

Einstein's New Physics in James Joyce's *Finnegans Wake*:
The Role of Irish Nationalism

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Introduction

“Joyce’s fictional method does not presume that the artist has any supernatural power, but that he has an insight into the methods and motivations of the universe.”

– Richard Ellman

The origins of this thesis began in a physics classroom. As physicist Berndt Mueller lectured my small seminar on the basic principles of relativity, he briefly mentioned how Einstein's theories shaped the works of James Joyce. My interest piqued, I questioned him. How exactly was the complicated language of theoretical physics translated into a work of fiction meant for people with no previous laboratorial experience? Einstein, he said, revolutionized the way scientists thought about physical reality, as his theories launched new studies into relativity and quantum mechanics. It was only too interesting for artists not to notice. Struck by this exciting cross-curricular relationship I began to consider it from a historical perspective. Was there something complicating this relationship beyond a simple transmission of ideas? Did historical events play a role? Was there something particular about the turbulent time period in which Joyce was writing that made him susceptible to new physics? With this thesis I explore how Irish nationalism in the 1920s and 1930s facilitated Joyce's use of relativity theory and quantum mechanics in *Finnegans Wake*.

In previous centuries imaginations were ignited by scientific advancement. Inspired by astronomical developments, probed to questioning by the discovery of new worlds, and excited by technological advances that asserted humanity's authority over nature, there is a long-standing tradition of science acting as muse for innumerable literary endeavors. This relationship held true for James Joyce as he was creating *Finnegans Wake* from 1923 to 1939. However, scholarship that connects 20th century literary production and the rapidly advancing science based on Einstein's groundbreaking work, first published in 1905, is not as developed as that of previous centuries. Also, while Joycean scholarship abounds, Joyce's precise exposure to the highly creative science of Einstein is often only briefly discussed or altogether absent. Thus,

a unique challenge presents itself. In *Finnegans Wake* Joyce problematizes time and temporal sequence yet he does this independently of his response to the nationalist question. While the two experiments in both political commentary and Einsteinian physics may not have been consciously linked, the aim of this thesis is to provide a new voice in exploring the use of relativity and quantum theory within Joyce's national narrative. To trace the role historical events played in the transference from laboratory to bookshelf, it is first necessary to explore Joyce's precise attitude towards the movement that held his attention the most: Irish nationalism.

Joyce willingly left his Irish homeland at the age of 22, never to live in his native country again. Although he maintained a 'self-imposed exile' the rest of his life, he remained fiercely involved in the political progress of his countrymen. Throughout the years he wrote *Finnegans Wake* Joyce's preferred readings were newspapers and periodicals from the Irish press and his notes and personal essays convey an innate sense of patriotism. But Joyce's loyalty to his homeland was not without its caveats. Ireland had long struggled for political autonomy against English colonizers. The Irish War of Independence from 1919 to 1921 and subsequent Irish Civil War from 1922 to 1923 were the culmination of British suppression of the Irish. The *Finnegans Wake Notebooks*, published by the University of Buffalo, as well as commentary from the wide canon of Joycean scholars, demonstrate that Joyce was in ideological conflict with the Irish Cultural Revival. The revivalists were a group of patriots who thought the way to Irish political salvation was through the glorification of the golden eras of the Irish history and the reinstatement of Irish as the national language. Joyce did not agree. The way he navigates both his own intense nationalism in juxtaposition to the flawed ideology of the revivalists is a central theme of *Finnegans Wake*.

Joyce critiqued the revivalists from abroad, away from the epicenter of revivalism. Joyce composed *Finnegans Wake* in Paris from 1923-1939 surrounded by a school of writers that adhered to the deconstructionist tenets of modernism. It was this environment that ultimately influenced the precise way Joyce combated the flawed revivalist ideology. Modernism is a complex and often contradictory movement and I have no intention of surveying it in its entirety, but I do wish to focus on the aspects most relevant to Joyce's *Finnegans Wake*. I focus on Joyce's and his close friends' particular experience as well as how the artistic goals of modernism in many ways parallels contemporaneous scientific breakthroughs. My goal is to provide the necessary artistic context that supported both the deconstruction of time and the deconstruction of Irish history in *Finnegans Wake*.

Once Joyce's unique political temperament is understood, the next step is to tease out Joyce's understanding of new physics. Joyce began writing *Finnegans Wake* at the precise time that new physics was gaining widespread recognition in the 1920s. He was situated at the beginning of a scientific revolution. Joyce was trained in the Newtonian tradition but being the active world citizen that he was, became fully aware of Einstein's contributions. Without understanding the differences of the two traditions and what exactly was 'revolutionized' after Einstein's 1905 publications, it would be difficult to fully comprehend why Joyce experimented with temporal dilation or played with quantum mechanics. By looking at Joycean scholarship, contemporary media diffusion, and Joyce's own notebooks, I find that Joyce was critically engaged with the scientific advancements of the early 20th century.

Finally, the two distinct trends of Joyce's nationalism and his scientific exposure must be brought together by the text itself. Although *Finnegans Wake* is filled with specific references to

new physics, beyond the specific mention of atoms or light rays, scholars have argued that entire structures and creative devices utilized by Joyce stem from Einstein's theories. Scholar Andrei Duszenko wrote a wonderful dissertation detailing the specific examples of new physics in *Finnegans Wake* and I have made extensive use of his findings. Although he does not discuss the correlation between Joyce's new physics and Irish nationalism, he does a brilliant job of highlighting the most salient examples of Joyce's use of Einstein's theories. Taking actual textual examples, I aim to merge the arguments of the first two chapters in order to empirically show that Joyce chose to express his political views through a deconstruction of the traditional forms of the novel facilitated, at least in part, by the popularization of Einstein. I argue that the new physics allowed Joyce to adequately portray the historical moment in which he was writing. In other words, I want to better understand why the science generated by Einstein's theories, both relativity and quantum theory alike, appealed to James Joyce the artist, and how much of this appeal was a result of the historical climate. By highlighting literary devices and specific passages from *Finnegans Wake* itself, I hope to assert the place history can have on this type of intellectual transference.

In order to begin a critical analysis of Joyce's final novel, it is necessary to first understand what Joyce was attempting to accomplish in writing *Finnegans Wake*. On its most fundamental level *Finnegans Wake* is Joyce's rendition of a dream, a dream that attempts to encompass as much of the human experience as possible. Joyce pushes languages to the extremes with multi-layer punning and a completely experimental style of writing. It is meant chiefly as a comedy, and "to reveal the coincidence of the present with the past...implying that there is no present and no past, that there are no dates, that time – and language which is time's

expression – is a series of coincidences which are general all over humanity.”¹ Joyce once told his friend Eugene Jolas that:

“I might easily have written this story in the traditional manner. Every novelist knows the recipe. It is not very difficult to follow a simple, chronological scheme which the critics will understand. But I, after all, am trying to tell the story of this Chapelizod [Dublin village] family in a new way. Time and the river and the mountain are the real heroes of my book. Yet the elements are exactly what every novelist might use: man and woman, birth, childhood, night, sleep, marriage, prayer, death. There is nothing paradoxical about all that. Only I am trying to build many planes of narrative with a single esthetic purpose.”²

Joyce wanted to discuss the human condition in an avant-garde manner that shook preconceived notions of what a novel could be.

The precise structure and characters of *Finnegans Wake* remain obscured to recreational readers and scholars alike. Generally the book focuses on the Dublin family of Humphrey Chimpden Earwicker (HCE) and his wife Anna Livia Plurabelle (ALP, she also represents the river Liffey of Dublin) and their three children Shem, Shaun, and Issy. Other minor characters appear throughout. The great difficulty of Joyce’s work though is that he provides no concreteness. Characters are likely to morph into rivers, trees, other characters, historical figures, disappear, reappear, and any number of countless transformations at any given moment. The characters are as fleeting in *Finnegans Wake* as they are in any actual dream. As difficult as characters are to track, the plot is just as elusive. Since its initial serialization what actually happens in *Finnegans Wake* has been endlessly debated among literary scholars.

The novel is written in four parts, or books. Generally the first book opens detailing the wake of Finnegan, at the end of which HCE sails into Dublin Bay. After rumors begin

¹ Ellmann, Richard. *James Joyce*. New York: Oxford UP, 1959. 563

² Ellmann, 565-566

concerning HCE's improper sexual behavior, the plot is plunged into an ambiguous series of events concerning the entire family. ALP writes a letter dictated to her son Shem (the Penman), used as evidence at her husband's trial. ALP and Shem are the primary focus of the first book. The second book focuses on the three children and their relationship with each other and with their father. The third book largely deals with Shaun (the postman) and his journey to deliver the letter dictated by his mother in Book I. Book four is one chapter only and a monologue by ALP. It contains several small side stories until ALP ultimately urges her sleeping husband to wake up.

Scholars still, decades after, debate the exact plot points of *Finnegans Wake*. This is a very rudimentary sketch of a very expansive novel and there is no guarantee that even what has been described above is correct. The meanings of the passages are far from obvious as the very first sentences show:

“riverrun, past Eve and Adam's, from swerve of shore to bend of bay, brings us by a commodius vicus of recirculation back to Howth Castle and Environs. Sir Tristram, violer d'amores, fr'over the short sea, had passencore rearrived from North Armonrica on this side the scraggy isthmus of Europe Minor to wielderfight his penisolate war: nor had topsawyer's rocks by the stream Oconee exaggerated themselfe to laurens County's gorgios while they went doublin their mumper all the time...”³

In his final work Joyce draws from historical events such as Scandinavian invasions, legends such as Tristan and Isolde, philosophical ideas such as Giambattista Vico's cyclical view of history, and science. Generally *Finnegans Wake* is a familial drama told in a series of multi-layer puns, encompassing countless aspects of the human experience. Joyce used words not just to tell a story, but approached language as a sculptor approaches a slab of marble *or* as a scientist approaches a new experiment. Words were a base substance to be manipulated, deconstructed,

³ Joyce, James. *Finnegans Wake*. New York: Penguin, 1999. 1

and built upon to create something wholly original. They also became the variables of an unprecedented literary experiment, the outcome of which is still being debated today.

Chapter 1

Joyce and Historical Events

“Most young men fancy themselves as Hamlets; Joyce, as later hints make clear, fancied himself as a Parnell.” – Richard Ellmann

Even as a self-proclaimed exile from his native Ireland, Joyce never fully left the country of his birth. The latter part of the nineteenth century and the early decades of the twentieth century bore witness to a resurgence of Irish self-identity and an intense ideological debate over the place of Ireland in contemporary society, specifically Ireland's relation to Britain. Nationalism and a concurrent cultural revival came to the forefront of Irish consciousness. However, the Irish cultural revival frustrated Joyce. The revivalists championed only the events of their history that demonstrated either cultural or physical superiority on the part of the Irish, choosing to ignore the rest. Joyce's frustration with such narrow-mindedness found expression *Finnegans Wake*. According to Frances Boldereff, "He [Joyce] would not participate in nonsense [revivalism], nor would he explain that the nonsense was harmful...all he could do was to create and to put his creation [*Finnegans Wake*] out in the universe to bide its time."⁴ Joyce's creation presented a comprehensive history, one that took in all eras of Ireland's past regardless of whether or not the isle was free or colonized. While Joyce's modernist writing style ensures that his specific agenda will forever be obscured, there exists in his works a nationalist critique that sought to depict Ireland beyond the sanctioned texts of the revivalists.⁵

This chapter aims first to trace Joyce's response to Irish nationalism beginning with his identification with Irish parliamentarian Charles Parnell. This will be followed by an analysis of how Joyce's writings uniquely trace his growing disenchantment and conscious distancing from the revivalist narrative. This chapter ends with a discussion of Joyce's place in the modernist movement, modernism serving as the creative intermediary between science and the politically charged literary production of *Finnegans Wake*. Modernism ultimately helped inspire Joyce to

⁴ Boldereff, Frances M. *Reading Finnegans Wake*. Woodward, Pa.: Classic Nonfiction Library, 1959. xiv

⁵ Maguire, Peter A. "Finnegans Wake and Irish Historical Memory." *Journal of Modern Literature* 22.2 (1999): 323

attack a traditionally frustrating political situation with an original literary approach that included the incorporation of new physics.

Early Political Inclinations

From a young age Joyce's father John had instilled in him an ardent respect for Irish Parliamentary Charles Parnell. According to Richard Ellman, when the young Joyce would come home from Clongowes College on breaks and holidays, "from 1888 to 1891, his father and John Kelly [a friend] had no subject for talk but Parnell. These were the years during which this unyielding man filled Ireland with his image."⁶ So formative was John Joyce's political views for young James that Parnell became Joyce's lifelong hero. As a result both the semi-autobiographical main character in *A Portrait of the Artist as a Young Man*⁷ and the character of HCE in *Finnegans Wake* are modeled partly on Parnell.

Charles Steward Parnell is notorious for his tremendously successful campaigns for Irish Home Rule. The Home Rule League was created in 1873. A "polite and almost totally ineffective parliamentary campaign to advance the Irish case for a moderate degree of self-government,"⁸ the party only gained serious political attention after Parnell entered politics. Parnell's political career was marked by impassioned speeches, charismatic self-assurance, and the rapid accumulation of widespread support. Parnell began his career as an advocate for land reform. These early campaigns and their relative success achieved unprecedented parliamentary

⁶ Ellmann, 31

⁷ Ellman, 154

⁸ Bew, Paul. *C. S. Parnell*. Dublin: Gill and Macmillan, 1980. 16

unity among the Irish. Parnell then used the political power acquired as a land reform advocate to focus the attention of the nation on Home Rule. Home Rule soon became the battle cry of Irish politics. Parnell's political adeptness impressed the Joyces, who considered him a hero. Despite attempts at scandalizing his name, Parnell gained more political support in the 1880s than any other Irish politician.

Parnell's prominence in the Irish political landscape was total. Then in 1889 member of Parliament Captain William O'Shea divorced his wife citing Parnell as co-respondent. It was only a scandal of great moral magnitude that could have brought down his political career.⁹ After O'Shea's accusation, things rapidly began to crumble for Parnell as his heroic image was tarnished by matrimonial dishonesty. Forty-five Irish Members of Parliament quickly disowned him, including some of his most loyal lieutenants, and created the Irish National Federation. The Irish Catholic Church also disavowed Parnell and urged all Irish citizens to do the same. Yet the city of Dublin, the Joyce family included, remained steadfastly loyal to their hero even as nationalist seats were being filled by anti-Parnellites. Parnell died on the campaign trail on October 6th, 1891.¹⁰ James Joyce was nine years old and in memory of his fallen hero wrote his first known work, a poem "Et Tu, Healy," Healy being one of the Irish Parliamentarians who betrayed Parnell.¹¹ Parnell's betrayal by his own countrymen was something the young Joyce could not forgive, and that the mature Joyce could never overlook.

Despite the people and politics involved, Parnell remained for Joyce a man of nobility who had overcome not only a disjointed Irish political landscape but also the power of the

⁹ Bew, 110

¹⁰ Bew, 125-135

¹¹ Ellmann, 33

Church.¹² In my opinion there are two aspects of Parnell that were to shape Joyce's response to the cultural revival: his magnetic character and his betrayal by his closest followers. Joyce revered Parnell's public persona. Approaching politics with a determination that was initially un-focused, Parnell was neither a traditional 'intellectual' nor did he have a traditional grounding in Irish history (he was less than enthusiastic proponent of Gaelic culture).¹³ Yet under his guidance Ireland was not only unified, but made several progressive steps towards Home Rule. Parnell's powerful speeches, his blunt and confident demeanor, and his tremendous leadership ability convinced the young Joyce that his nationalism was the path to Irish salvation.

But Parnell's nationalism was in direct conflict to that of the cultural revivalists. Parnell came from the elite Anglo-Irish landlord class of Ireland that characteristically maintained a loyalty to their English forbearers. Of significance was the fact that Parnell's parents did not share the supremacist attitude or intense British loyalty of much of the landed aristocracy. Rather, his parents embraced their Irish citizenship and did not kowtow to their English landlords. Parnell's privileged birth allowed him to understand the colonial relationship Ireland maintained with England.¹⁴ Joyce saw how Parnell fought for Home Rule by embracing Ireland's colonial struggle as indivisible from her relationship with England. And most importantly, he saw Parnell's huge success.

