Joyce in the Machine/Re-Joyce in the Digital Humanities

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> 'Heart and Science'! yes, there is great danger in heartless science, very great danger indeed, leading only to inhumanity. (*CW* 28)

I. Introduction

James Joyce can be regarded as a modernist writer of *techne* (*Gk.* craft) or technology. He applied different narrative techniques including the interior monologue, and adopted various linguistic styles for different characters. He also had a sharp interest in techno-culture, especially technological products such as cars, films, typewriters, radios, televisions and even nuclear experiments as he described some of them in his novels. Yet, in contrast, he feared technological advancements "leading only to inhumanity" (*CW* 28). This paper aims to discuss how Joyce represented the development of technology, and to suggest some possible directions for Joyce studies at the dawn of the Digital Humanities.

Humanities is a broad academic field which encompasses various aspects of human society and culture. In Europe, the study of humanities may be traced back

to ancient Greece. In Roman times, the concept of the seven *artes liberales* (arts of freemen) or liberal arts developed as the subjects which only free citizens were allowed to learn: grammar, rhetoric, logic (the trivium), arithmetic, geometry, astronomy and music (the quadrivium). In the Renaissance Period, from the fourteenth century to the seventeenth century, the term was the antithesis of ecclesiastical studies and included what is now called classics. Humanities incorporated secular studies at university including philosophy, history, literature and art.

Since the twentieth century, universities have been arguably considered places for training students for future careers rather than places for deepening intellectual education. The humanities have been gradually regarded as an anachronism, and it has been claimed that humanities education does not offer enough preparation for future employment except for teaching jobs. The field of humanities has been facing massive decline around the world: the number of students, their job opportunities and financial budgets have definitely been decreasing. To redress this lamentable situation, the digitization of humanities is a counterpoint to attract many more people to the field using information technology. Digital Humanities has made great progress in Europe and North America.

II. Joyce and Technology

It is a well-known fact that Joyce founded the Volta, the first cinema of Ireland, on 20 December 1909. Its audience capacity was 420. At that time, Trieste already had 20 cinemas which attracted Joyce's sister Eva who encouraged him to build a cinema in Dublin. Joyce's three Triestine business partners, Giuseppe Caris, Giovanni Rebez and Catrina Machnich agreed to invest the money to open more cinemas in Belfast and Cork. However, Irish people were not so interested in Italian and other European films. The Volta closed down only one year later. In spite of this failure, Joyce learned a cinematic point of view, specifically featured in the

multi-angled delineations of many characters in "Wandering Rocks" in *Ulysses*.

In the time of Joycean or fin-de-siècle Dublin, Ireland was still under British control, and heavily dependent on primary industries such as agriculture and fishing except for Belfast which was known as a center for the shipping industry, linen factories and tea production. The 1891 census confirmed that this industrial city had overtaken Dublin to become the largest city of Ireland. Reading Joyce's novels, Belfast is usually described as a richer city than Dublin. Although the latter was flourishing as a commercial centre, manufacturing was mainly only in the traditional industries of food processing, textiles and St. James Gate Guinness brewery and distilleries. In "Clay," on the tram, Maria took out her purse with the silver clasps. She was very fond of the purse which was "A Present from Belfast" from the young brothers Maria had nursed when they were young (*D* 100). In *Ulysses*, Leopold Bloom proudly tells his friend M'Coy that his wife Molly is soon going to sing in the Ulster Hall, Belfast (*U* 5.151-52). Later Molly relates a monologue in which she hopes that Boylan can buy her a nice present up in Belfast (*U* 18.404).

Jacques Derrida started to discuss Joyce and technological culture, including using computers for Joyce studies. In his iconic lecture "*Ulysse* gramophone: Le oui-dire de Joyce" at the Ninth International James Joyce Symposium, Frankfurt, 1984, he ardently discussed sonic modernity in *Ulysses*, using the new term "gramophone effect" which indicates another aspect of literature as a memory machine (44). Derrida regarded *Ulysses*, an encyclopedic conceit, as a gramophonic computer, and imagined Joyce studies as a computer of the same kind (Saint-Amour 18).

