty-five minutes behind Greenwich Mean Time, Dunsink time was the official time in Ireland from 1880 to 1916.

Bloom's thoughts of parallax and passing time blur and confuse his sense of self, causing him to question the possibilities still available to his present self as well as address the lack of clear definition between his youth and old age. Joyce illustrates this in episode eleven as Bloom listens to Ben Dollard sing and thinks,

All gone. All fallen...Last of his name and race.
I too. Last of my race. Milly young student. Well, my fault perhaps. No son.
Rudy. Too late now. Or if not? If not? If still?
He bore no hate.
Hate. Love. Those are names. Rudy. Soon I am old.
Big Ben his voice unfolded. Great voice Richie Goulding said...to Bloom soon old. But when was young? (11.1063-71)

Time weighs heavily over Bloom's mind in this passage, evident not only from his repeated thoughts of aging and time left to procreate, but also with Ben Dollard's time-inspired nickname. The ceaseless passing of time troubles Bloom as he remarks "Too late now" (11.1066) but still wistfully wonders at the possibility that he still might have enough time to father a son. His sense of how much time has passed versus how much time he has left in his future blurs and gains a sense of urgency as he considers that he is the last male of his lineage.

At times, Joyce combines ideas of parallax with those of double stars and language of repetition in order to further confuse Bloom's sense of self and the nature of time.⁵ These instances usually address a duality in the nature of time that causes history to repeat, but never in the exact same way. This follows Bloom's troubles concerning parallax and time, as he repeatedly questions what is still possible in his lifetime, along with his inability to return to a time that exactly matches one in his past. Joyce illustrates this as Bloom continues to ponder aging after Gerty leaves the beach in episode thirteen, thinking,

⁵ Doubles were also present during the process of establishing standardized time. In his book *The Culture of Time & Space, 1880-1918*, Stephen Kern states that in the United States, "The day the railroads imposed a uniform time, November 18, 1883, was called 'the day of two noons,' because at mid-day clocks had to be set back in the eastern part of each zone" (12).

The year returns. History repeats itself. Ye crags and peaks I'm with you once again... She kissed me. Never again. My youth. Only once it comes. Or hers. Take the train there tomorrow. No. Returning not the same. Like kids your second visit to a house... Are you not happy in your?... So it returns. Think you're escaping and run into yourself. Longest way round is the shortest way home... All changed. Forgotten. The young are old. (13.1092-3, 13.1102-5, 13.1109-11, 13.1115-6)

In this excerpt, Bloom's past language referring to parallax resurfaces as he remarks how everything changes over time, noting the unrepeatable nature of youth. However, Joyce adds the element of doubling and returning that echoes language pertaining to double star systems, complicating Bloom's understanding of time. This idea appears with Bloom's thoughts of history's tendency to repeat itself, along with the recurring thought that he might not be happy at present. Bloom's remark that "Returning [is] not the same" (13.1103-4) merges Joyce's language of repetition with the idea of a parallax of varying selves over time, as Bloom acknowledges that though he is able to return to a state similar to one in the past, it will never be the same.

Joyce further joins the language of repetition with the idea of a parallax of multiple selves over time by allowing Bloom and Stephen similar thoughts on the topics in neighboring episodes. In episode eight, Bloom uses abundant repetition of words to conjure a fond memory with his wife:

Stuck on the pane two flies buzzed, stuck...

... Seems to a secret touch telling me memory. Touched his sense moistened remembered. Hidden under wild ferns on Howth below us bay sleeping: sky... The sky... her hand touched me, caressed... Ravished over her I lay, full lips full open, kissed her mouth. Yum. Softly she gave me in my mouth the seedcake warm and chewed. Mawkish pulp her mouth had mumbled sweetsour of her spittle. Joy: I ate it: joy. Young life, her lips that gave me pouting. Soft warm sticky gumjelly lips. Flowers her eyes were, take me, willing eyes... Wildly I lay on her, kissed her: eyes, her lips... She kissed me. I was kissed... Kissed, she kissed me.

Me. And me now.

Stuck, the flies buzzed. (8.896, 8.898-900, 8.905-10, 8.913, 8.915-8)

Doubleness bookends this passage, as it both starts and ends with two stuck, buzzing flies, illuminating the importance of this memory to Bloom. Joyce uses pairs of repeated words many

times throughout this section, which, along with the memory's depiction of a moment of intimate contact between the two Blooms, recalls the bound nature of binary star systems. However, the two concluding lines act as a reminder that this pleasant memory is stuck in the past, and there is a distinct distance between the past Bloom of this memory and the present Bloom of June 16, 1904.

In episode nine, Stephen echoes the memory Bloom presents in the previous episode as he ponders a debt to his peer leftover from months ago. Stephen remarks,

Wait. Five months. Molecules all change. I am other I now. Other I got pound.
Buzz. Buzz.
But I, entelechy, form of forms, am I by memory because under everchanging forms...
...I, I and I. I. (9.205-9, 9.212)