The second characteristic of Parnell that so influenced Joyce was his betrayal by his countrymen. According to Ellman, "the closest connection between himself [Joyce] and Parnell was Parnell's profound conviction that, in his hour of need, one of the disciples who dipped his

¹² Costello, Peter. *The Years of Growth*. London: Kyle Cathie Limited, 1992. 109

¹³ Bew, 12

¹⁴ Bew, 6

hand in the same bowl with him would betray him...that he fought to the very end with this desolate certainty in mind is his greatest claim to nobility.”¹⁵ Joyce projected onto himself the characterization of tragic hero, suffering exclusion and betrayal for his art much like Parnell for the sake of his country. Following Parnell’s death Joyce saw Parliament as nothing more than a gathering of untrustworthy men unable to inspire the Irish masses as his hero once had. The teenage Joyce not only distrusted Irish politicians, but he saw Irish politics dissolve into paralysis. To some extent this is true, after the divorce scandal the Home Rule cause made little significant progress for several years. Joyce wrote an article for a newspaper while living in Rome in 1912 entitled *L’Ombra di Parnell* or The Shade of Parnell. In Joyce’s own words,

“...the extraordinary personality of a leader who, without forensic gifts or any original political talent, forced the greatest English politicians to carry out his orders; and, like another Moses, led a turbulent and unstable people from the house of shame to the verge of the Promised Land... In his final desperate appeal to his countrymen, he begged them not to throw him as a sop to the English wolves howling around them. It redounds to their honor that they did not fail this appeal. They did not throw him to the English wolves; they tore him to pieces themselves.”¹⁶

The disappointing way that Parnell was treated after his moral lapse was the first of Joyce’s disappointments with his countrymen. As his frustrations grew, his criticisms of his countrymen grew increasingly acute.

¹⁵ Ellmann, 331

¹⁶ Joyce, James, Ellsworth Mason, and Richard Ellmann. *The Critical Writings of James Joyce*. Ithaca, N.Y.: Cornell UP, 1989. 223-228

Cultural Revival

Parnell's nationalistic politics coincided with an Irish cultural and literary revival.¹⁷ The Gaelic League was formed in 1893 and its primary goals were to establish Irish as the universal language of discourse and to serve as the bastion of Irish historical and cultural awareness. The Gaelic League focused on Irish folklore and glorified the peasantry. Their aim was to exalt only that which was strictly Irish as a means of surmounting their English invaders:

“Irish cultural nationalism is primarily concerned with the sublation of diversity and difference...nationalist ideology invariably tells of an original, unreflective wholeness of the people, which has now fallen into disunity. Nationalism seeks to transcend this condition in the eventual achievement of a restored and self-conscious unity. Its specific project in Ireland since the nineteenth century has been the forging of a sense of Irish identity that would transcend historically determined cultural and political difference and form the reconciliatory centre of national unity.”¹⁸

To clarify (however simplistically), Irish nationalism pointedly dismissed aspects Irish history that was considered to be ignoble - like colonialism and Anglicization. The revivalists took certain events out of the Irish national narrative entirely. In doing so they hoped that they could combat both England's perception of a historically subjugated Ireland as well as the Irish self-identity of colonized mass. However Joyce understood that Irish history, like any nation's history, has difficult periods in which it is entangled with other nations and to ignore these epochs is to present a historically and culturally unfounded view of Irish identity.¹⁹ According to Ellman's biography, even as a senior at Belvedere College Joyce had resisted the Gaelic League

¹⁷ Garrigan, Mattar Sinéad. *Primitivism, Science, and the Irish Revival*. Oxford: Clarendon, 2004. 26

¹⁸ Nolan, Emer. *James Joyce and Nationalism*. London: Routledge, 1995. 52

¹⁹ Nolan, 50

and national revival. "He was not ready to accept all his nation; as a Parnellite he was suspicious of attempts to ignore old wounds, preferring to cherish them."²⁰

Language was a central part of the revivalist agenda. Beginning at the end of the nineteenth century the Gaelic league offered classes on the Irish language while in political arenas they protested for its universal use. To revivalists, if they could dethrone the widespread use of the English language on their isle, they could first symbolically oust their colonizers. Following this linguistic demonstration of reclamation, a period of such national pride and unity would sweep over the isle so as to actually rid Ireland of foreign involvement. Joyce did not agree. In fact, he found severe fault with revivalist logic

It is important to realize that Joyce remained supportive of the ultimate goal of Irish nationalism. Joyce wanted Irish autonomy. It was the way in which cultural revivalists expressed their agenda that angered him.²¹ By denouncing everything Anglicized, the revivalists were ignoring or minimizing large parts of Irish identity. Joyce had no tolerance for such ideology because it foreclosed what he got from intellectual life and sanctioned only a particular type of culture. Joyce, the artist, saw this as unforgivably restricting. It is in his stories that Joyce manages to represent and challenge the effects of Revivalism on the construction of Irish identity with a kind of ethnographic fidelity.²²

²⁰ Ellmann, 56

²¹ Mackey, Theresa. "The Lingering Nationalism of James Joyce." *The Midwest Quarterly* 35.3 (1994): 248

²² Castle, Gregory. *Modernism and the Celtic Revival*. Cambridge: Cambridge UP, 2001.182

Joyce's Politics

In 1903, the year before he left Ireland for good, Joyce wrote a review entitled *The Soul of Ireland*, which was a published review of a colleague's folkloric collection of essays. In this review Joyce highlights his disdain for Irish folklore, a main component of the cultural revival.

Joyce's contempt is seen in the closing paragraph:

“This book, like so many other books of our time, is in part picturesque and in part an indirect or direct utterance of the central belief of Ireland. Out of the material and spiritual battle which has gone so hardly with her Ireland has emerged with many memories of beliefs, and with one belief – a belief in the incurable ignobility of the forces that have overcome her...”²³

Here we see glimpses of Joyce's cynicism that was to later inspire his published stories. It is exactly the fact that many of the revivalists could not get past the 'incurable ignobility' of Ireland's historical ghosts, her conquerors and debtors, which angered Joyce. The Norman invasions, English invasions, the waning use of Irish, and the lack of Irish political influence in the global arena, among other things, embarrassed the revivalists. To study such moments of Irish dependency would be antithetical to their ultimate goal of expressing Irish autonomy. But to Joyce the historical experience of Ireland as a whole was important to him, not simply a limited view of only golden ages and kingdoms.

In 1907 while he was living in Trieste Joyce wrote a series of three articles on Ireland for the most important newspaper in the city. They were entitled 'Fenianism,' 'Home Rule Comes of Age,' and 'Ireland at the Bar.' These articles demonstrated Joyce's intellectual prowess as he critically examined Ireland's faults in the independence struggle while simultaneously

²³ *Critical Writings of James Joyce*, 105

advocating Home Rule. Joyce also clearly articulates his belief that independence is only most natural and that England was afraid of “a rival island to arise near [it] or Irish factories to create competition for those in England.”²⁴ These 1907 articles shed light on Joyce, the well-informed citizen, yet they are most useful for highlighting the precise political tension within his works. By showing his clear support for Home Rule and Irish autonomy, Joyce aligns himself with the essential goals of the revivalists. Both wanted Ireland to emerge out of colonial subservience as a proud and sovereign entity. But Joyce disagreed with the implementation specific to the revivalists. In order to combat what Joyce saw as tragically flawed narrow-mindedness, he took to his fiction in order to present his own unique solution to the nationalist question.

Ivy Day in the Committee Room is a short story from *Dubliners*. It was written in 1905 and celebrates the accomplishments of Charles Parnell. The story is set in a room of quarrelling politicians. The men suddenly realize that it is Ivy Day, or October 6th, the day Parnellites commemorated when his forty-five once-loyal supporters walked out on him. Once the men come to this realization, they urge one of their members to read aloud a poem honoring Parnell. This poem glorifies Parnell, placing him among Ireland’s greatest heroes, and sharply criticizes all of the late politician’s betrayers. In *Ivy Day* Joyce expressed his belief that with the betrayal of Parnell all of Irish politics descended into “nothing greater than a network of betrayals...inescapable [from the] pattern of betrayal and conquest, the pattern of Irish history.”²⁵ While the men had been quarreling before the poem was read aloud, they are momentarily united in their applause for the oratory performance and the poem itself. Parnell posthumously unites a fragmented Ireland.

²⁴ *Critical Writings of James Joyce*, 195

²⁵ Maguire, 305

In *Ivy Day* language serves as the political force. Of great import is the conscious creative decision by Joyce to write *Ivy Day* in English, not Irish. In the initial paragraphs independence seems impossible as the group of men argue unproductively. It is only when Parnell's praises were being sung in poetic verse does Joyce present any glimpse of potential unity among the men and it is in this fleeting moment of unity comes the only point in the story where political progress seems feasible.²⁶ Progress, according to Joyce, must happen in English. The use of English is a direct critique of the revivalist attempt to resurrect Irish from the throes of linguistic death. In one of his earliest and most politically-charged stories Joyce shows how the revivalists had it wrong. Irish was not the means to either political unity or parliamentary progress. In the committee room English, the language of the colonizers, was the only language capable of uniting a room of Irishmen.

A Portrait of the Artist as a Young Man was serialized from 1914-1915 and published whole for the first time in 1916. In *Portrait* we actually see a more formulated ideology to Joyce's approach to nationalism as expressed through language:

“The language in which we are speaking is his [an Englishman] before it is mine. How different are the words *home, Christ, ale, master* on his lips and on mine! I cannot speak or write these words without unrest of spirit. His language, so familiar and so foreign, will always be for me an acquired speech. I have not made or accepted his words. My voice holds them at bay. My soul frets in the shadow of his language. (*Portrait of the Artist As a Young Man*, 189)”

Maguire brilliantly highlights the key to this passage within the greater nationalist debate raging in his homeland: “Essentially Joyce realizes that the cultural attitudes of a defeated people are activated whenever an Irishman speaks English, unless he can refashion – ‘forge’ – the language

²⁶ Maguire, 304

in accordance with his own cultural requirements.”²⁷ *Portrait*, as a semi-autobiographical narrative of an Irishman, takes the Englishman’s language to present Irish life. The English language is not being used to assert English superiority; Joyce is inverting its role to expose Ireland to the English-speaking world.²⁸

Finnegans Wake continues in the tradition of Joyce’s earlier publications by using the actual substance of a narrative, the language itself, to create political commentary. Yet unlike these early works, *Finnegans Wake* showcases Joyce’s aesthetic maturation as it completely breaks down any semblance of a sanctioned national narrative. As I will show in the following chapter, *Finnegans Wake* builds upon both the political dialogue of these previous works while incorporating the new sources of scientific inspiration available to him.

1919-1923

The Irish War of Independence from January 1919 to July 1921 saw the ideologies of previous decades attain tangible results. Immediately following the War of Independence was the Irish Civil War from June 1922 to May 1923. The Irish War of Independence is of course a watershed moment in Irish history. To exclude this from Joyce’s list of muses would be to misunderstand his uniquely historical *Finnegans Wake*. So I present a brief overview of the War and the ideologies that were at the forefront.

In 1916 the Irish Volunteers launched a revolt in Dublin with the express goal to establish an independent Irish Republic. This is known as the Easter Rising. The British executed the leaders and arrested thousands, leading many Irish to join the separatist Sinn Fein political party,

²⁷ Maguire, 301

²⁸ Maguire, 303

which at the time was the representative party of the Irish independence movement. As the independence movement was growing and British support severely waning, Parliament made another severe blunder. In 1918 it tried to introduce conscription in Ireland to supplement British troops fighting in WWI, which sent the vast majority of the Irish into the anti-British camp. Irish politicians soon set up their own legislative body, known as the First Dail (or Dail Eireann), in Dublin. There they drafted and sent out a Declaration of Independence and a Declaration of War with Britain. The Irish Volunteers became the Irish Republican Army (IRA). Fighting broke out and strikes were implemented against British goods.²⁹ The end of 1920 was particularly bloody. On November 21st an IRA squad killed 14 people and in response Auxiliaries, a paramilitary group sent from Britain earlier in the year, drove to a football match in Dublin and fired into the crowd. Fourteen civilians died.³⁰ Later that same day, three republicans were killed in Dublin castle.³¹ This day lives on as Bloody Sunday. Guerilla violence soon escalated to a hitherto unseen vehemence. Political pressure and violent bloodshed forced Britain to finally accept their inability to defeat the nationalists.

The war ended on July 11th 1921 with an agreement to end to all attacks on the British, all displays of force, and all reinforcements of men or arms by both sides.³² The agreement was meant only as reprieve from fighting but this period of relative peace led directly to the Anglo-Irish Treaty. It was ratified by Dail Eireann on January 7th 1922. Ireland became a Free State - not a republic. Ireland was granted self-governance with its own police force and army, but the

²⁹ Kautt, William H. *The Anglo-Irish War, 1916-1921: a People's War*. Westport, Conn.: Praeger, 1999. 1-71

³⁰ Leeson, David. "Eath in the Afternoon: The Croke Park Massacre, 21 November 1920." *Canadian Journal of History* 38.1 (2003): 43-67.

³¹ Dolan, Anne. "Killing and Bloody Sunday, November 1920." *The Historical Journal* 49.3 (2006): 791

³² Purdon, 58

British monarch remained head of state. Northern Ireland was given the choice to become part of the Free State and obviously declined. Ellman documents Joyce's response to the new Ireland, stating that the results of the war "had not pleased him, even though they represented the triumph of the Sinn Fein principles which in Rome and Trieste he had vigorously espoused. During the last two years of the Irish fight for independence, the only incident that had stirred his imagination was the hunger strike of the Lord Mayor of Cork."³³ The problems that lay ahead left Joyce with a tangible sense of trepidation. He once retorted to a friend on the subject of his countrymen and their new country that "he knew they'd make a mess of it."³⁴ Following the War of Independence, the prospect of Civil War left Joyce gave Joyce such a strong sense of trepidation that he had no desire to visit home. This feeling permeates his texts.

The Anglo-Irish Treaty caused a bitter rift among Irish nationalists. Soon factions formed and armed conflict began to break out between those who supported the treaty and those who demanded complete Irish independence.³⁵ Tensions grew as the pro-treaty Sinn Fein won the 1922 general election and began establishing an Irish state in Dublin while anti-treaty IRA units began taking over old British barracks around the country. Street fights between factions began in Dublin until early July and fanned out into the countryside. Ireland was plunged into a Civil War. While the anti-treaty forces initially held many of the large towns in Ireland, most towns were successfully taken by the Free State supporters in August 1922, followed by a period of bloody guerilla warfare. Joyce generally disapproved of violence and favored non-violent

³³ Ellmann, 547

³⁴ Ellmann, 623

³⁵ Litton, Helen. *The Irish Civil War: an Illustrated History*. Dublin: Wolfhound, 1995. 25

programs.³⁶ Beginning in November 1922 and intense period of fighting broke out as both sides ruthlessly executed their enemies and committed unwarranted acts of cruelty, the effect of which still lingers in Ireland today.³⁷ Due to lack of support from both the Irish majority and the Catholic Church, maintaining the war effort became very difficult for anti-treaty supporters. On May 23rd, 1923 the IRA surrendered to the Free State.

The death toll was high, the economic situation grim. Because of the economic predicament of the Free State, it was unable to participate adequately in the Boundary Commission negotiations in 1925, which set the boundary of Northern Ireland. In the 1931 Statue of Westminster, British Parliament gave up its authority to legislate for Ireland as politicians further purged the Irish government of British influence. In 1937 a new constitution was passed which created an Irish president and there was no clause or statute that predicated any allegiance to Britain. *Finnegans Wake* was published in 1939. The summation of these efforts were not fully realized until 1948 when the Irish government left the British Commonwealth under authority of the newly re-named Republic of Ireland.³⁸

When asked by a French reporter in 1925 “Do you think Irish self-government is a good thing?” Joyce replied cagily, “I don’t think anything about it.” The reporter pressed on, “What is your attitude towards the national movement in Ireland?” to which Joyce responded, “To use an expression of your country, j’en ai marre [I’m fed up with it].” “I think you were fed up with it twenty years ago,” he said to which Joyce replied “You could say forty.”³⁹ While Joyce was

³⁶ Ellmann, Richard. "Prologue." *Light Rays: James Joyce and Modernism*. By Morris Beja and Heyward Ehrlich. New York: New Horizon, 1984. 5

³⁷ Litton, 119

³⁸ Hollis, Daniel Webster. *The History of Ireland*. Westport, Conn.: Greenwood, 2001.