Donald Theall insists technology is one of the keys to understanding the new role of the arts in contemporary society (6). The word "modern" reminds one of machines and technology: "the modern artist is an engineer" (Theall 6). Theall explains that the worlds of *Ulysses* and *Finnegans Wake* are "poetic machines that are assemblages of bits—fragments, clichés, typifications, words, syllables, letters, and etymological roots" (Theall xviii). Stephen Dedalus is characterized from his

name: Stephen (*Gk.* Stéphanos: wreath, crown)/ St. Stephen (c. AD 5-c. AD 34) known as the first martyr of the Christian Church and the mythical skillful craftsman Daedalus (*Gk. Daidalos*: "cunningly wrought").

The word "technological" was not suitable for Ireland in Joyce's time although it was very appropriate to describe modern Great Britain, the most flourishing country in the world until the late nineteenth century. Great Britain had been thriving since the late-eighteenth-century Industrial Revolution starting with the development of the steam engine in 1765 by the Scottish inventor James Watt, who worked as an instrument maker at the University of Glasgow. The steam engine enabled the activation of industries all over the country. The situation was a complete contrast to that of Ireland.

"After the Race" in *Dubliners* features an international car race held in the suburbs of Dublin. The setting and its characters suggest the great technological gap between Ireland and other European countries: "At the crest of the hill at Inchicore sightseers had gathered in clumps to watch the cars careering homeward, and through this channel of poverty and inaction the Continent sped its wealth and industry. Now and again the clumps of people raised the cheer of the gratefully oppressed" (*D* 42). It is well-known that Joyce adopted some elements of the 1903 Gordon Bennet Cup held in Athy, Ireland, the first international motor race in Ireland and hosted there by the Automobile Club of Great Britain and Ireland because racing was illegal on British public roads at that time. The historical record indicates that no Irish driver participated while three British teams each with a British driver joined, but none of them ran the whole distance: twelve teams started, seven teams retired, one British team was disqualified due to outside assistance, and only four teams completed the race. The winner was Camille Jenatzy (Belgium) for Mercedes (Germany), second place went to René de Knyff (France), Panhard (France), third place to Henry Farman (France), Panhard (France) and fourth place to Fernand Gabriel (France), Mors (France). Joyce's story also implies how European imperialism influenced Ireland.

In 1898, when a Benz Velo, the first car, arrived in Ireland, cars were

immensely expensive and only 38 motor vehicles were registered in Ireland in 1904. However, the number remarkably increased: 5,058 by 1911 and 19,554 in 1914, which doubled the number of petrol dealers between 1901 and 1914. In 1903, the law forced car drivers to hold a driver's license and owners to register their cars with the country council.[1]

Joyce had a keen interest in new technology, but he did not use any of it himself. Concerning the typewriter, he wrote to John Quinn in May, 1917: "I cannot dictate to a stenographer or type," "I write all with my hand" (*LII* 396). The first typewriter was invented in 1714 in order to enable blind people to write. Joyce would have benefitted from a typewriter as he had suffered from a serious eye disease (anterior uveitis), presumably caused by syphilis since 1907 when he began to suffer from eye inflammation and resulted in him being almost blind in the late 1930s. In *Ulysses*, Mr. Garret Deasy uses a typewriter: "He went to the desk near the window, pulled in his chair twice and read off some words from the sheet on the drum of his typewriter" (*U* 2.292-93). Also, Miss Dunne seems a typist: "Miss Dunne hid the Capel street library copy of *The Woman in White* far back in her drawer and rolled a sheet of gaudy notepaper into her typewriter" (*U* 10.368-70). In a Cabman's Shelter, a man named H. du Boyes, agent for typewriters, appears (*U* 16.1238-40). The first commercial typewriters were introduced in 1874, but they were not common in offices until the 1880s. Typewriters were essential in offices until the 1980s before the spread of computers.