In this section, Stephen addresses many concepts that Bloom links to parallax. First, like Bloom, Stephen's sense of parallax (though he does not acknowledge the principle by name) also deals with time as the distance variable. In noting the nature of molecules to change, Stephen acknowledges that he changes as time passes. His thoughts are linked to Bloom's in episode eight with the inclusion of a double fly buzz, which Joyce seems to employ primarily to connect Bloom and Stephen as a type of binary star system. After all, it is only through Bloom's repeated thoughts of parallax that the excerpt of Stephen's thoughts above implies another instance of astronomical parallax. The end of the passage, however, fights against Bloom's notions that pair parallax with a group of disparate selves. When Stephen thinks, "But I, entelechy, form of forms, am I by memory because under everchanging forms" (9.208-9), he implies that his true self is defined by the continuous change in self over time. Both Stephen and Bloom develop valid understandings of parallax—Bloom's concept of identity over time is a series of separate selves, while Stephen's is a continuous change over time in which the self is present at all times past, present, and future—but the fact that they differ in their fundamental understandings of identity

places a sense of doubt over whether the two characters can truly constitute the human equivalent of a binary star. Specifically, the characters' two separate senses of themselves in their world might differ enough to debunk the notion of a common center of mass that binds them. While Bloom's memory ends in his defining the difference between past and present selves ("Me. And me now" (8.917)), Stephen ends his parallel thought with selves that are both different and the same, as they are all "I:" "I, I and I. I" (9.213).

Stephen's thoughts continue to touch on his concept of parallax, further clarifying that the principle to him means a continuation of true self in past, present, and future. While acknowledging a change in substance and the molecules of which he is composed, he recognizes self-identity as a constant. He states,

...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 unloving son looks forth. In the intense instant of imagination, when the mind, Shelley says, is a fading 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. (9.379-85)

Again, Stephen perceives a fluid sense of time in which a true sense of self carries from the past into the present and future.

Stephen further develops this idea of the true self's constancy in terms of encounters, remarking, "Every life is many days, day after day. We walk through ourselves, meeting robbers, ghosts, giants, old men, young men, wives, widows, brothers-in-love, but always meeting ourselves" (9.1044-6). This excerpt both continues his ideas of self-identity and exemplifies a connected theme of chance encounters. Stephen notes that one will always encounter the self, whereas meeting other entities occurs by chance. The first such chance meeting he lists is that of robbers, which echoes Bloom's thoughts as he leaves home in the morning: "Wander through awned streets... Might meet a robber or two. Well, meet him" (4.88, 4.91-2).

The theme of chance encounters contradicts Joyce's abundant astronomical language suggesting a significant, lasting connection between Bloom and Stephen that is reminiscent of a binary, while echoing astronomers' original beliefs that the occurrence of double stars in the cosmos is due to mere coincidence. The repeated instances of individuals that coincidentally meet suggest that if, together, Bloom and Stephen do resemble a stellar binary, then this is a temporary, arbitrary illusion or pairing that will pass. Joyce employs language of chance encounters many times, like when Bloom remarks, "Wonder if I'll meet [Boylan] today" (4.215-6), as well as when Bloom acknowledges the chance in seeing someone twice on the street: "And there he is too. Now that's really a coincidence: second time. Coming events cast their shadows before" (8.525-6).

Bloom further addresses the theme of chance encounters in reference to his day's journey with Stephen, which leads to the conclusion that instances of connection such as this, resembling binary stars with their common center of mass, are fleeting. Here, Bloom addresses the reason behind his following Stephen:

...[Bloom] felt it was his interest and duty even to wait on and profit by the unlookedfor occasion though why he could not exactly tell being as it was already several shillings to the bad having in fact let himself in for it. Still to cultivate the acquaintance of someone of no uncommon calibre who could provide food for reflection would amply repay any small. Intellectual stimulation, as such, was, he felt, from time to time a first-rate tonic for the mind. Added to which was the coincidence of meeting, discussion, dance, row, old salt of the here today and gone tomorrow type, night loafers, the whole galaxy of events, all went to make up a miniature cameo of the world we live in. (16.1216-25)

Bloom's acknowledgement that the "coincidence of meeting" (16.1222-3) is an example of "the here today and gone tomorrow" (16.1223-4) demonstrates that, even if he wishes that his connection with Stephen lasts, he is aware of the temporary nature of their togetherness.

Ball notes that "[double stars] are to be counted in thousands; indeed, *many* thousands" (393), so these transient instances of chance encounter and connection occur abundantly in life.

Strung together, they comprise what Joyce, in episode sixteen, calls a “whole galaxy of events...mak[ing] up a miniature cameo of the world we live in” (16.1224-5). In this passage, Bloom acknowledges that chance encounters, such as his with Stephen, both occur often enough and are significant enough that, at least in his mind, they shape a miniature model of the world and of life. His use of the word “galaxy” in relation to these encounters further grounds his temporary connection with Stephen in the larger scheme of the cosmos, hinting at the fact that even a small encounter occurring within a single day can indeed add a sense of purpose or meaning to life. Whether Bloom and Stephen will meet again is not important: rather, the importance lies in the occurrence of this encounter, even in its brevity. Bloom understands “the painful character of the ultimate function of separate existence” (17.997-8), or the fact that it is man’s nature to be alone and inhabit a “separate existence” in life. These moments of chance encounters, though brief blips in the grand scheme of life and the universe, suspend the reality of man’s separateness and allow him to interpret meaning in the world around him through encounters with others. In this way, in *Ulysses*, Joyce creates foundations for perceiving significance—moments of intimate, potentially intellectually stimulating connection between two people, along with notions of discovering and defining a true self over time—in Bloom and Stephen’s encounter on June 16, 1904, presenting a world in which meaning stems from unpredictable coincidence that is bound to happen. Joyce suggests that the chance encounters that occur in everyday life, such as that between Bloom and Stephen, gain meaning only when acknowledged and interpreted by humans.

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