³⁹ Ellmann, 582

certainly frustrated, his notes on his homeland betray the conversation above. Joyce's critical essays and the fact that he engaged so thoroughly with the national issue suggest that he was simply being difficult with the reporter. Joyce's personal writings show that he was compelled to see his homeland through its stuttering and violent beginnings. Yet this is not to negate the feeling of being 'fed up' with his countrymen. The frustration inherent in Joyce's conversation above is one of the primary motivating factors of *Finnegans Wake*. Joyce was forever waiting for the unity of the Parnell era to return to the Irish landscape. The misinformed revivalists that clamored for independence, followed by a nation at odds with itself as civil war broke out, never satisfied the Parnellite-in-exile. Chaos was the nature of Irish politics. In order to rework this superseding idea of conflict and chaos, Joyce embraced its artistic value. In *Finnegans Wake* he reworked the turbulence of political life by creating a new, chaotic narrative form. New physics would become vital to this vision of the novel.

The Catholic Church

Joyce's revolt against religious formalism began in his teenage years when he was unable to reconcile the guilt he felt for "heretical exonerations of the senses" with Catholic piety.⁴⁰ Catholicism was a dominating force in Joyce's upbringing and provided much of the source material for *Portrait of an Artist*. While attending Clongowes College as a young boy Joyce was "devout enough" although he often had trouble reconciling his faith with the anticlericalism of

⁴⁰ Ellmann, 50

his father and the misdeeds of his priest-teachers.⁴¹ These doubts were only confounded once Joyce hit puberty and was unable to temper his hormonal urges. He soon began to cavort with prostitutes. He began to see the strict moral code of the church as suffocating and imprisoning. It soon became a hindrance to true living. In a letter written to his wife soon after their meeting Joyce claims “Six years ago [at sixteen] I left the Catholic Church, hating it most fervently. I found it impossible for me to remain in it on account of the impulses of my nature.”⁴² Slowly, spurned by the guilt the doctrines imposed upon him, it became clear that Joyce was transferring his faith in godly saints to faith in artistic sinners. And the transformation was total. Joyce’s greatest thematic enemy in his writings was the Irish Catholic Church.⁴³ Although Joyce’s scorn of religion was initially vehement, he soon mitigated his repulsion in favor of moderate contempt. Joyce “preferred disdain to combat...He was no longer a Christian himself; but he converted the temple to new uses instead of trying to knock it down, regarding it as a superior kind of human folly and one which, interpreted by a secular artist, contained obscured bits of truth.”⁴⁴ In a letter written to his brother Stanislaus in 1906 Joyce responds to the Church’s increasing role in the Free State movement as well as his general attitude toward nationalism:

“I quite see, of course, that the Church, is still, as it was in the time of Adrian IV, the enemy of Ireland; but I think her time is almost up. For either Sinn Fein or Imperialism will conquer the present Ireland. If the Irish programme did not insist on the Irish language I suppose I would call myself a nationalist. As it is, I am content to recognize myself an exile: and, prophetically, a repudiated one.”⁴⁵

⁴¹ Ellmann, 30

⁴² Ellmann, Richard. "Prologue." *Light Rays: James Joyce and Modernism*. 1

⁴³ Mackey, 254

⁴⁴ Ellmann, 68

⁴⁵ Joyce, James, and Richard Ellmann. *Letters of James Joyce. Vol. II and III*. London: Viking, 1966. 187

The fact that Joyce intertwines the Church and the Irish national question hints at their close connectedness in his mind. Both the nationalists and clergy are bound up in Irish identity. *Finnegans Wake* challenges this complex relationship by destroying any context of order. To Joyce, the many complex elements of Irishness can only find authentic expression through disarray. The uncertainty of the typical Irishman as he navigates Irish nationalism can only be accurately represented if the boundaries of the absolute are dissolved. In an attempt to address the national issue in lieu of degeneration into violence or religious dogma, Joyce chose to express the complicatedness of his homeland as faithfully as possible through prose. The result was a newly re-forged national narrative.

***Finnegans Wake* as Nationalist Text**

Finnegans Wake is a post-colonial novel; it was written immediately following the Irish War of Independence and the conclusion of the Irish Civil War. Although complete statehood had not been granted, the Irish had gained significant political autonomy. *Finnegans Wake* expresses this unique Irish political position in the 1920s and 1930s. The very writing of *Finnegans Wake* was an act of political commentary.⁴⁶ In *Finnegans Wake* everything is dismantled to such an extreme degree that the reader is never completely certain as to what character is being presented, where the action is taking place, what the action even is, and when everything is happening. There is nothing absolute in its prose and it is precisely “Joyce’s refusal to indulge in the slightest dead pronouncement that is exactly itself the political act...[an act of] active transnationalism, disarticulating, rearticulating and at the same time annulling the

⁴⁶ Nolan, 139

maximum number of traces – linguistic, historical, mythological, religious.”⁴⁷ This idea, the complete lack of the certainty, continuity, and awareness that is central to pre-modernist works, is essential to understanding Joyce’s artistic goal in terms of nationalism. Without having a coherent plot, Joyce was given limitless freedom to include in his work any and every topic he chose. Without the confines of a traditional structure or the requirement to discuss certain themes as dictated by plot progression, Joyce was free to utilize any aspect of language, history, mythology, and religion. Joyce was able to express Irish history with a type of completeness that transcended traditional novels.

If there is any doubt as to whether nationalism remained at the forefront of Joyce’s consciousness as he was writing *Finnegans Wake*, a glance at his published notebooks reveals that the national question constantly held his attention. His notebooks are filled overwhelming with notes taken from Irish press make this fact very clear. In the first notebook Joyce was known to have used in the creation of *Finnegans Wake*, used from December 1922 to February 1923, there are notes on the formation of the Irish Free State, the Civil War, and on the IRA’s destruction of Irish infrastructure.⁴⁸ From his very first notebook we learn that Irish politics were to constantly provide the background for *Finnegans Wake*. In another early notebook compiled between August to October 1923 Joyce began taking notes from *The Leader*, a ‘belligerently nationalistic’ publication.⁴⁹ In this same notebook there are also notes on Sinn Fein, Time Healy, and the Ulster border (the border that created Northern Ireland).⁵⁰

⁴⁷ Sollers, Philippe cited in Nolan. ‘Joyce and Co.’ *In the Wake of the Wake*, ed. David Hayman and Elliot Anderson Madison: University of Wisconsin Press, 1978. 140

⁴⁸ Joyce, James, Vincent Deane, Daniel Ferrer, Geert Lernout, Luca F. P. Crispi, Robert J. Bertholf, and Sam Slote. *The Finnegans Wake Notebooks at Buffalo*. VI.B.10. Turnhout, Belgium: Brepols, 2001. 7

⁴⁹ VI.B.25. 5

⁵⁰ VI.B.25, 107a, 141a, 150e

The nationalist purposes of *Finnegans Wake* are manifold. First, scholars see the ‘unreadability’ of *Finnegans Wake* as a protest against “too-easy apprehension of any merely written history.”⁵¹ Joyce was addressing the traditionally lazy acquisition of historical knowledge. By creating a text that needed active thought after nearly every syllable, Joyce was forcing the reader to be an active participant in the digestion of the novel. It asked of its readers to pay close attention; reading the novel was much more than just casual entertainment. Reading *Finnegans Wake* is an exercise in active consumption.

Like a painter who paints with small brushstrokes of color to create the subtleties and combinations that convey true genius, so does Joyce approach language in the brushstrokes of *Finnegans Wake*. Joyce exploits Irish, English, German and over seventy other languages. For example, in one of his notebooks Joyce takes notes on Native American expressions for time.⁵² As outlined above, the battle of the Irish language was the central tenet of the Gaelic League and the cultural revival. If Irish could be made into the national language, many revivalists saw this as the defining triumph over the English imperialists. To Joyce, true Irish victory lay not in resurrecting a dying language but in using the English language to create and define a contemporary and powerful Ireland. Thus *Finnegans Wake* is based on the premise that there is no future to the Irish Language Revival and that the only way to overcome the embarrassing subjugation of Ireland’s past is to formulate a new language.⁵³ The act of breaking down language finds a parallel in the breakdown of time and space. The Irish situation did not fit into any one specific paradigm of nationalism. Einstein developed the general and specific theory of

⁵¹ Nolan, 140

⁵² VI.B. 5. 9

⁵³ Maguire, 321

relativity in an attempt to address problems in theoretical physics that did not fit any Newtonian paradigms. Just as new physics was Einstein's solution to reconciling gaps in theoretical physics, *Finnegans Wake* is Joyce's way of explaining Ireland, of reconciling all the many political currents of its past with its present.

Peter Maguire writes that "Joyce ridicules all patriotic aspirations and portrays the outcome of independence-seeking [in *Finnegans Wake*]...as a matter of Tweedledum and Tweedledee."⁵⁴ While we have established that Joyce was sympathetic to the aim of nationalism, this does not preclude him from critical engagement with nationalist victories. First, Emer Nolan suggests in his book *James Joyce and Nationalism* that the issue of partition into Northern and Southern Ireland is always treated regrettably within the work: "A phantom city, phaked of phillim pholk, bowed and sould for a four of hundreds of manhood in their tree and three-score fylkers for a price partitional of twenty six and six"⁵⁵ (six counties had been partitioned into Northern Ireland while 26 remained in Southern Ireland).⁵⁶ Another integral part of the work is the dichotic nature of the brothers Shem and Shaun. One way that Joyce uses the opposing nature of the brothers is to play with themes of the Irish Civil War. Shem contains qualities of Joyce himself, while Shaun is partly modeled on Eamon De Valera, the anti-Treaty opposition leader during the Civil War who among other things enshrined the Catholic Church in the Independent Irish State.⁵⁷

The lives of Shem and Shaun assume aspects of the Irish national question. They are twins and serve as constant foils for each other. Their opposing nature takes on many different

⁵⁴ Nolan, 141

⁵⁵ *Finnegans Wake*, 264

⁵⁶ Nolan, 142

⁵⁷ Nolan, 143

forms over the course of the novel's 600 pages, a pertinent manifestation being that of colonizer and colonized:

“Surprising configurations of native and exile, invader and nationalist, emerge on the basis of re-examination of some of the scenes of fraternal conflict which are so significant in the post-colonial context: this will serve to contextualize a critical tradition which lays the stress merely on ‘the livelier ironies’ of Irish nationalism, contributing to a sense of that political ideology’s hopeless self-contradiction... It is by appreciating the specific ironies of the post-colonial condition that we can explain how, in the course of the brother-battle, ‘native’ becomes ‘exile’ to the exact extent that ‘invader’ becomes ‘native,’ and neither Shem nor Shaun appear capable of properly defeating or succeeding their father. Otherwise, the questions raised by their antagonism or equivalence can be too easily appropriated for observations about ambivalence and symmetry within the imperial relationship itself.”⁵⁸

Joyce places upon two of the book's most central figures the contemporary drama of Ireland.

While the revivalists sought to cleanse Irish consciousness of its invaders Joyce sought to cherish the experience of suppression. The roles played by Shem and Shaun highlights at least one example of Joyce using the Irish colonial experience as thematic inspiration.

Another brief example of nationalism in *Finnegans Wake* comes from Chapter 1.7. This chapter deals with the brother Shem the Penman. Joyce created Shem with many of his own characteristics in mind, including his anti-revivalist philosophy. Ingeborg Landuyt explores this connection:

“Joyce shared Shem’s horror at the fighting that accompanied Bloody Sunday and the Irish Civil War... Besides, Joyce’s own wife had been in danger during the fights between Republicans and Free State soldiers, an incident he seems to have taken very personally. Shem’s eating habits also betray his antinationalism: ‘He even ran away with himself and became a farsoonerite, saying he would far sooner muddle wthrough the hash of lentisl in Europe than meddle with Irrland’s split little pea’ (171.04-06).⁵⁹

⁵⁸ Nolan, 145-156

⁵⁹ Landuyt, Ingeborg. "Cain-Ham-(Shem)-Esau-Jim the Penman: Chapter 1.7." *How Joyce Wrote Finnegans Wake: a Chapter-by-chapter Genetic Guide*. By Luca Crispi and Sam Slote. Madison: University of Wisconsin, 2007. 147

Joyce's sense of disenchantment with his countrymen is evident in this particular passage. Clearly Shem would rather eat from the imperialists, England and Europe, than take what his divided, bickering, volatile homeland provides.

Interestingly, Joyce chose to counter the revivalists by actually embracing their version of Irish history. While he steadfastly challenged the insular nature of revivalist nationalism, he could not dispose of it altogether. In his quest for universality, to ignore Irish folklore would be to exclude a significant part of the Irish experience. This was simply not an option. By writing *Finnegans Wake* Joyce did not choose to impose on the reader any one type of narrative. Rather, he presented Ireland as a whole and invited the reader to construct his own narrative, gathering from his words what they will. He took notes from such sources as *The Scandinavian Kingdom of Dublin*,⁶⁰ *Scandinavian Relations with Ireland During the Viking Period*,⁶¹ and *Ireland and the Making of Great Britain*.⁶² He also had notes on the Book of Kells⁶³ and Celtic lore.⁶⁴ Folklore and Irish legend were as much a part of his nation's homeland as Scandinavian and English invasions. The content of Irish cultural revivalism was equally important to the depiction of universal history.

Of course Joyce never provides a conclusion to the fraternal drama, instead he invokes a cyclical view of history. The first sentence of the work is the continuation of the very last, highlighting how all characters and plot eventually dissolve into temporal flux. Joyce gives no

⁶⁰ VI.B.29

⁶¹ VI.B.16

⁶² Vi.B.3

⁶³ VI.B.6

⁶⁴ VI.B.14, VI.B.5, VI.B.5

solutions the political questions he is exploring; he does not reconcile nationalism to some clear and virtuous end.

Joyce used Ireland as a primary muse, but *Finnegans Wake* is by no means just an Irish book. Joyce uses Irish history to appropriate a commentary on history in general. Samuel Beckett was perhaps the first to point out that “all historical times are simultaneously present at any given point in the text,” thus *Finnegans Wake* was used to project Irish elements on entire world cycles.⁶⁵ As Nolan points out, “Both the options of reading the text as a ‘universal’ or as an ‘individual’ history tend to universalize the historical experiences out of which it is produced. These two interpretative strategies are, of course, by no means irreconcilable: indeed they may even be seen as complementary and interchangeable.”⁶⁶ Joyce made one day in Dublin a paradigm for world history.⁶⁷ A traditional novel framework was insufficient for such a great artistic endeavor.

Modernism

Joyce wanted to convey politics in a ubiquitous way, universal and specific to every man-made situation. Yet he was displeased with his model politic: Ireland. In a creative venture he thus strove to deconstruct traditional elements of experience and re-craft them into a new literary form that presented Irish nationalism and religion, thus all nationalism and religion, on his own terms. But this utter disassembling of the traditional novel and the use of Einsteinian physics was not simply a spontaneous offshoot of Joyce’s discontent. The modernist movement provides

⁶⁵ Nolan, 146

⁶⁶ Nolan, 144

⁶⁷ Bowen, Zack. "Joyce and the Modern Coalescence." *Light Rays: James Joyce and Modernism*. By Morris Beja and Heyward Ehrlich. New York: New Horizon, 54

the key to understanding why Joyce reached towards new physics. Modernism places Joyce within a specific artistic climate that challenged the constructions of the past.

Morton Levitt states that, “the Modernist Age might more tellingly be labeled The Age of James Joyce.”⁶⁸ The beginning of modernism is hard to detect; some scholars claim that it began in with the Democratic Revolutions in Paris in 1848. Modernism is complex and often times contradictory. It would be impossible and unwise to survey the entire movement. Rather, a general introduction to the inspirations behind the creative attitude in the early twentieth century, specifically Paris, is most beneficial to understanding the real-world context of *Finnegans Wake*.