The first pipe-gas lamp appeared in Dublin in 1825 and gas was used until 1957. However, it was gradually replaced by electric lighting, especially after the opening of the Pigeon House Generating Station in 1903 when electric lighting was provided to almost all major streets in the city. So, the whole city became very bright at night in 1904: "... the flags of the Ballast office and Custom House were dipped in salute as were also those of the electrical power station at the Pigeonhouse and the Poolbeg Light" (*U* 12.1839-41); "Was there one point on which their views were equal and negative?/ The influence of gaslight or electric

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1) See "Evolution of Motor Cars in Ireland."

light on the growth of adjoining paraheliotropic trees" (*U* 17.43-45)[2]

The night town of *Ulysses* can be described as Bella Cohen's fantasy machine (Theall 7). In "Circe," as well as the whirligig movement on the refrain "My Girl's a Yorkshire, etc.," the pianola (player-piano) itself assumes a significant role in affecting the night fantasy as Joyce explained in his letter to Frank Budgen, 10 December 1920 (*LetterI* 151): "ZOE/ And more's mother? (she pats him offhandedly with velvet paws) Are you coming into the music room to see our new pianola? Come and I'll peel off" (*U* 15.1989-91).[3] The sales of the pianola peaked in 1924, but soon remarkably declined due to the popularity of the radio which enabled people to listen to music at home very easily. Derrida called the gramophone an amnesic machine and cited Bloom's interior monologue: "Besides how could you remember everybody? Eyes, walk, voice. Well, the voice, yes: gramophone. Have a gramophone in every grave or keep it in the house" (*U* 6.962-64) (44). Thomas Edison invented the phonograph in 1877, but the American English term never appears in Joyce's literary texts. Derrida noted that Bella Cohen's gramophone just shouted: "THE GRAMOPHONE/ Jerusalem!/ Open your gates and sing/ Hosanna ...." (*U* 15.2170-73) (45).

Joyce described the radio, the television and even the atomic bomb in *Finnegans Wake*. The first radio broadcast in Ireland was transmitted from the General Post Office by the rebels of the Easter Rising on 24 April 1916. Regular broadcasts began in 1925 in Ireland and Raidió Éireann was launched in 1926. So, historically the references to the radio and the television in *Finnegans Wake* can be regarded as an anachronism.

Radio broadcasting is featured with the symbolic television screen of Earwicker's pub "Mullingar Inn" (*FW* 138.19-20) in Chapelizod as described in *Finnegans Wake* II.3 (*FW* 309-382): MAJOR SYMBOLS: TV-screen; TECHNIQUE: Radio Broadcast ("A Plan of *Finnegans Wake*," Hart 17).

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2) See "Ask About Ireland: Streetlights."

3) Cf. also *U* 15.2072, 3530, 3562, 3667, 3674, 4005 and 4026.

References to the radio in *Finnegans Wake*

1. ..., then as to this *radio*oscillating epiepistle to which, cotton, silk or (*FW* 108.24)
2. ..., and sixty *radio*lumin lines to the wustworts of (*FW* 265.27)
3. ..., the hundred bottles with the *radio* beamer tower and its hangars, (*FW* 380.16)
4. ..., queck quack for the *radio*se. Renove that bible. (*FW* 579.10) (Italics mine.)

Television transmission waves were first received in Ireland in 1949 following the opening of high power transmitters at Sutton Coldfield near Birmingham, England. The first television broadcast on the island of Ireland started with the launch of BBC Northern Ireland in 1953. The Irish government worried about the strong influence of the British media, so they finally founded their own television station, Teilifís Éireann in 1960, and in the same year Raidió Teilifís Éireann (RTÉ) was established after a merger with Raidió Éireann. Amazingly, there are at least two references to television in *Finnegans Wake*. Joyce probably never saw a television, but he could imagine what it was like as he described it between *FW* 337 and *FW* 355.

References to the television in *Finnegans Wake*

1. ..., looking through at these accidents with the faroscope of *television*, (*FW* 150.32-33)
2. Doth it not all come aft to you, puritysnooper, in the way *television* opes longtimes ofter when Potollomuck Sotyr or Sourdanapplous the Lollapaloosa? (*FW* 254.21-23, emphasis added)

Joyce even referred to Lord Ernest Rutherford, First Baron Rutherford of Nelson (1871-1937), known as the father of nuclear physics who conducted research leading to the first "splitting" of the atom (annihilation of atom) in 1917, although he did not in fact "split" the atom: he only "chipped" it (Mitchell 99). The

following passage is inserted after Butt tells the Crimean War story of the Irish soldier Buckley shooting the Russian General after watching the general's movement of excretion.