Almost all modernists held it as a unanimous fact that Paris was the cultural epicenter of the movement.⁶⁹ Paris in 1848 was dealing with many difficult, if unoriginal problems: unemployment, hunger, political discontent, etc. On February 23rd a small demonstration by republicans were fired upon, fifty of them killed. This incident directly led to the French Second Republic, which created an atmosphere of discussion, radicalism, and change, even though political situation of Paris throughout the mid 1800’s remained combative.⁷⁰ The French coup of 1851 instated the president under the republic, Louis-Napoleon Bonaparte, as Emperor once more. However the fertile environment of progress and discussion could not be quelled. Urban renewal programs relied on revolutionary projects of creative destruction.⁷¹

While the literal city walls began to crumble as urban planners (most famously Georges-Eugene Haussmann) revolted against the past, economic and intellectual culture also became a

⁶⁸ Levitt, Morton. "The Modernist Age: The Age of James Joyce." *Light Rays: James Joyce and Modernism*. By Morris Beja and Heyward Ehrlich. New York: New Horizon, 136

⁶⁹ Gay, Peter. *Modernism: the Lure of Heresy : from Baudelaire to Beckett and beyond*. New York: W.W. Norton, 2008, 19

⁷⁰ Harvey, David. *Paris, Capital of Modernity*. New York: Routledge, 2003. 5

⁷¹ Harvey, 10

fertile seedbed for modernist thought. The Industrial Revolution created a class of wealthy bourgeoisie. Wealth was more dispersed, no longer only in the hands of a very select class of monarchs and aristocrats. With this dispersal came a rapid increase in opportunities for artistic patronage, most notably in cities. With the expansion of cities and the creation of a wealthy middle class within these cities, art became a sustainable endeavor like never before. Public institutions such as libraries, museums, theaters, and concert halls also became part of the great commercialization brought on by the industrial revolution.

“These decades of dizzying transformation saw the gradual (never quite complete) dismantling of the mercantilist state intervention that had once regulated economies. Although that retreat from paternalism also generated festering, unsanitary slums and the heartless exploitation of labor, the horror that came to be known, too politely, as “the social question,” it released unexampled entrepreneurial energies...inventions like the typewriter, the Atlantic cable, the telephone stood as agents of capitalism in a wealth-creating machine that enormously enlarged the circles of the flourishing middle classes in Europe and the United States alike. Untold numbers of bourgeois earnestly attended art exhibitions with dollars, pounds, and franc loose in their pockets.”⁷²

Not only did the restructuring of wealth provide ample inspiration for the nineteenth and twentieth century artist, but it also created a class of patrons that had previously not existed.

Beginning in the 1800s there was also a lessening of religious constriction. It is dangerous to assert sweeping generalizations on the climate of religious fervor because religiosity varied greatly based on location and culture. However, Paris had a longstanding history of secular revolutionaries and religious debate. Secularists moved much of western society away from the firm grip of Christianity as a new diversity in spiritual expression was cultivated. Modernist artists added to the litany of new sects the religion of art.⁷³

⁷² Gay, 22

⁷³ Gay, 29

A discussion on modernism cannot leave out the impact of the First World War and its hitherto unheard of devastation. The Great War completely obliterated long-held notions of humanity, people's capacity for brutality, and seemingly secure notions of politics and national boundaries. World War I threw Europe off-balance with its mechanized bloodshed. This upheaval of so many established truths created a wariness that saturated schools of intellectual thought, art being no exception. It is not a coincidence that the deconstruction of traditional values and the emerging autonomy of art appeared in full-fledged intensity following 1919.

Fundamentally, modernists sought to shake off the past, to free themselves and to create anew.⁷⁴ The literary modernists movement was devoted to the complete upturning of the naturalism and realism that had pervaded the nineteenth century novel.⁷⁵ A shift in emphasis occurred from merely a good, suspenseful story to the actual technique of composition. Literary virtuosos in Paris and beyond declared dissatisfaction with the formulaic novels of the Realists and ventured to create works that distorted subjectivity, perspective, and clarity.⁷⁶ Literary modernism was also characterized by an extreme awareness of the interiority of things, the "extremities of self-consciousness."⁷⁷ It was the minutiae of human experience that the realists had ignored and literary modernism sought to expose. *Ulysses* is a prime example. This approach led many authors to invert the traditional depiction of space as they rid themselves of characters in less than a sentence or delineated pages to a singular physical movement.⁷⁸ An element of unpredictability, strangeness even, dominated the works of writers who focused on

⁷⁴ Gay, 137

⁷⁵ Olson, Liesl. *Modernism and the Ordinary*. Oxford: Oxford UP, 2009. 3

⁷⁶ Gay, 183

⁷⁷ Olson, 3

⁷⁸ Gay, 184

the ordinary. Modernist fiction sought to supplant the realist narrative and construct masterpieces that completely reworked description and coherence, time and perspective.⁷⁹ Joyce is considered one of the foremost modernist artists for the daring way in which he embraced all these most fundamental tenets of modernism.

Joyce once praised Henrik Ibsen, perhaps the writer he revered the most, for dispensing with tradition.⁸⁰ Joyce took Ibsen's legacy upon himself. What already existed bored Joyce. As an artist he was much more interested in originality, in breaking with what had already been done.⁸¹ Levitt argues that when Joyce took up his pen to rewrite Stephen Hero into *A Portrait of the Artist as a Young Man*, Joyce's venture into modernist writings began:

“The opening scene of *A Portrait* thus puts us on notice that the comfortable Victorian world is no more. Thrust without warning into a consciousness which cannot order the events it observes, which is incapable of distinguishing among levels of truth or even of sorting out its own sensory perceptions, the reader understand at once that he is in a new world, with changing forces and shifting boundaries, with one of the certainty that the Victorians desire and that he himself has long been accustomed to.”

This new ‘ambiguity,’ as Levitt classifies this break with tradition, is present in all of Joyce works and culminates in *Finnegans Wake*. *Finnegans Wake* was a departure, not only from pre-modernist absoluteness, but even from the previous modernism of Dada and *Ulysses*. While the timeframe (one night as compared to one waking day of *Ulysses*), location (Dublin), and end (monologue by the novel's main female character) are all similarities between *Ulysses* and *Finnegans Wake*, the books are radically different. *Finnegans Wake* was so avant-garde that it actually managed to redefine modernism. It broke all rules for literary composition. It violently

⁷⁹ Gay, 185

⁸⁰ Oser, Lee. *The Ethics of Modernism: Moral Ideas in Yeats, Joyce, Woolf, and Beckett*. Cambridge: Cambridge UP, 2007. 66

⁸¹ Ehrlich, Heyward. "Introduction." *Light Rays: James Joyce and Modernism*. By Morris Beja and Heyward Ehrlich. New York: New Horizon. 12

and unapologetically uprooted all conventions.⁸² To Joyce, *Finnegans Wake* was the supreme expression that structure and substance were interchangeable, that art and life were intrinsically connected and reciprocal.⁸³ In *Our Exagmination round His Factification for Incamination of Work in Progress*, a collection of essays written by Joyce's colleagues contemporary to the serialization to *Finnegans Wake*, Samuel Beckett wrote that "Here form is content, content is form. You complain that this stuff is not written in English. It is not written at all. It is not to be read – or rather it is not only to be read. It is to be looked at and listened to. His writing is not about something; it is that something itself."⁸⁴ Subject and purpose merge into the same entity. Art truly became autonomous.⁸⁵

A better understanding of Joyce's type of modernism can be seen through the lens of his social circle as he was compiling *Finnegans Wake*. Ezra Pound invited Joyce to Paris in 1920 for a week but Joyce took to the city so strongly that he immediately moved his family and remained in Paris for the rest of his life. Joyce's circle of friends initially centered around Ezra Pound and his cohorts.⁸⁶ Pound helped advance the career of many of the most famous modernist writers and thus always had a pulse on the direction of the movement. Pound is most commonly associated with the imagist movement in poetry. As its name suggests, imagism favored precise imagery with concise language and rejected Romantic and Victorian models. Pound eventually left Paris permanently in 1924 and according to Richard Ellman, "only one of his many encounters with literary people was of great importance," that being his meeting with

⁸² Gay, 229

⁸³ Ehrlich, 14

⁸⁴ Beckett, Samuel. *Our Exagmination round His Factification for Incamination of Work in Progress*. London: Faber and Faber, 196. 14

⁸⁵ Ehrlich, 14

⁸⁶ Ellmann, 502

Adrienne Monnier and Sylvia Beach, owners of an English bookshop and who would later become his publishers. Beach and Monnier guided Joyce through the contemporary French literature in the 1920s.⁸⁷ At a party in May 1921 Joyce was invited to meet modernist composers Igor Stravinsky, Sergie Diaghilev, as well as famous modernist author Marcel Proust. As his peers challenged traditional ideas of literature, music, and art Joyce settled in among like-minded spirits for the 18-year penning of *Finnegans Wake*.

Modernism challenged institutionalized notions of creativity and relied on the developing sciences for part of its direction and inspiration. Contributing to this destruction were developments in emerging scientific fields, including physics.⁸⁸ Modernism actually turned to social and physical sciences for inspiration, beyond just the humanities and world of art as previous artists had done. Arthur Miller's book *Einstein, Picasso* traces the similarities between Einstein and Picasso in the early twentieth century. He suggests that both the scientific and artistic "shared a response to the tension between classical and nonclassical thinking...[that] both men's epiphanies grew out of a sense that something was missing in the way science and art were then understood."⁸⁹ Absolutes in both the real and the creative world were simultaneously destroyed in the early twentieth century.

Fundamentally the aim of the scientific world was the same as the modernist. Einstein conceived of his theories as a means of reconciling theoretical disparities, as an attempt to bring together science under one universal conceptual framework. Modernism, as an artistic movement, was in many ways trying to account for the whole of human experience. This

⁸⁷ Ellmann, 503

⁸⁸ Ehrlich, 15

⁸⁹ Miller, Arthur I. *Einstein, Picasso: Space, Time, and Beauty That Causes Havoc*. New York: Basic, 2001. 237-239

included an aggressive probing into unexplored or allusive perspectives and structures. Both science and modernism used deconstruction as their mechanism of expression. While relativity deconstructed the absolutism of space and time, modernism deconstructed perspective, structure, words, and forms. Both undermined previously held notions of reality.⁹⁰ As “art was moving toward a highly abstractive phase, physics underwent a parallel movement after the geometrization of space and time in Einstein’s general relativity of 1915, and then even more dramatically in the 1920s with the development of quantum theory.”⁹¹ While several scholars point to the rejection of science as a form of salvation, others have cited how artists and authors found within the Einstein’s theories validation and inspiration for their pieces. Joyce, as the following chapter will show, was well aware of Einstein’s rising popularity.

In *Finnegans Wake* Joyce tackles the Irish nationalist question using every weapon in the arsenal of modernism. On one hand he uses the Irish independence narrative as substantial material for *Finnegans Wake*’s dream-like pages. On the other hand he is inspired by the modernist climate in which he lives, part of which encourages him to use Einstein’s theories of relativity and quantum theory. These two events in *Finnegans Wake* may certainly not have been a conscious connection in Joyce’s mind, however that does not negate the fact that science was used to appropriate historical trends. Modernism simply gives the context for this transference. I want to look at the different ways Joyce problematized temporal sequence and temporal narratives in *Finnegans Wake* in order to ultimately convey a certain attitude on Irish nationalism. The modernist movement, with its experimentation and rejection of previous forms, cultivated a creative environment that explored the meaning of reality and how it pertained to

⁹⁰ Miller, 4

⁹¹ Miller, 6

human experience. Modernism facilitated, however serendipitously, to forge nationalism, new physics, and the penning of *Finnegans Wake* into a canonical work of art.

Thesis Chapter 2

Joyce's Exposure to Science

“What is demanded is a change in our imaginative picture of the world.”
-Bertrand Russell on understanding Einstein

Before *Finnegans Wake*

Joyce once quipped to a colleague “I don’t believe in any science,” a not unusual sentiment that characterizes his lifelong dedication to the only deity he truly believed in: art.⁹²

Joyce wrote early in his literary career:

“Do not think that science, human or divine, will effect on the one hand a great and substantial change for good in men and things, if it merely consults the interests of men in its own interests, and does good to them it may do good to itself, and in everything pass over that first, most natural aspect of man, namely, as a living being, and regard him as an infinitely small actor, playing a most uninterested part in the drama of worlds.”⁹³

Joyce clearly had his doubts about the utility of science when juxtaposed against the humanism of art. Although Joyce did not claim to adhere to science, this did not mean he found it valueless - in fact quite the contrary. Throughout his entire literary career Joyce strove to capture and document humanity as faithfully as possible, albeit in unconventional ways. Ironically, by choosing the human condition as his subject matter he had to embrace the role of science as the mechanism by which the physical condition of man improves through the centuries. Joyce was an avid enough scholar to comprehend the importance of science to human development and therefore made no attempts to alienate it within his writings.

But Joyce was interested in the fluid, the transient, the elusiveness of truth and art. Steven Reese explains how Joyce’s “adherence to the claims of spiritual reality against the claims of materialism”⁹⁴ ultimately led him towards the life of the artist. Joyce rejected the limitedness of gaining knowledge only by sensory experience as espoused by materialism and

⁹² Ellmann, p. 706

⁹³ Reese, Steven C. *Modernism and the March of Science Four Novelists*. Diss. University of Delaware, 1988. 28

⁹⁴ Reese, 90.

the positivist tradition in science. Also, the pragmatism of many of Joyce's intellectual contemporaries generally rejected those facets of science and art that were seen as impractical.⁹⁵ Reese quotes Joyce's brother, Stanislaus, who stated that the popular pragmatism of his time "ran counter not only to his [Joyce's] Aristotelian principles of logic but still more to his character."⁹⁶ This telling quote shows Joyce as a man who found the world without absolutes the most interesting, as well as the most suitable to his own outlook on art and philosophy. Encouraged by the anti-traditional modernists with whom he surrounded himself, Joyce valued human experience above all else.⁹⁷ This affinity suggests an inherent conflict with the absoluteness of Newton's hypothesis that we experience life as a series of events in a three dimensional Euclidean framework, with space and time autonomous. The rigidity of this construct certainly ran counter to Joyce's natural aesthetic disposition. Therefore, the fact that Joyce would have embraced the creative freedom allowed by Einstein's theories is not surprising in the least.

Schooling

Without discussing the science Joyce understood prior to Einstein, it would be difficult to understand why Joyce found Newtonian physics inadequate to portray the chaos of the interwar period. Conversely, it is only after understanding the limits of pre-Einsteinian science can one understand why Joyce found new physics appropriate. Joyce began his education in 1888 at Clongowes Wood College. Due to his family's inability to afford tuition, in 1892 Joyce was taken out and briefly home-schooled before attending Christian Brothers School in Dublin, and

⁹⁵ Reese, 87

⁹⁶ Reese, 89-90

⁹⁷ Reese, 87

then Belvedere College.⁹⁸ Although Joyce struggled with mathematics during these pre-university years, he studied hard and was generally a good student. Chemistry was “the only subject that evaded his zeal.”⁹⁹

Joyce then enrolled in the rather new and struggling University College in Dublin. Throughout university Joyce was an active participant in many literary debates and his talent for writing became known across Dublin intellectual circles. With the conclusion of his college career 1902 Joyce opted to enroll with his friend J.F. Byrne in medical school. This choice seems somewhat arbitrary, and it is unknown if Joyce honestly believed he would become a doctor or if it was merely to serve as an intermediary excuse so he did not have to take a clerical job and follow in the finance-plagued footsteps of his father. Whatever the case, biographer Richard Ellman suggests that Joyce held firm to his belief in the superiority of literature above all other curricula. His motivations to attend medical school stemmed primarily from a need to finance his writing career. Joyce was also drawn to the idea that “The writer, who had Ireland for a patient, to anatomize and purge, might plausibly be physician too.”¹⁰⁰ Although his reasons may never be fully known, Joyce made the conscious decision to enroll in St. Cecilia Medical School, and thus situate himself very close to the latest scientific discoveries as they pertained to medicine.¹⁰¹

Joyce began his medical coursework in October 1902. Einstein had yet to be published and it is certain that within the St. Cecilia lecture halls Joyce was exposed only to Newtonian science. If his highly literary college career was any indication, Joyce did not much care for the

⁹⁸ Ellmann, 35

⁹⁹ Ellmann, 47

¹⁰⁰ Ellmann, 101

¹⁰¹ Ellmann, 101

rigorous science classes. As a result in 1902 he decided to transfer to Parisian medical school Ecole de Medecine under the guise that medical school in Ireland was too expensive. This departure was spiritual rather than practical, as Joyce felt suffocated by the Irish literary school and longed to experience life on the continent.¹⁰²

He left Dublin on December 1st, 1902 wrote to his family on December 6th, 1902 that he had received “admission to the course for the certificate in physics, chemistry, and biology.”¹⁰³ As to be expected, the same financial issues that plagued Joyce in Ireland followed him to Paris. With little money and a general dislike of the subject material as a whole, Joyce very quickly stopped attending lectures.¹⁰⁴ He returned to Dublin in 1903 because his mother had fallen deathly ill and attempted medical school yet again back at St. Cecilia’s. Chemistry once more turned him away, this time for good.¹⁰⁵ Although this dabble into a professional scientific life was largely unsuccessful, it certainly provided substantial pre-Einstein scientific exposure for the artist. The very fact that medical school was his first serious attempt at a career shows that he held medicine, and science, in high enough esteem to possibly commit his life to them.

Soon after this failed sojourn as a medical student, Joyce left Dublin in 1904 with his wife Nora Barnacle, and began the life of an expatriate never to live in Ireland again. He lived in Trieste, Rome briefly, and Zurich before moving to Paris in 1920. He worked as a teacher, tutor, and clerk to subsist, but his primary occupation remained that of author.¹⁰⁶ There is little documentation in Ellman’s biography of things of a scientific nature between the ending of

¹⁰² Ellmann, 109-112

¹⁰³ *Letters of James Joyce* vol. II, 19

¹⁰⁴ Ellmann, 117

¹⁰⁵ Ellmann, 145

¹⁰⁶ Ellmann, 183

Joyce's medical career and his arrival in Paris. Ellman does mention that in 1913 Joyce told one of his pupils about his passion for 18th century Italian philosopher Giambattista Vico. Joyce was very fond of Vico and admired him for his theory on the recurring cycle of history, or eternal return. As a footnote to the third volume of Joyce's letters edited by Richard Ellman, Ellman states that Joyce read Vico's capstone work, the *La Scienza Nuova*, while he lived in Trieste (between 1905 and 1915).¹⁰⁷ Alan Thiher draws the comparison that "The law of eternal return can look very much like a description of relativistic temporality,"¹⁰⁸ in the sense that time is distorted from its unequivocal Newtonian absoluteness. Eternal return is a predominant theme in *Finnegans Wake*, for the first sentence is actually the last half of the last sentence.¹⁰⁹

Joyce remained a faithful academic his entire life, and as such he often took it upon himself to learn about new subjects and discoveries. Scholars have found that while Joyce was preparing *Ulysses*, published in 1922, he began to better familiarize himself with science. The extent to which this self-education included relativity and quantum theory is debated among scholars. *Ulysses* is famous for its stream-of-consciousness style of writing and although Joyce offers up new representations of time within the novel, the narrative of *Ulysses* progresses in a linear fashion. Allen Thiher adamantly supports the view that:

"Joyce did not know anything about Heisenberg or quantum theory when he was writing *Ulysses*. In fact, quantum mechanics didn't exist yet when he was writing *Ulysses*, and Joyce probably knew little at that time about Einstein and relativity. It is dubious that Joyce knew much of anything about the new physics until after publishing *Ulysses*, when he began documenting himself on everything in order to write *Finnegans*

¹⁰⁷ *Letters of James Joyce* vol. III, 117

¹⁰⁸ Thiher, Allen. *Fiction Refracts Science: Modernist Writers from Proust to Borges*. Columbia: University of Missouri, 2005. 190.

¹⁰⁹ "[pg. 628 – final sentence] A way a lone a last a loved a long the [pg 1 – very first sentence] riverrun, past Eve and Adam's, from swerve of shore to bend of bay, brings us by a commodius vicus of recirculation back to Howth Castle and Environs."

Wake... Einstein's theories of relativity were the subject of the mass media... of the twenties... but, I stress, this occurred after *Ulysses* was published in 1922."¹¹⁰

The majority of archival work on the correspondence, notes, and writings of Joyce indicates the validity of Thiher's claim. However, Jean-Michel Rabate states that "Joyce had felt the necessity to update his scientific terminology and his view of modern physics, mathematics and astronomy around 1918, when he was preparing the 'Ithaca' episode of *Ulysses*."¹¹¹ This chapter is written as a formulaic series of 309 questions and their answers narrated by a third person. Karen Lawrence describes how in the 'Ithaca' chapter Joyce "dons the anti-literary mask of science" and organizes the chapter around the strict guidelines of a catechism. Joyce forgoes literary 'beauty' in favor of technical, impersonal writing.¹¹²

He did not necessarily utilize Einstein's new physics or quantum theory at this stage, but it is quite clear that Joyce embraced the sciences as viable thematic inspiration for his writings. In the notes for the Ithaca chapter, Rabate finds that Joyce was studying Henri Poincaré's *La Science et l'hypothèse*, which had been published in 1902. While Einstein never refers to Poincaré in his famous publication on the special theory of relativity in 1905, Poincaré was an important influence for Einstein.¹¹³ There are also extensive notes for the 'Ithaca' chapter on Bertrand Russell's 1919 publication, *Introduction to Mathematical Philosophy*.¹¹⁴ The fact that Joyce was educating himself on mathematics in order to write this chapter suggests that the formality of the writing was a direct result of his scientific self-education. Joyce engaged with mathematics and science in order to become a more versatile writer. For *Ulysses* Joyce's process

¹¹⁰ Thiher, 173-174.

¹¹¹ Rabaté, Jean-Michel. *Joyce upon the Void: the Genesis of Doubt*. New York: St. Martin's, 1991. 1

¹¹² Lawrence, Karen R. "Style and Narrative in the "Ithaca" Chapter of Joyce's *Ulysses*." *ELH* 47.3 (1980): 559-74. *JSTOR*. 559

¹¹³ Miller, 226-227

¹¹⁴ Rabate, 1

of literary production took a decidedly scientific turn, illustrating that before he even sat down to pen *Finnegans Wake* he found inspiration in science.

Popularization of Einstein and New Physics

Joyce began *Finnegans Wake* around March 10th, 1923¹¹⁵ and the early 1920s served as time for the rapid popularization of the theories of Einstein and the subsequent developments in the field of quantum theory. Einstein published his special theory of relativity and a paper on the photoelectric effect in the *Annalen der Physik* in 1905, and the general theory of relativity in the same periodical in 1916. Although the theories themselves were initially published in the first two decades of the century, as previously noted, Allen Thiher claims that Joyce most likely became familiar with Einstein after the publishing of *Ulysses* in 1922. This was largely due to popular publications and widespread newspaper coverage. It took a few years before the public grasped the brilliance of Einstein, but once they did they could not get enough of his futuristic new theories.

In order to understand the reasons that Einstein became a cultural icon, a basic understanding of his contributions to physics is useful. The descriptions that follow are not mathematically or theoretically intense because it is unlikely Joyce would have been able to understand the mathematics behind the theories (given his early distaste for the subject). Rather, the goal of this overview is to provide a basic understanding similar to something Joyce may have realistically grasped.

¹¹⁵ *Letters of James Joyce vol. II*, 144

The Newtonian framework is based on the idea of absolute time and absolute space.

According to Newton's supreme canonical work the *Principia Mathematica*:

“Absolute, true, and mathematical time, of itself, and from its own nature flows equably without regard to anything external, and by another name is called duration: [Absolute time is to be contrasted with] relative, apparent, and common time, [which] is some sensible and external (whether accurate or unequable) measure of duration by the means of motion, which is commonly used instead of true time; such as an hour, a day, a month, a year.”¹¹⁶

Another way of looking at what Newton is saying is by picturing time as constant, and the universe moving through time linearly at a uniform rate. Absolute space according to Newton is as follows:

“Absolute space, in its own nature, without regard to anything external, remains always similar and immovable. Relative space is some movable dimension or measure of the absolute spaces; which our senses determine by its position to bodies...”¹¹⁷

To put it differently, true motion according to Newton “is motion relative to a temporally enduring, rigid, 3-dimensional Euclidean space, which he dubbed ‘absolute space.’”¹¹⁸ We, the mobile bodies within this universe, define our motion in relation to this space.

Einstein's theory of special relativity rid physics of the idea of a Newtonian privileged frame of reference. To further explain I will use an example similar to one given by Bertrand Russell.¹¹⁹ When we walk towards a door we experience it as our motion moving towards the doorway. However, the idea that the doorway is in fact moving towards us is just as mathematically and theoretically legitimate according to relativity. There is no privileged inertial frame. The speed of light, however, is constant and independent of any observational

¹¹⁶ Newton, Isaac. *Principia Mathematica*. <http://www.mnstate.edu/gracyk/courses/web%20publishing/Newton_Scholium.htm>

¹¹⁷ Newton, Isaac

¹¹⁸ Huggett, Nick, and Carl Hoefer. "Absolute and Relational Theories of Space and Motio." 11 Aug. 2006. <<http://plato.stanford.edu/entries/spacetime-theories/#4.2.>>

¹¹⁹ Russell, Bertrand. *The ABC of Relativity*. London: G. Allen & Unwin, 1958. 13-16.

reference frame. Many people came to misinterpret this theory and conclude that *everything* is relative. This is wrong. Einstein was developing theories that would bring all of physics into one conceptual mode. The goal of relativity theory is in fact to “arrive at a statement of physical laws that shall in no way depend upon the circumstances of the observer.”¹²⁰ Furthermore, Newton’s laws of physics prove quite applicable to our typical experiences on the surface of the earth. In his 1905 paper Einstein himself states the velocities of common experience are so far from the speed of light that Newtonian mechanics can be applied.

Einstein published another paper in 1905 that spurred the advancement of what was to become quantum theory. In this paper Einstein introduced the idea of light as ‘quanta,’ or packets of energy. Previous physicists and mathematicians held steadfast to the idea that there was an ‘ether’ that existed in the universe. Popular in the 1800s and assumed by Lorentz and Poincare, the ether was an entity at absolute rest in the universe and served as the foundational frame of reference. Also, previously held ideations of light as electromagnetic waves required that there be some sort of medium through which it must travel. The ether was the solution to this dilemma, even though it was never proven. Max Planck in 1900 had conceived of a law of radiation that introduced energy as discrete packets. Einstein in turn applied this theory in an attempt to justify the duality of atoms and waves by stating “the continuous waves [of electromagnetic radiation]... could be considered only averages over myriads of fine light quanta, essentially “atoms” of light.”¹²¹ If light is a particle and not an electromagnetic wave, there is no fundamental need for the existence of the ether for a wave to travel through. Because

¹²⁰ Russell, 16

¹²¹ Cassidy, David. "Einstein on the Photoelectric Effect." Hofstra University. <<http://www.aip.org/history/einstein/essay-photoelectric.htm>>

an entity at ‘absolute rest’ is not needed in Einstein’s reconfiguration of light, the special theory of relativity becomes mathematically and theoretically feasible.¹²²

The historical progression of quantum theory from this point onward centered around the debate over the particulate or wave-like nature of light. The theory of the atomic model put forth by Niels Bohr (who interestingly refused to accept the importance of quanta) in 1913 postulated that electrons exist in orbits around the nucleus of the atom dictated by certain energy thresholds. He predicted that when electrons emit or absorb a quanta of light their energy level is altered and they are liable to change orbits depending on their new energy level, with the lowest energy orbits closest to the nucleus, and the more energy one electron has, the further from the nucleus it moves. Louis De Broglie in 1924 and Erwin Schrodinger in 1926 contributed to this work with developments to the wave theory of light. De Broglie suggested electrons have a certain periodicity, or wave-like behavior and Schrodinger developed a wave equation that described the behavior of the electron wonderfully. It is important to note that these developments were taking place exactly when Joyce was writing *Finnegans Wake*. The next year, in 1927, Max Born realized that Schrodinger’s equations are actually equations of probabilities of an electron being in a certain position at a given time. This led directly to Heisenberg’s uncertainty principle. Heisenberg’s uncertainty principle states that “The more precisely the position is determined [of an electron], the less precisely the momentum is known in this instant, and vice versa.”¹²³ Heisenberg’s uncertainty principle raised many questions on a very fundamental level as to the determinism of physical phenomena, the philosophical repercussions of which will be detailed

¹²² Mauskopf, Seymour. "Second Quantum Revolution." Class Lecture. Duke University, Durham, NC. Lecture

¹²³ Heisenberg, Werner. “On the Perceptual Content of Quantum Theoretical Kinematics and Mechanics.” *Zeitschrift für Physik*, vol. 43 (1927): 172-198. English Translation by John A. Wheeler and Wojciech Zurek, eds. *Quantum Theory and Measurement*. Princeton: Princeton University Press, 1983. 62-84

later. The development of quantum theory was rather rapid and very collaborative, as this brief outline shows.

In her dissertation on relativity in culture, Elise Gail Myers attributes such publications as A.S. Eddington's *Space, Time and Gravitation* (1920), Charles Nordmann's *Einstein and the Universe*, and Bertrand Russell's *The ABC of Relativity* (1925) as responsible for bringing Einstein's theories to lay people.¹²⁴ Rabate suggests that along with these titles that it is likely that most of Joyce's understanding of relativity came from reading the 11th edition of the *Encyclopaedia Britannica* which was published in 1911 (to be discussed in *Finnegans Wake* notebooks section).¹²⁵ These publications were meant for popular consumption, and they soon combined with the mass media's intrigue to saturate Western Europe with Einstein's legacy.

Newspapers

In 1906 Joyce's brother Stanislaus noted in his diary that Joyce would often write to his Aunt Josephine in Dublin requesting Irish newspapers, magazines, and books.¹²⁶ In his notebooks for *Finnegans Wake* the vast majority of Joyce's notes are taken from Irish newspapers and periodicals. Throughout his life Joyce's friends also often saw him reading English newspapers.¹²⁷ Joyce read and contributed to countless newspapers, periodicals, and magazines and to analyze them all is unrealistic. To assess the pervasiveness of relativity between the years 1905 and 1939, I will look at both the *Irish Times*, one of the foremost publications in Joyce's

¹²⁴ Myers, Elyse Gail. *Relativity Physiques: Bodies as Events in Anglo-American Modernist Literature*. Diss. University of Iowa, 2003. 12

¹²⁵ Rabate. 7

¹²⁶ Ellmann. 244

¹²⁷ Ellmann. 424.

Dublin. I will also take *The Times* of London as an archetypical newspaper of Western Europe and look at articles pertaining to relativity and Einstein between the same years.

With the headline of *The Times* reading “The Revolution of Science,” the stage was set on November 8th, 1919, for the popularization of new physics. On this day both *The Times* and the *Irish Times* present information on Einstein and his ‘remarkable’ theories. They provide brief biographical sketches of the physicist while reporting the discussion on his work held the previous week at the Royal Society in England after a total eclipse experiment in Brazil that supported the hypothesis of general relativity. Although one must be aware of sensationalist journalism, such phrases as “the Newtonian principle has been upset,” “the most remarkable since the discovery of Neptune, and as propounding a new philosophy of the universe” (*The Times*), “may revolutionize human thought,” and “threatens the fundamental axioms of physical science” (*Irish Times*) make it evident that the radical implications of Einstein’s work was not lost. This sensationalism that drove to undermine the previously held assumptions of a mechanical worldview appears to be exactly something that would pique the interest of Joyce.