> [The abnihilisation of the etym by the grisning of the grosning of the grinder of the grunder of the first lord of hurtreford ex-polodotonates through Parsuralia with an ivanmorinthorrorumble fragoromboassity amidwhiches general uttermosts confusion are perceivable moletons skaping with mulicules which coventry plumpkins fairlygosmotherthemselves in the Landaunelegants of Pinkadindy. Similar scenatas are projectilised from Hullulullu, Bawlawayo, empyreal Raum and mordern Atems. They were precisely the twelves of clocks, noon minutes, none seconds. At someseat of Oldanelang's Konguerrig, by dawnybreak in Aira.] (*FW* 353.23-33)

Breon Mitchell noted that Otto Hahn and Fritz Strassman really accomplished the splitting of the atom in their Berlin laboratory in 1938: it was nuclear 'fission,' the basis of the atomic bomb: "If in 'confussion' (*FW* 353.26) Joyce included 'fission' it might well have been the result of the latest world news" (99). However, the two discovered nuclear fission on 17 December 1938 and it was explained theoretically in January 1939 by Lise Meitner and her nephew Otto Robert Frisch. Richard Ellmann noted that as Joyce wrote to his Zurich friend Paul Ruggiero, the '*maledetto*' book [*Finnegans Wake*] was finished by 13 November 1938 (714). So, Mitchell's conjecture seems inappropriate.

III. The Digital Humanities

The Digital Humanities give us opportunities to consider what humanities can be in the Computer/Internet Age. Why is the digitization of humanities needed now? Each area of humanities has been separated: students and researchers have read numerous books, archives and manuscripts to develop new ideas and criticize

old ways of thinking in their own isolated fields. The Digital Humanities enable us to access other studies in different humanity fields and share academic heritage through the Internet. Now, many academic achievements are open to the public through the Internet: everyone can access materials and databases for free if they are in the public domain. Research and teaching methods throughout universities are changing due to the rapid dissemination of digital technology, personal computers and the Internet. Research and teaching have steadily relied on digital technology over the past two decades. Today, very few people still use card indexes of catalogues at libraries while most people tend to check online library catalogues before their visit. Since the 1990s, digital technology has brought us convenience indeed.

Yet, we face a new problem. Before the Age of the Internet, it was often difficult to find and acquire appropriate reference books. Even if it were possible, it would take time and very often money. However, recently, we can find many appropriate references immediately on the Internet. The volume of archives could become infinite. This would render time-honored, conventional close reading ineffective. Rather, distant reading which relies on computer programs would be helpful, as Franco Moretti explains.[4] Nowadays, many researchers are grappling with an abundance of information. Some software might be able to systematically and thoroughly analyze the differences and similarities between a large set of redactions of 'a' text, and would probably be essential, for example, in managing a large data set such as a broad corpus of texts across different languages (Evans and Rees 26).

The digital revolution has also brought a great transformation of oral history. Spoken communication has a much longer history than written communication, although the former was not recorded until the late nineteenth century when microphones and recording machines were invented. Folklorists conventionally relied on memory, paper and ink. During the past two decades, the Internet has

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4) Moretti, *Graphs, Maps, Trees: Abstract Models for a Literary History*, p. 1. This term originally appeared in his article "Conjectures on World Literature," pp. 56-58.

become a practical way of making recorded sound and video available, opening up a wide range of possibilities for the presentation of material (Boyd and Larson 4). Oral history researchers do not have to travel from one university or museum to another, reading typewritten transcripts or listening to analog cassettes: they can access the Internet for the online catalogues on available recordings, audio files and transcripts. The availability of resources is vastly advanced, compared with even just two decades ago.