The Times asked Einstein to write an article on his new theories, what one can only logically assume was due to a popular response to the November 8th publications. On November 28th, 1919 Einstein details his theories in understandable language and discusses their place within the greater Newtonian scientific tradition that pre-dated his publications. This article does two things. First, it shows how the everyday reader of a daily newspaper can grasp Einstein’s science, with some degree of accuracy. Second, it shows the initial stages of Einstein’s ascendance into cultural iconography. The accessibility of this article should not be

overshadowed by the appeal of his theories, for the fact that Einstein himself was able to address the literate public certainly had much to do with his cultural reception.

Several articles on Einstein and relativity appeared toward the end of 1919. The tone of many of such articles is exemplified in a December 13th, 1919 account of A.S. Eddington's address to the Royal Astronomical Society on relativity. Eddington stated that "generalized relativity theory was the most profound theory of nature, embracing almost all the phenomena of physics."¹²⁸ Articles on Einstein steadily appeared in *The Times* between 1919 and 1922 including philosophical musings, letters to the editor, and cultural analysis. However, there is a significant increase in the number of articles in the year 1921. Interestingly, there is an article dated June 20th, 1921 using relativity to describe Shakespeare. The next article on Einstein from the online *Irish Times* archive appears on October 24th, 1922 describing his candidacy for the Nobel Prize in physics, which he was received in November of that year. Einstein's coverage in *The Times* was steady and generally laudatory.

Although the *Irish Times* was less consistent in its reporting's, it presents small morsels of information that include: Einstein's Nobel Prize contention, his inaugural address at the International University Extension lectures in 1928¹²⁹, his 51st birthday (in his birthday announcement the *Irish Times* actually states he "has revolutionized modern scientific conceptions to a degree comparable only with Newton's demonstration of the laws of gravitation),¹³⁰ as well as such trivial matters as his arrival at Victoria Station in London.¹³¹ The

¹²⁸ *The Times*. December 13th, 1919.

¹²⁹ *Irish Times*. March 27th, 1928.

¹³⁰ *Irish Times*. March 14th, 1930.

¹³¹ *Irish Times*. October 28th, 1930.

very fact that these rather mundane notices appeared at all is a strong statement to the cultural impression Einstein had made and the persona he quickly became.

There is a significant decline in articles relating to Einstein in 1928, only to resurge again in 1929 after he submitted a new paper promoting the connection between gravitation and electro-magnetism.¹³² The beginning of a new decade solidified Einstein's fame, and also saw articles that appear to more critically engage with his theories. A March 14th, 1930 *Times* article parodies the popularization of relativity by describing how 4,000 to 5,000 people showed up to a film on relativity at the New York Museum of Natural History, when only 1,000 tickets had been issued. As a result the police had to be called to control the crowd; Einstein had fully infiltrated popular culture. There were many articles in the *Irish Times* on Einstein in 1931, one of the most telling of which appears on March 14th, Einstein's 52nd birthday. In this article he is considered "present almost as much in the public eye as Mr. Charles Chaplin."

On May 7th, 1932 the *Irish Times* reported that Einstein delivered the annual Rouse Ball lecture in mathematics to the Senate House in Dublin. Ireland was not immune to the rising celebrity of Einstein, and for the amount of Irish newspapers Joyce regularly read, it would be unreasonable to assume that he was not fully aware of Einstein's findings. Beginning in a March 29th, 1933 article, the tone of Einstein's articles become explicitly more political. In this particular article Einstein's renunciation of the repressive climate of Germany is the primary focus, not his science. As a cultural icon he took on the role of political commentator, whether he intended to or not. On October 3rd of the same year in the same newspaper Einstein gave his first public address in order to raise funds for German refugees.

¹³² *The Times*. January 31st, 1929.

A prominent article from May 3rd, 1935 in *The Times* entitled “Theory of Relativity: Experiments on the Atom” effectively publicizes the relativity and its influence on quantum physics. The article states that “it was not until 1913, when Niels Bohr applied the [quanta] theory to the structure of the atom, that it [quantum theory] entered on its present conquering career.” The article goes on to describe the history and contemporary developments of quantum theory. After 1936 there is a sharp decline in articles mentioning Einstein, although they do not completely disappear.

The course of Einstein’s popularization in the media makes it fairly evident that Joyce, as an engaged world citizen, could not have missed his ascendancy. The steady stream of commentary served to make relativity palatable to the masses, as well as offer up philosophical explanations for a physical world thrown off its Euclidean center. Joyce’s own intellectual sympathies made him incredibly susceptible to the boundary breaking new physics.

Other Connections While Writing *Finnegans Wake*

Joyce began writing *Finnegans Wake* in early 1923. By the early 1920s Einstein was to some extent already a cultural fixture. Ellman states that one of Joyce’s clearest ambitions in *Finnegans Wake* was to present a world that spoke equally to any reader.¹³³ Pivotal to his general appeal to humanity was the breakdown of absolute time. This breakdown, a dominant motif of the novel, is strikingly similar to the information on new physics disseminated during these years. In reading Joyce’s early work on the novel, his colleague from Trieste, Ettore

¹³³ Ellmann, 563

Schmitz, wrote him in 1924 that his treatment of time was one of the most interesting things about the new work.¹³⁴

In January of 1927 Einstein actually acted on behalf of James Joyce. U.S. publisher Samuel Roth had been pirating *Ulysses*, making illegal profit and distorting the original text. As a result 167 people from many academic and social spheres signed a protest of Roth's actions, Einstein among them. In response, on February 1st, 1927 Joyce wrote his patroness, Mrs. Harriet Shaw Weaver saying "I feel honoured by many of the signatures and humiliated by some, those of Gentile, Einstein and Croce especially. It is curious about them too on account of Vico."¹³⁵ This letter leaves little doubt that Joyce was familiar with Einstein, although his reasons for embarrassment can only be speculated upon. The connection to Vico is interesting; it is possible that Joyce was beginning to connect Vico's idea of eternal return to the relativity of time. Regardless, Joyce's wording clearly shows an acknowledgement of Einstein's identity.

In a letter from May 1929 Joyce told his patroness Harriet Weaver of his plans to have a collection of four essays published defending some of his completed work on *Finnegans Wake*.¹³⁶ *Finnegans Wake's* experimental style of which was being published serially, was drawing criticism from those who did not quite understand Joyce's objective in the new novel. One of these essays was to deal solely with mechanics and chemistry. Also, when an excerpt of *Finnegans Wake* was to be published in a periodical run by his friends he asked author C.K. Ogden to write an introduction and "comment, as a mathematician, upon the structure of

¹³⁴ Ellmann, 571.

¹³⁵ Joyce, James, and Stuart Gilbert. *Letters of James Joyce, Vol I*. New York: Viking, 1957. 249

¹³⁶ Ellmann, 626-27

Finnegans Wake, which he [Joyce] insisted was mathematical.”¹³⁷ Here Joyce is actually admitting that mathematics and science are fundamental organizational principles behind his work. This subtle admission by Joyce lends itself to exciting interpretations. If Joyce used science as *Finnegans Wake*'s foundation, what concepts was Joyce actually inspired by? For this I now turn to the actual notes Joyce kept while writing *Finnegans Wake*.

***Finnegans Wake* Notebooks**

The *Finnegans Wake* notebooks are a collection of Joyce's notes, in over 50 bound volumes, that he amassed while writing *Finnegans Wake*. A community of Joycean scholars has so far transcribed twelve of the primary notebooks he created. These transcriptions include when applicable: a clear deciphering of his often illegible handwriting, annotations describing the source of the note as best as possible, the context from which it was taken out of the source, its transfer process in drafts of *Finnegans Wake*, and where the note ended up in *Finnegans Wake*. Each notebook also gives an introduction to the sources Joyce consulted while the notebook was in use. Of course not all sources have been identified, but for the notebooks that have been published scholars have done an excellent job identifying Joyce's most probable inspirations. For those trying to understand modernist literary production, these notebooks shed some much needed light on the great riddle that is *Finnegans Wake*.

Beginning with the second oldest of the transcribed notebooks, VI.B.3, Joyce provides a valuable example of how he uses science as a motif for an entire section of his work. It should be noted that VI.B.3 is not the third notebook of Joyce's recorded notes. When the notebooks

¹³⁷ Ellmann. 627

were initially organized by Peter Spielberg in 1962 he did not have the information available today on source material that indicates a more accurate sequence, however Spielberg's system of classification is still in use.¹³⁸ One of the sources Joyce used for this notebook was J.J. Flood's *Ireland: its Saints and Scholars*.¹³⁹ Irish history, as has been discussed, was one of Joyce's primary preoccupations and inspirations for *Finnegans Wake*. From this source Joyce took many notes on St. Patrick, which he used to compile the chapter 'St. Patrick and the Druid.' These notes focus on the color white and according to scholars provided "the structural framework underlying the episode...[as] a nationalistic distortion of Newtonian revelation for white light as the true source of colour."¹⁴⁰ One of Joyce's notations is the widely recognizable mnemonic for the colors of visible light, "r+o+y+b+i+v."¹⁴¹ His note is conspicuously missing 'g' for green, the color of Ireland. The splicing of light into fragments of different wavelengths is synonymous to "the diversity of the perceived world into a fragmentation of national unity"¹⁴² that Joyce tackled in the St. Patrick chapter.

The thematic insight Joyce found within the fragmentation of white light is very important to this thesis. The example above takes into account many of Joyce's artistic proclivities as they pertained to the writing of *Finnegans Wake*. First, Joyce relied heavily upon history generally and Irish history specifically. Second, because the structural framework of the St. Patrick chapter is based on refracting light, this example further shows that Joyce was willing

¹³⁸ Vi.b.10, 6

¹³⁹ VI.B.3, 5

¹⁴⁰ Vi.b.3, 5

¹⁴¹ Vi.b.3, 58 (a)

¹⁴² Vi.b.3, 7

to use scientific principles to guide his writing on a thematic level; that science was artistically more valuable than just source material for puns.

VI.B.1, used between February and April 1924, contains exciting and explicit references to relativity and quantum theory. The first source that Joyce used in VI.B.1, and the most relevant to this thesis, is *Daedalus: or science and the future*, a lecture that biologist J.B.S. Haldane gave in Cambridge in February 1923. The lecture was published later in the year. Haldane, in his lecture, says about Einstein:

“At the present physical theory is in a state of profound suspense. This is primarily due to Einstein...I have no doubt that Einstein’s name will be remembered and revered...It is perhaps interesting to speculate on the practical consequences of Einstein’s discovery. I do not doubt that he will be believed. A prophet who can give signs in the heavens is always believed...[I am] absolutely convinced that science is vastly more stimulating to the imagination than are the classics...not until our poets are once more drawn from the educated classes (I speak as a scientist) will they appeal to the average man by showing him the beauty in his own life”¹⁴³

Haldane adamantly believed that Einstein was the greatest thinker of his generation and that he held more influence than philosophers and politicians alike. Haldane goes on to discuss quantum theory, its history, and the future course he thinks it will take.¹⁴⁴ What is perhaps most interesting about his lecture is that Haldane claims that for artists to be truly successful, they first must appreciate science. The many notes Joyce took from this source demonstrate the intrigue the material held for the artist.

In his notes from Haldane Joyce refers to one of *Finnegans Wake’s* main characters, HCE, as a chemical symbol¹⁴⁵ and deifies Einstein, along with Columbus and Newton in the

¹⁴³ Haldane, J. B. S. *Daedalus or Science and the Future*. London: K. Paul, Trench, Trubner, 1924. 11-14. 39

¹⁴⁴ Haldane, 17-18

¹⁴⁵ VI.B.1, 17 (j)

note: “Columbus/Newton/Einstein } Sign in heavens.”¹⁴⁶ Joyce also uses Haldane as inspiration for a series of notes on Poincare, light and hot body radiation, night, distance, and human progress as they pertain to the quantum hypothesis.¹⁴⁷ Although Joyce did not transfer these notes into draft form or *Finnegans Wake* itself, they demonstrate that Joyce was receptive to new physics, his mind fertile ground through which these theories might gain literary expression.

In VI.B.1 Joyce also read and took notes on *La Civilisation et les grands fleuves historiques*, a sociological study by Leon Metchnikoff published in 1889 on the effect of rivers on culture. In his notebook Joyce inserts “Einstein” between notes on Chinese history, time, and genealogy taken from Metchnikoff’s work.¹⁴⁸ Joyce’s notes are often times nonsensical and open to wide interpretation, however I would argue that by inserting a reference to Einstein among notes on Chinese history, Joyce is playing with the idea of temporal flux in historical development.

VI.B.1 also contains an entire section of notes that refer specifically to relativity, which according to the scholars who compiled the notebook “Joyce could have found in any popular account of Einstein’s theory.”¹⁴⁹ The notes are tantalizing and include such phrases as: “See history retrograd if / leave E faster than lux,”¹⁵⁰ and “my particles may travel 1000s of years.”¹⁵¹ There are also obvious references to new physics: “lightyear / will arrive yesterday,” “ray of light / traveling backward,” “stars seen from / E perspective,” and “Constellations relative / their

¹⁴⁶ VI.B.1, 13-14 (l)

¹⁴⁷ VI.B.1, 41

¹⁴⁸ VI.B.1, 97 (h), (i)

¹⁴⁹ VI.B.1, 13

¹⁵⁰ VI.B.1, 165 (i)

¹⁵¹ VI.B.1, 125 (f)

names.”¹⁵² These are provocative scientific references and obvious reflections on the new ideations of time.

VI.B.1 is a wonderful example of Joyce responding not only to science, but to Einstein specifically. In *Daedalus* Haldane was tangibly excited by the new science of Einstein. In his notes it appears Joyce was responding to Haldane’s excitement. The notes on relativity theory that appear later in the notebook shows that Joyce imbued scientific topics with artistic merit. From this notebook it is evident that Joyce began the process of channeling the imaginative energies of science into literary production.

VI.B.19 (June-July and September-November 1925) provides one of the most intriguing hints into Joyce’s contact with new physics; however the transcription of this notebook has yet to be published. Jean-Michel Rabate was able to find on page 73 of this notebook the note “ABC of Relativity / Bertrand Russell” which was published in 1926.¹⁵³ The extent to which Joyce actually read from it can never be known because this is the only note written from the source (the discrepancy in dates between Joyce’s note-taking and the book’s publishing date is either because Joyce returned to this notebook at a later date and filled in pages, or he wrote it as a precursor to its publishing). *The ABC of Relativity* is a small book written purposefully for the interested public. It uses illustrations and rudimentary examples to try to convey what is meant by ‘relativity’ without using the technical language of mathematics. Although it is at points hard to understand, it does a wonderful job at introducing the greater intellectual shifts that occurred concurrently with the publishing of Einstein’s 1905 and 1915 papers. For example:

¹⁵² VI.B.1, 167, 205, 206

¹⁵³ Rabate, 3

“Since all motion is relative, you may take any body you like as your standard body of reference, and estimate all other motions with reference to that one. If you are in a train and walking to the dining-car, you naturally, for the moment, treat the train as fixed and estimate your motion in relation to it. But when you think of the journey you are making, you think of the earth as fixed, and you say you are moving at the rate of sixty miles an hour....Physics must, therefore, be concerned with those features which a physical process has in common for all observers, since such features alone can be regarded as belonging to the physical occurrence itself. This requires that the laws of phenomena should be the same whether the phenomena are described as they appear to one observer or as they appear to another. This single principle is the generating motive of the whole theory of relativity.¹⁵⁴

This work gives a satisfactory overview of a theoretically abstruse topic.

Turning to a much later notebook, VI.B.47, which was compiled between October and December 1938, Joyce takes notes on chemistry, metallurgy and physics.¹⁵⁵ There is a specific cluster of physics notes that mentions atoms, electrons, positrons, ‘atomic structure’, valency, as well as a possible sketch of the atom by Joyce.¹⁵⁶ These are all essential elements of quantum theory. The positron, the anti-matter counterpart of the electron, was discovered in 1932 as part of the steady progression of quantum physics. In 1938 Joyce was nearing completion of his work and as quantum theory progressed steadily into the 30s, Joyce was continually grappling with the new developments. Rabate argues that this section “prove[s] that Joyce was still trying to connect relativistic physics, textuality and the theory of vision.”¹⁵⁷

It is worth mentioning that while other *Finnegans Wake* notebooks did not necessarily contain notes specifically to new physics, many did touch on topics of time, time-travel, and light. VI.B.5, for example, contains the notes “light outrunner”¹⁵⁸ and “timefield.”¹⁵⁹ VI.B.16

¹⁵⁴ Russell, 22

¹⁵⁵ VI.B.47, 6, 69-10

¹⁵⁶ VI.b.47, 67

¹⁵⁷ Rabate, 4

¹⁵⁸ VI.B.5, 22 (J)

¹⁵⁹ VI.b.5, 53(h)

was also used primarily for character development Shaun and immediately pre-dates VI.B.5. Notes such as “the time we well / remember,”¹⁶⁰ “temporizer,”¹⁶¹ and “sun = clock / dials(s) before his / time.”¹⁶² VI.B.33 is similar and contains a section beginning with “from space/to space” on space and time more generally.¹⁶³ All of these tantalizing jottings suggest an experimentation with the traditional concept of a privileged sense of time *throughout* the compilation of *Finnegans Wake*.

Lastly, Joyce used the 11th edition of the *Encyclopedia Britannica* (1911) in many of the transcribed notebooks in order to take notes on a wide-ranging list of topics. Rabate thinks that it is likely that Joyce learned about relativity most extensively (and usefully) through this umbrella source.¹⁶⁴ Although an article on relativity is not present in the actual 1911 edition, the 1922 and 1926 supplements both contain an extensive article on relativity. The article gives a historical background of the theory itself, how it was developed, and new ideas it posits for physical reality. An example of the general readability of the article can be seen in the section that describes how relativity rid physics of a privileged reference frame:

The two observers who used the coordinates x, y, z, t and x', y', z', t' had been regarded by Lorentz as being one at rest in an aether and one in motion; for Einstein they were observers moving with any velocities whatever subject to their relative velocity. Lorentz had regarded t as the true time and t' as an artificial time... With Einstein came the conception that both times, t and t' had precisely equal rights to be regarded as the true time....¹⁶⁵

¹⁶⁰ VI.B.6, 136 (f)

¹⁶¹ VI.b.6, 170 (b)

¹⁶² Vi.b.6, 172 (j)

¹⁶³ VI.B.33, 83

¹⁶⁴ Rabate, 7

¹⁶⁵ Jeans, James H. "Relativity." *Encyclopedia Britannica*. 13th ed. Vol. 32. New York: Encyclopedia Britannica Company, 1922. 264

As the excerpt shows, this is very digestible. The *Encyclopedia Britannica* explained Einstein's theories within the intellectual grasp of Joyce's literary mind.¹⁶⁶

Although James Joyce held fast to the belief that art reigned above all, he acquiesced to the utility and creativity of science. Einstein's revolutionary theory of relativity and the subsequent developments in the field of quantum mechanics contained exactly the type of imagination that attracted Joyce the artist. In his schooling and early published works it is clear Joyce was exposed to the Newtonian tradition. However, once Einstein's discoveries broke out of the laboratory through popular media outlets, the *Finnegans Wake* notebooks demonstrate that Joyce was ready to utilize them, pen in hand.

¹⁶⁶ Jeans, 261-267

Thesis Chapter 3

Finnegans Wake: New Physics in Political Passages

“Three quarks for Muster Mark!” – *Finnegans Wake* 383

Thematically, Joyce takes Einstein's reconfiguration of the physical universe and utilizes it in full artistic flourish. In the idiosyncratic dream that is *Finnegans Wake* Joyce fills his expansive work with specific references to new physics. But more than just the specific mention of atoms or light rays, scholars have argued that entire structures and creative devices utilized by Joyce stem from Einstein's theories. The innovative ideas of new physics unquestionably held the attention of one of the world's greatest literary experimenters and one of Ireland's most loyal patriots. In this chapter I aim to merge the arguments of the previous two chapters and empirically show that Joyce chose to express his political views through a deconstruction of the traditional forms of the novel facilitated, at least in part, by the popularization of Einstein.

Structural Elements

When Joyce sat down to write *Finnegans Wake* the structure of the book was a major concern. Literary modernism placed great emphasis on a book's construction because it was a way of breaking with the formulaic novels of Trollope and Tolstoy. Generally speaking, the book is divided into four parts and the number four plays a large thematic role throughout: "He [Joyce] identified the four dimensions of timespace with The Four Old Men of *Finnegans Wake*: Matthew Gregory, Mark Lyons, Luke Tarpey and Johnny MacDougal, who at different times may appear as The Four Evangelists, the Irish historians of The Annals of the Four Masters, the four provinces of Ireland, and several other tetrads."¹⁶⁷ The publication of a fourth dimension quite possibly may account for the prominence of the number four. Einstein based both the

¹⁶⁷ Duszenko, Andrzej. "The Theory of Relativity in *Finnegans Wake*." *The Joyce of Science: New Physics in Finnegans Wake*. 1997 <<http://duszenko.northern.edu/joyce/relativ.html>>. 8

general and specific theories of relativity on the concept of spacetime. Prior to Einstein physical space had only ever been thought of in terms of the Euclidean three-dimensional system with space and time as discrete entities. The fourth dimension - a spacetime continuum - suggested that time is dependent on the velocity of an object moving through space, poetically entwining the two concepts in a way that appealed to several artists. The Four men, in whatever form they inhabit in the “tetradomational gazebocticon” (614.28) that is *Finnegans Wake*, are “facing one way to another way and this way on that way, from severalled their fourdimmansions” (367.26-27).¹⁶⁸

Besides the general use of four, the manifestation of the four historians, provinces, and evangelists warrants its own examination. It is interesting to picture the reclusive genius, sitting in his Parisian flat, penning a text that on first glance is nothing but literary chaos. But upon close examination, out of this chaos rises subtle traces of the Irish experience. The number four as manifested in the historians or ‘provinces of Ireland’ was exactly the type of general Irishness that Joyce was relying on in order to assemble a new national narrative. Religion, on the other hand, represents a very specific aspect of Irish identity – in the case of the four evangelists. To many, the Irish Catholic Church was the beating heart of the Irishman, a weakness in the eyes of the secular Joyce. The religious nature of the Four Evangelists in *Finnegans Wake* may actually be a distortion of earlier traditions of Christian exegesis. Whether or not Joyce was writing out of anti-Trinitarian sentiment is unclear, however there is an interesting parallel between the new conception of the fourth dimension and the unconventionality of Joyce’s Four Evangelists (unconventional in the sense that everything written in *Finnegans Wake* is unconventional, not

¹⁶⁸Duszenko, "The Theory of Relativity in *Finnegans Wake*.", 9

that Joyce chose to use four evangelists which is supported by tradition). The number four is an important conceptual principle for the theory of relativity and an important organizing principle around which Joyce creates a new Irish identity.

Relativity

Of course the new relativistic idea of time was creatively attractive. As both abstract and original, it catered to the type of modernism that was flourishing in Joyce's Paris. Literary modernists encouraged new expressions of the human experience, one that relied less and less on the spatial impenetrability of traditional novel structures and increasingly strove to understand the inner-consciousness of living. In each of Joyce's works one sees an author obsessed with portraying the deliberate experience of living, but never is the journey into the extremities of consciousness more faithful than in *Finnegans Wake*. The exploration of consciousness or sub-consciousness necessitated a reformulation of time. Classical physics accepted a certain idea of time as fixed and impervious to distortion. There was no need to even consider how to structure a novel because time was uniform for each character. Relativity allowed for temporal dilation as experiences no longer passed as fixed units of minutes, hours, days. According to relativity, time is a unique and individual experience that depends on the situation of a given event and the position of the observer. Dreams do not progress based on a prescribed organizational structure, nor does history simply take into account present events. Relativity legitimized Joyce's literary experiments as time became a tool of creative expression, not simply a fixed roadmap.¹⁶⁹

¹⁶⁹Duszenko. "The Theory of Relativity in *Finnegans Wake*." 4

The flexibility of time correlates with several episodes of *Finnegans Wake*. In *Finnegans Wake* events are drawn out, shortened, and distorted to such an extent that it is often hard to distinguish how much, or even if, time has passed. Some events span centuries while others happen simultaneously. For Einstein, the problematization of simultaneity was at the heart of relativity. Events that appear to be happening at the same time are actually dependent on the velocity of the observer. The perspective of *Finnegans Wake* is largely dependent on how the reader chooses to interpret its passages. Joyce's conscious confusion of past, present, and future in such lines as "there is a future in every past that is present," (496.35-36), "will be is nor was" (236.28), and "there's a split in the infinitive from to have to have been to will be" (271.21-22) display a willingness to embrace a view of humanity that knows no temporal bounds.¹⁷⁰

Relativity uprooted the classically held idea that we can only ever experience the present. However according to Einstein the present was not privileged; time as a relative dimension made events viable from many different temporal perspectives. With the coming age of relativity, a 'present' in the Newtonian sense exists no more. Rather it is a conglomeration of events that have happened, are happening, and will happen:

"In the book they [the main characters] undergo constant transformations, each metamorphosing into dozens of other personages, fictional or historical, with which they share similarities (or contrasts--for Joyce also believed in the unity of opposites). Thus the characters interact with one another not only spatially, as when HCE calls his children home, but also temporally, when HCE, a Dublin publican, is transformed into Adam, Napoleon, Finn MacCool or Tim Finnegan, thereby proving that Joyce indeed wrote his book "with the help of the simulchronic flush in his pann" (182.11-12). This spatiotemporal interaction in *Finnegans Wake* not only conveys the idea of time without boundaries between the past, present and future, but it also expresses the relativistic fusion of time and space into a timespace continuum."¹⁷¹

¹⁷⁰ Duszenko, Andrzej. "The Theory of Relativity in *Finnegans Wake*." 6

¹⁷¹ Duszenko, "The Theory of Relativity in *Finnegans Wake*." 5-6

The fact that the distortion of time was not just an artistic ploy but grounded in some new form of physical reality was attractive to the unconventional Joyce. Unconventionality was his creative method of choice in depicting the complex nature of imperialist politics. To Joyce all of the Irish past was part of Irish identity. It did not matter what century an occupation occurred or in what era a battle was fought, each event was equally part of the formation of the contemporary Irish state. Because all events were equally important the demarcation of historical sequence was irrelevant.

Joyce wonderfully showcases his belief in an unprivileged frame of historical reference when he details the journey of Shaun the postman through a nighttime adventure. Joyce sat down to write the chapters of the journey, chapter III.1 and III.2, with clear intent. In a letter Joyce wrote to Harriet Weaver in he told his patron that the character of Shaun will be traveling backwards temporally through the night, through events he had already written.¹⁷² While Joyce's notes on this chapter show that he was responding to relativity, the actual magnitude to which Joyce disregards a traditional temporal narrative is both shocking and inspiring.¹⁷³ Within the chapter Shaun's 'place' is always indeterminate, in a constant state of flux. In describing the events of Shaun Joyce plays with the elasticity of time the same way Picasso played with the extremities of visual perspective.

While Shaun's journey is at once symbolic, revolutionary, and frustrating for the reader, it contains many undeniable references to Irish folklore (the substance of the cultural revivalists),

¹⁷² VI.B.5

¹⁷³ VI.B.1

religion, and legend.¹⁷⁴ For example, Shaun's journey is in many ways symbolic of Christ's journey to Calvary. Shaun encounters stations, much like the stations of the cross, as he wanders backwards ultimately towards death.¹⁷⁵ The inclusion of religion is always a consequence of Joyce's experience growing up in Catholic Dublin. Shaun encounters such disparate Irish elements because Ireland's past, must resurface for the mission of *Finnegans Wake* to be realized. Taking the Irish material in combination with the Einsteinian temporal mutation, Shaun's journey depicts Joyce embracing the creativity of Einstein to paint, so to speak, a general portrait of Ireland.

Joyce was a man of coincidence, illogically superstitious, who found inspiration in the unity of opposites. Joyce used the time-space dichotomy to set up the character polarity of Shem and Shaun. The brothers, who appear to be in conflict for most of the novel, represent the opposition of space and time: Shem exemplifies the spatial approach of writing while Shem is associated with time.¹⁷⁶ But Joyce also uses the dichotic nature of the twins in more general ways; at one point he recasts the duplicity of Shem and Shaun according to Parnell's betrayal: "'O'Shea and O'Shame' (183.30) were new prototypes that induced a whole context of forgery and duplicity of their own."¹⁷⁷ Perhaps the twofold nature of spacetime held great utility for Joyce because it resonated so clearly in his own identity. As exile and patriot, critic of Irish

¹⁷⁴ As Frances Boldereff states in her guidebook *Reading Finnegans Wake*: "there is not a single part of *Finnegans Wake* which does not contain a direct reference to Ireland – on each page are scattered references to her history, her geography, her ethnography and her literature."¹⁷⁴

¹⁷⁵ Van Mierlo, Wim. "Shaun the Post: Chapters III.1-2." *How Joyce Wrote Finnegans Wake: a Chapter-by-chapter Genetic Guide*, 364

¹⁷⁶ Duszenko, "The Theory of Relativity in *Finnegans Wake*." 7

¹⁷⁷ Landuyt, Ingeborg. "Cain-Ham-(Shem)-Esau-Jim the Penman: Chapter 1.7." *How Joyce Wrote Finnegans Wake: a Chapter-by-chapter Genetic Guide*. By Luca Crispi and Sam Slotte. Madison: University of Wisconsin, 2007.

revivalism and supporter of a Free State, several fundamental elements of Joyce's own worldview mirrored the coalescence of spacetime.

Regardless of nationalist undertones, I would like to stress once more how radical and important the treatment of time in *Finnegans Wake* is to its artistic goals. Joyce was a very proud man and did not respond well to criticism. He thought that he was right almost all the time, an aspect of his character that although supported by his genius, led him to alienate many of his acquaintances. When contemporaneous literary critic Wyndham Lewis severely condemned Joyce for being obsessed with time in his novels, Joyce of course had to have the last word.¹⁷⁸ Lewis denounced the use of relativity in literature claiming that the lack of concreteness and constant flux made it too difficult to draw solid moral conclusions. To Lewis, moral return was the fundamental reason for reading novels in the first place. By distorting time, Joyce distorted any attempt at meaning and Lewis did not approve.¹⁷⁹ Joyce responded to Lewis' sharp criticism by addressing him directly in *Finnegans Wake*, notably through the tale of the Mookse and the Gripes in Chapter I.6 and the Ondt and the Gracehoper in Chapter III.1. The Mookse and the Gripes opens with "Eins within a space" (152.18) and is followed by a lecture given by the character of Professor Jones. Professor Jones is modeled after Wyndham Lewis as well as the spatially cognizant Shem (not temporal-minded Shaun).¹⁸⁰ In this story Professor Jones bumbles through a lecture in an attempt to articulate his views on time and to eradicate it altogether. He fails on both accounts.

¹⁷⁸ Schork, R.J. "Genetic Primer: Chapter 1.6." *How Joyce Wrote Finnegans Wake: a Chapter-by-chapter Genetic Guide*. By Luca Crispi and Sam Slote. Madison: University of Wisconsin, 2007. 126

¹⁷⁹ Duszenko.. "The Theory of Relativity in Finnegans Wake." 11

¹⁸⁰ Duszenko.. "The Theory of Relativity in Finnegans Wake." 11

Later in the fable of the Ondt and the Gracehoper Lewis is once more the source of inspiration for the spatially inclined Ondt. The Ondt and the Gracehoper get into a confrontation and the story concludes with the Gracehoper (Joyce) singing a song that insults the Ondt (Lewis). It is Joyce as Gracehoper who chides Lewis the Ondt's inability to embrace the new conceptions of time: "Your genus is worldwide, your spacest sublime! But, Holy Saltmartin, why can't you beat time?" (419.07-08).¹⁸¹ Joyce firmly believed in the creative power inherent in the new perceptions of time, even as many contemporary intellectuals thought writers of the new 'time-school' to be altogether alienating. In this feud between Lewis and Joyce we catch a glimpse of just how central Joyce's time experiments were to the artistic success of his works.