In general, the greatest change that has been brought to the humanities by digitization must be collaboration. In many humanities fields, scholarly production in the past tended to be generated primarily by single scholars working alone. While there may be collegiality and sincere cooperation, the humanities have not been known for group projects. In the field of the Digital Humanities, unexpected collaboration across different fields can be possible, even several humanities fields and science and technological fields. YouTube lectures, podcasts, audio books, and the ubiquity of what is sometimes referred to as "demo culture" in the Digital Humanities all contribute to the resurgence of voice, of gesture, of extemporaneous speaking, of embodied performances of argument (Burdick 11). However, in contrast to the past, such performances can be recorded, remixed and distributed, thereby becoming units of multi-formed exchange and productive mutation (Burdick 11). Digital Humanities have inevitably adapted to the screen culture of the twentieth-first century: from stationary computer monitors to mobile tablets.

Digital media can absorb and merge all previous forms of conventional humanities records: redesigning such old records is a multivalent act of thinking (Burdick 15). It is noted that Digital Humanities are a prolongation or amplification of traditional knowledge skills and methods, not a replacement for them (Burdick 16): "The Library of Alexandria is said to have held roughly half a million scrolls, representing works numbering in the tens of thousands. Twenty centuries later, Google Books has scanned, to date, around 14 million of the estimated 130 million printed books housed in physical libraries worldwide" (Burdick 33).

While the English language is being learned globally, the number of English

major students has gradually decreased around the world. A reason for this decline could be that current graduate courses of English fail to provide students with sufficient academic career prospects (Glaser and Micciche 200). The number of Japanese major students has also dropped worldwide due to the diminishing Japanese economic power. The digitation of specific academic fields is, however, expected to attract young people with collaborative writing and teaching which will develop networks and potentially lead to great achievements.

Students and researchers of humanities need to read numerous reference materials such as manuscripts and academic books. In the past many people went to libraries and bought books if necessary. Today, we can easily find such references on the Internet for free. Some popular sites offer free e-texts. Generally speaking, many literature major students and researchers access two popular sites to get free e-texts: Project Gutenberg and the Internet Archive. A most wonderful characteristic of the Digital Humanities is the sharing of the infinite research materials via the Internet, with some sites even offering them for free.

Project Gutenberg was founded in 1971 by Michael Stern Hart (1947-2011) at the Materials Research Lab at the University of Illinois and is now hosted by ibiblio at the University of North Carolina at Chapel Hill. It offers over 60,000 free e-books (ePub and kindle books), especially old literary works for which copyright has expired. They were digitized and diligently proofread with the help of thousands of volunteers. You can download e-books or read them online: www.gutenberg.org/

The Internet Archive (IA), a 501(c) (3) non-profit open library based in San Francisco, was founded in 1996 by Brewster Kahle (1960-) "by archiving the Internet itself, a medium that was just beginning to grow in use": archive.org. Their mission is "to provide Universal Access to All Knowledge". They claim that they have 20+ years of web history accessible through the Wayback Machine and they work with 625+ libraries and other partners through their Archive-It program to identify important web pages. As their web archive grew, so did their commitment to providing digital versions of other published works. Today their archive

contains:

- 330 billion web pages
- 20 million books and texts
- 4.5 million audio recordings (including 180,000 live concerts)
- 4 million videos (including 1.6 million Television News programs)
- 3 million images
- 200,000 software programs (IA)

They work with thousands of partners globally to save copies of their work into special collections: "Anyone with a free account can upload media to the Internet Archive" (IA).

IV. Joyce in the Digital Humanities

There are numerous sites related to Irish studies that have encouraged people to study Irish literature around the world. Among them, the National Library of Ireland (NLI) stores the most comprehensive collection of Irish documentary material in the world and represents Ireland's history and heritage: www.nli.ie. The library engages in archiving "Born Digital material" of Irish interest such as "websites, e-mails, photographs, e-publications, film, and databases." This library generously offers free access to their manuscript collections: catalogue.nli.ie

The NLI manuscripts of James Joyce include what is called the Joyce Papers 2002. Most of them are generously open to the public and can be read online: catalogue.nli.ie/Search/Results?lookfor=james+joyce&type=Author&filter%5B%5D=format%3A%22Manuscript%22&view=list

It is expected that the number of approaches from the Digital Humanities to research James Joyce will increase significantly in the near future. Until recently, students and researchers needed so many reference books to cover even only the basic background knowledge of the history of Ireland and literature, especially

European literature. Readers need some knowledge of the Jesuits (The Society of Jesus) to appreciate *A Portrait of the Artist as a Young Man*, and some knowledge of Judaism and Jewish immigrants around 1904 in Ireland to appreciate *Ulysses*. Some Digital Humanities sites on Joyce bounteously offer such background knowledge, normally free of charge.