Quantum Theory

The artistic contribution of *Finnegans Wake* is much more than just a time experiment. In a rare self-referential statement in the novel Joyce refers to the work as having "the sameold gamebold adomic structure...highly charged with electrons" (615.06-07).¹⁸² While the modernists had been attacking tradition for a few decades by the 1920s, Joyce took their motto of departure and pushed it to the extreme. He actually broke down the written word as no novel had before. Interestingly, Joyce knew from the outset that he wanted to incorporate the subatomic into his work. In an October 1923 letter to patron Harriet Weaver Joyce wrote: "The construction [of *Finnegans Wake*] is quite different from *Ulysses* where at least the ports of call were known beforehand...I work as much as I can because these are not fragments but active

¹⁸¹ Duszenko.. "The Theory of Relativity in *Finnegans Wake*." 13-14

¹⁸² Duszenko.. "The Theory of Relativity in *Finnegans Wake*."4

elements and when they are more and a little older they will begin to fuse themselves.”¹⁸³ The ‘active elements’ and their ‘fusing’ hint at a sub-atomic scientific proclivity that pervades Joyce’s text.

With Einstein’s quantum theory of light published in 1905 laboratories engaged in new dialogue over the nature of the quantum universe. New research illustrated that the fundamental makeup of an atom was actually a complicated microcosm of energy, particles, and specific physical laws. Joyce in a similar fashion deconstructed the atoms of a novel: the words themselves. Joyce used seemingly random languages like Ruthenian, Kiswahili, and Albanian, took words from these various languages, and peeled them down to their most basic, elemental form: the syllable.¹⁸⁴ From the syllables Joyce then built upwards once more. He created a new language because, as has been discussed, the traditional use of English (or Irish) was insufficient for him. Joyce found the insistence by the revivalists that the only true, free language of Ireland was Irish to be idiotic. The path to self-determinism and statehood was not through a difficult renaissance of a dead and useless language. Rather Ireland, and all colonies, were better off if they demanded autonomy by means of creating their own narrative, their own language. Joyce used subatomic inspiration to craft just that, his very own language.

Joyce’s discontent with simply English or Irish is mirrored by the discontent of scientists when first faced with quantum theory:

“Particle physics suggests that there is no such thing as an objective reality and consequently the goal of science in its classical sense can never be realized. On the other hand, the artistic or imaginary language proved to be the only nonmathematical medium capable of describing subatomic phenomena. To talk about their findings, physicists had

¹⁸³ Duszenko, Andrzej. "Quantum Physics in *Finnegans Wake*." *The Joyce of Science: New Physics in Finnegans Wake*. 1997 < <http://duszenko.northern.edu/joyce/quanta.html>>. 2

¹⁸⁴ Duszenko. "Quantum Physics in *Finnegans Wake*." 2

to renounce the rule of logic and the strictness of scientific language. Instead, like artists, they had to rely on their imagination.”¹⁸⁵

Because quantum theory was completely original and new, traditional scientific terminology proved inadequate to describe the phenomena being observed. Scientists had to invent a language based on old images. In an interesting parallel, *Finnegans Wake* takes the old images of the Irish past and describes them in an entirely new way. The obstacles of both the scientist and the author merge into the same solution.

Beyond the language itself, character portrayal in *Finnegans Wake* is unlike that of any other novel. Characters in modernist works became infinitely more dynamic than characters of traditional novels. For Joyce in particular, he wished to create characters that contained all elements of personality, from the mundane to the extreme. In Chapter 2 I mention Heisenberg’s uncertainty principle. Heisenberg built upon the developments of other quantum scientists as the debate over the behavior of sub-atomic particles raged in laboratories worldwide. Heisenberg was working in Neils Bohr’s laboratory in 1927 and grappling with Schrodinger’s wave mechanics of light. Heisenberg took Schrodinger’s equations and abstracted them one step further. Such mathematical experimentation resulted in the uncertainty principle. The uncertainty principle states that one cannot know both the position *and* speed of an electron; the more accurate the calculation of a particle’s speed, the less assured they are as to its position.

Joyce penned his characters with extreme fluidity. They pop up unexpectedly and disappear just as abruptly. As soon as the reader has some idea of which character might be speaking, they often lose the context. If there is knowledge of the plot’s context, often it gets harder to determine which characters are involved. In several passages the characters operate

¹⁸⁵ Duszenko. "Quantum Physics in *Finnegans Wake*." 3

exactly like an electron. The more one knows a character's identity, the less certain the reader is of what is actually happening. The more certain one is of what is taking place, the less sure they are of who is in fact enacting the plot. Joyce's characters become literary electrons.¹⁸⁶

There is also an *observer effect* intrinsic to the uncertainty principle. The observer effect states that by measuring the momentum of a particle its velocity is unavoidably altered. Under Newton's principles the scientist was simply a casual observer of natural events, unable to determine anything about his experiments. All one could do was watch and record the independent events of nature. The inception of quantum theory necessitated that laboratories became much more active places of experimentation. Thus the uncertainty principle and observer effect do things for the scientist. First, it empowers the scientist to become an active participant in their experiments, having to determine what trait of a particle they need to observe. The scientist is given a sense of autonomy that directly contrasts with the role necessitated by Newtonian physics. Second, the experimenter becomes inextricably linked to his or her experiment, the act of experimenting *actually* influencing the results.

Finnegans Wake operates in much the same way as these new laboratories. The act of reading actually creates the meaning of the novel; it's not simply set out for the reader to observe. The reader is in part responsible for creating the fictional world set before them.¹⁸⁷ Joyce did not want to design another history lesson that was read but never ingested. His enigmatic work demands that the reader digest his words with a critical eye, for it is only by understanding his puns and multi-layer references will the meanings of *Finnegans Wake* reveal themselves. As the scientist came to participate in the outcome of experiments, so to the reader

¹⁸⁶ Duszenko. "Quantum Physics in *Finnegans Wake*."

¹⁸⁷ Duszenko, *The Theory of Relativity in Finnegans Wake*, 4

has to participate in *Finnegans Wake*. If the reader pays close enough attention, one learns that they are just as fundamental a factor to the success of the novel as are the words on the page. This very clever call to action is part of Joyce's political motivations. The call to action is a call to critical thinking. Joyce wanted history to be actively consumed. Under the clever guise of uncertainty the reader is left no choice but to engage with the text. To create his own (Irish) identity and history through action, not the passive the ignorance of the revivalists, was the great goal of *Finnegans Wake*.

Quantum theory is also based on the unity of the universe. It was Einstein who first postulated in 1905 the famous equation $E=mc^2$, or the mass-energy equivalence, uniting two of the most basic states of physical universe is a direct result of the symmetrical unification of spacetime in Einstein's relativity theories. The unification of mass and energy is not limited to only the realm of relativity; it is also crucial to quantum theory. Heisenberg explains that at high energies the most basic particles can be transmuted into different particles, created by energy, or annihilated into energy because they are all fundamentally comprised of the same thing: energy. In *Finnegans Wake* characters are transmuted, created, and annihilated constantly. They are all made of the universal syllables of speech and out of this substance they take a myriad of spontaneous forms throughout the pages – they are in a state of constant flux.¹⁸⁸

What Joyce writes is likely to be misunderstood, contradicted in an upcoming passage, or contrary to something he has already written. Like the particles in an atom, there is a strong sense of unpredictability to Joyce's words. History is as unpredictable as a quantum particle. Causality is not clearly easily discoverable in terms of particles and quarks. As in the minutiae of

¹⁸⁸ Duszenko. "Quantum Physics in *Finnegans Wake*." 5

the atom where causality is often hard to determine, in *Finnegans Wake* it is often hard to understand how one event precedes another. The “atomic structure” of HCE is “as highly charged with electrons as hopharzards can effective it” (615.06-06). According to Duszenko, “Metamorphosing into one another, persons, objects and incidents form a self-contained continuum of mutually interdependent elements in constant motion.”¹⁸⁹ Facts, like events are granted no privileged sense of security. Ireland’s campaigns for Home Rule, for Independence, and for peace were characterized by a perpetual state of political flux. The media outlets Joyce relied upon described an Ireland that was constantly undergoing some sort of political change, whether it was towards progress or paralysis. The overwhelming sense of uncertainty in Joyce’s homeland is arguably the most accurately depicted in the ambiguous pages of *Finnegans Wake*.

Having outlined the general thematic coalescence of science and politics, I would now like to highlight a specific example of science. The emission of light had been a highly contentious topic since Einstein’s publication of the photoelectric paper in 1905. Bohr’s complimentary principle that evolved out of Einstein’s initial discovery, discussed in the previous chapter, states that light can be perceived as *both* particular and undulatory. In the 1920s and 1930s scientists were in one of two camps. They were either proponents of the particulate nature of light *or* the undulatory nature of light. Science spliced light into two different explanations, the reconciliation of which continues to occupy modern quantum physicists. As an engaged Irish citizen despite his exile, Joyce was aware of this great debate playing out among the world’s top physicists. He understood to at least some degree the importance of light to the developing field of quantum theory. III.3 the main character HCE

¹⁸⁹ Duszenko, Andrzej. "Conclusion: New Physics and *Finnegans Wake*." *The Joyce of Science: New Physics in Finnegans Wake*. 1997 < <http://duszenko.northern.edu/joyce/concl.html>>. 1

(who represents the city of Dublin, among other things) explains “Elgin’s marble ahllles lamping limp from black to block, through all livania’s volted ampire, from anodes to cathoes and from the toazolites of Mourne” (549.15-17). Although written in Joyce’s characteristic ambiguity, this speech alludes to an electron tube and the emission of light. Jean-Michel Rabate grapples with the meaning of this chapter through an extensive look at its assimilation, and he manages to connect this passage to a denunciation of imperialist exploitation, - the ‘ampire’ of ‘liviania’ a manifestation of Joyce’s discontent with the splicing of homelands into foreign occupations.¹⁹⁰ The imperialist overtone of the chapter is further supported by similar allusions to Sinn Fein, the Freeman’s Journal, American imperialism, and other types of colonialism.¹⁹¹ This passage is a fascinating and highly indicative of the type of intellectual transference occurring for Joyce, in Paris, in the early 1900s. From the laboratorial debate of scientists Joyce presents a small morsel of political commentary.

Finally, as Joyce strove to lay bare all of Irelands faults and triumphs he relied on multiple perspectives for a singular event. This artistic attempt draws strong parallels to the work of Niels Bohr discussed above. The particular and undulatory nature of light do not fundamentally express the nature of light, rather they are our interpretation of how we perceive light. Similarly, *Finnegans Wake* does not fundamentally describe the experience of living, but it is an interpretation of the sensations and ideas of life through language.¹⁹² One example of this is taken from Book IV. In this book Joyce discusses ‘New Ireland’ which serves “as a metaphor for the Irish Free State, as an analogy and a diametrically opposite alternative [for the actual

¹⁹⁰ Rabate, Jean-Michel. "The Fourfold Root of yawn’s Unreason: Chapter III.3." *How Joyce Wrote Finnegans Wake: a Chapter-by-chapter Genetic Guide*. 384-409

¹⁹¹ Rabate, Jean-Michel. "The Fourfold Root of yawn’s Unreason: Chapter III.3." 402; VI.B.25

¹⁹² Duszenko,. "Conclusion: New Physics and *Finnegans Wake*.", 2

island of New Ireland in Milenesia]...[of] the national/ist revival rising to a global perspective relating to more recently colonized [regions].”¹⁹³ The dual perspective of New Ireland as both real place and metaphor for the Free State showcases a fundamental likeness to Bohr’s complimentary principle. Although Joyce may not have been consciously channeling Bohr, there is as of yet there is no concrete way of proving this, yet there is no denying that quantum theory and the complementary principle fundamentally changed the way people thought about the physical world.

Finnegans Wake is not a commentary per se and it is definitely not the work of a propagandist. It is simply Joyce’s attempt at depicting a reality, albeit that of a dream. Likewise, the mathematical descriptions of quantum theory have no room for opinion or agenda, they simply present reality as clearly as possible. On a greater thematic scale this indeterminate nature of quantum theory symbolizes *Finnegans Wake*’s great lack of conclusion. The novel begins and ends halfway through the same sentence; there is no identifiable commentary or critique on Ireland, on the Church, on anything. Things are presented as they are, contradicted, re-worked. Joyce solved the issue of resolution by simply providing none.¹⁹⁴ In the state of quantum flux that permeates each page, the indeterminacy of atomic particles is mirrored by the indeterminacy of Joyce’s personal agenda.

The quote that introduces this chapter, “Three quarks for muster mark!” (383), is actually the namesake for the particles we now refer to as quarks. Murray Gell-Mann, the man responsible for the discovery of quarks describes how he first named his particle:

¹⁹³ Forham, Finn. ““The End”; “Zee End”” *How Joyce Wrote Finnegans Wake: a Chapter-by-chapter Genetic Guide*. By Luca Crispi and Sam Slote. Madison: University of Wisconsin, 2007. 474

¹⁹⁴ Forham, Finn, 463

“In 1963, when I assigned the name "quark" to the fundamental constituents of the nucleon, I had the sound first, without the spelling, which could have been "kwork". Then, in one of my occasional perusals of *Finnegans Wake*, by James Joyce, I came across the word "quark" in the phrase "Three quarks for Muster Mark"....the book represents the dream of a publican named Humphrey Chimpden Earwicker. Words in the text are typically drawn from several sources at once...and fitted perfectly with the way quarks occur in nature.”¹⁹⁵

Gell-Mann retrieved his copy of *Finnegans Wake* from his bookshelf and was inspired by Joyce’s words. This is a fitting conclusion to Joyce’s great achievement. The Dubliner looked to new physics to depict an Ireland he wished to free, chiefly from her own narrow-mindedness. In cyclical return, the respect his novel received from artists and scientists alike allowed his words to return the favor science had done for him. The name ‘quark’ transcends every national boundary in the global language of science. It is a wonderful real-world conclusion to Joyce’s experiment in relativistic interconnectedness and quantum unity.

¹⁹⁵ Gell-Mann, Murray. *The Quark and the Jaguar: Adventures in the Simple and the Complex*. London: Abacus, 2002. 180-181

Conclusion

“In retrospect, it seems clear that the ‘monster,’ as Joyce several times called *Finnegans Wake* in these days, had to be written, and that he had to write it.” – Richard Ellmann

As an author James Joyce was trying to add his own unique perspective to the human experience. He wanted to express the confusion, comedy, chaos, and passion of a dream. But more than that, he wanted to showcase humanity in its entirety. In a novel that is said to have pushed the boundaries of modernist art, *Finnegans Wake* excels at fusing together the many facets of early twentieth century life. And like any author, Joyce used as his inspiration topics that captured his own attention and piqued his own unique imagination.

Although Joyce lived the majority of his life on the Continent, he remained steadfastly Irish. As I have shown, Joyce's particular brand of nationalism differed from many of Ireland's most vehement patriots, the cultural revivalists. Ireland was Joyce's muse for much of his literary career, a loyalty founded on his childhood idolization of Charles Parnell. However in keeping with *Finnegans Wake's* theme of universality, Joyce's patriotism necessitated the expression of complete Irishness, not a sanctioned revivalist narrative. Irish identity, any colonial identity, is difficult to navigate and even harder to faithfully express. Joyce tackled such a complicated historical position in part by embracing the experimentation of his modernist peers. Modernism spurned old means of expression and cultivated an atmosphere of creative adventurism. Joyce's genius, in the Parisian epicenter of the movement in the 1920s and 30s, found fertile ground in which to explore nationalism in a characteristically unconventional way.

The unconventionality championed by the modernists coincided with the upsurge of new physics' popularization. Joyce's personal biography portrays a man predisposed to the rejection of Newtonian absolutes. As his peers, notes, and personal writings attest to, Joyce was a prime example of an artist who found new creative freedom as a consequence of new physics. The scientific justification of such interesting topics as temporal distortion, uncertainty, and four

dimensions complemented the literary breakdown of the modernists. And that is exactly what Joyce did in *Finnegans Wake*. He broke down all aspects of the human experience, of the Irish experience in particular, in order to re-forge a new narrative without traditional boundaries. Science played a role in the deconstruction of time and space in Joyce's novel. The result of this, at least in part, is a complex and revolutionary commentary on Irish cultural revivalism. The triad of science, literary production, and history combine in *Finnegans Wake* to give us a glimpse at the extreme interconnectedness of all intellectual endeavors.

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