A Basic List of James Joyce Studies Sites:

* Digital *Dubliners*: A Multimedia Edition (directed by Joseph Nugent, Boston College, USA since 2014): digitaldubliners.com/tag/digital-humanities/
* Dislocating *Ulysses* (A Digital Humanities project by Alex Christie and Katie Tanigawa. debuted in June 2013, U of Victoria, Canada): axchristie.github.io/z-axis/
* From Swerve of Shore to Bend of Bay (a blog on *Finnegans Wake* by Peter Chrisp, UK since 2013): peterchrisp.blogspot.com
* *Genetic Joyce Studies* (maintained by Dirk Van Hulle, U of Antwerp since 2001): www.geneticjoycestudies.org
* Home Feet Home: *Finnegans Wake* Extensible Elucidation Treasury (Fweet) (since shortly before Oct. 2005, maintained by Raphael Slepon, Israel): www.fweet.org
* *Hypermedia Joyce Studies* (founded by Rob Callahan & Louis Armand in 1994): hjs.ff.cuni.cz
* Infinite *Ulysses* (Sep. 2014 – Jun. 2015 digital project led by Amanda Visconti, University of Maryland, USA)[5]: mith.umd.edu/research/infinite-ulysses/
* *The James Joyce Digital Archive* (divided into two 'volumes': *Ulysses* and *Finnegans Wake* (since 2018, edited by Danis Rose and John O'Hanlon): www.jjda.ie/main/JJDA/JJDAhome.htm
* *JJON: James Joyce Online Notes* (edited and maintained by Harald Beck

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5) This is a very successful site, as Roger Wilson notes: "As an alternative, consider Amanda Visconti's *Infinite Ulysses*, a project that incorporates social media into a digital edition of James Joyce's *Ulysses*. Visconti uses Twitter accounts and Facebook groups to encourage users to contribute, favorite, and filter annotations to the novel. The project is still in beta, and yet Visconti has already received 22,000+ visitors to the site, 774 members, 1,168 annotations, and 286 unique terms used to tag those annotations" (n18 190).

and John Simpson since Sep. 2011): www.jjon.org/home
* The James Joyce Universe (Australian National University, 2011-2012): cdhr.cass.anu.edu.au/news/james-joyce-universe

The Official Sites of Selected Joyce Studies Organizations:

* International James Joyce Foundation: joycefoundation.utulsa.edu
* The James Joyce Italian Foundation: thejamesjoyceitalianfoundation.wordpress.com
* The James Joyce Society of Japan: www.joyce-society-japan.com
* The James Joyce Society of Korea: www.joycesociety.or.kr
* The Zurich James Joyce Foundation: www.joycefoundation.ch
* The British Museum (*Portrait* manuscripts): www.bl.uk/collection-items/manuscript-drafts-of-a-portrait-of-the-artist-as-a-young-man-and-ulysses-by-james-joyce
* Joyce Tools (resources of Clive Hart (1931-2016), maintained by Ian Gunn): www.riverrun.org.uk/joycetools.html
* The Rosenbach (*Ulysses* manuscripts): rosenbach.org/collection/james-joyces-ulysses/
* The University at Buffalo (The James Joyce Collection): library.buffalo.edu/pl/collections/jamesjoyce/
* The University of Texas at Austin (Joyce's manuscripts): norman.hrc.utexas.edu/fasearch/findingAid.cfm?eadid=00065

The official site of the James Joyce Society of Japan has links to two Japanese Joycean studies sites:

* "Stephens Workshop: A Critical Directory of James Joyce and Irish Studies" (since Apr. 2011): www.stephens-workshop.com This Japanese website is maintained by three young Japanese scholars, Yoshimi Minamitani, Hironao Kobayashi and Kaori Hirashige. They introduce and review many recent scholarly works on Joyce both in English and Japanese as well as their personal articles on Joyce.
* "Atelier Aterui" (since Apr. 2000): www.iwate-pu.ac.jp/home/acro-ito/ This is Ito's personal website. It includes more than 20,000 photos related to many places described in the works of James Joyce, Irish literature as well as Ito's articles on Joyce and some introductions to Japanese culture

and history. Some of his essays on Joyce can be read online or many pdf
files and Word files related to Joyce studies are downloadable.

One impressive digital Joyce product is "Joycestick," a *Ulysses* adapted 3D
virtual reality (VR) computer game directed by Boston College Joyce scholar
Joseph Nugent and developed by his team of students, mainly from Boston College,
who share a common interest in Joyce and VR games, although their majors vary
from humanities to computer science, engineering and so on. This VR game enables
you to experience *Ulysses* virtually. In Singapore in July 2017, Ito managed to
experience the game after waiting in line for about one hour. The following video
introduces what the VR game looks like: www.youtube.com/watch?v=7N-G_
t1ORZM

V. Conclusion

It seems that Joyce had an obsessional idea to modernize Ireland in order to
keep up with other European nations. He failed to popularize film-viewing in
Ireland in 1909, but continued to describe Dublin as a modern technological city
in his fictions.

Recently, Ireland, after the high economic growth era called the Celtic Tiger
(1995-2007), has been booming with a knowledge economy focusing on high-tech
services, life sciences and financial services. The latest GDP of Ireland is $382.754
billion (nominal, 2018, ranked 32nd), $389.019 billion (PPP, 2018, ranked 48th).[6]
Dublin is now known as one of the greatest high-tech cities of the world attracting
global computer and communication companies, e-commerce companies and social
networking companies such as Microsoft, Google, Yahoo!, Amazon, eBay, PayPal,
Facebook and Twitter which have European headquarters or operational bases in the
city.[7]

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6) Cf. "World Economic Outlook Database, October 2018."

The Digital Humanities are ideal for Joyce studies because the new field can provide infinite annotations and articles for readers and researchers. However, some Korean experts are sounding the alarm stating that "easy accessibility to Big Data does not always help us cultivate our own creativity or intellectual capacity" (Dec. 2019). Joseph Nugent's VR game of *Ulysses* epitomizes the ultimate in digitized Joyce studies so far, although no updates can be found on their website recently. Amanda Visconti's project is very efficient because it enables her followers not only to access annotations, but also provides chances to join the project through social network services such as Twitter and Facebook to encourage further study. Multi-reading via the Internet forum with SNS seems one of the best methods of the Digital Humanities because it costs much less than making VR games, and can encourage many more participants from around the world through the Internet.

From the 1990s to the present, there have been many mailing lists related to Joyce studies:

* j-joyce@lists.utah.edu
* "*Finnegans Wake* (by James Joyce) Discussion List"
  FWAKE-L@LISTSERV.HEA.IE
* fwread@colorado.edu
* "*Finnegans Wake* Page-a-week Readthrough" (52 members)
  finneganswakepageaweekreadthrough@yahoogroups.com
* "swimmin the wake" (135 members) prankquean@yahoogroups.com
* "A look at James Joyce's *Ulysses*" (855 members)
  joyce-ulysses@yahoogroups.com
* "*Ulysses* for experts" (21 members) ulysses_for_experts@yahoogroups.com
* "Joycean Japan ML" (a brand-new Japanese ML since Oct. 2019)
  joyceanjapan@googlegroups.com
* The above list is of the James Joyce-related mailing lists to which Ito currently belongs: the number of Yahoo groups is as of 22 October 2019. Please note that since 21 October 2019, all Yahoo mailing groups are no longer being updated.

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7) Cf. "Dublin Economic Monitor," Issue 14, August 2018.

Unfortunately, however, most of them are much less active than several years ago. It seems that joining a Joycean mailing list is less popular than before.

The digitization of humanities studies is a method for passing the infinite heritage of humanities accumulated over thousands of years on to future generations. We have to cooperate with each other globally to enable humanities to survive in the future. Joyce would love the final speech of *The Great Dictator* (1940) that Charlie Chaplin, as a Jewish barber in the ghetto, made: "More than machinery, we need humanity." Without Humanities, humanity cannot exist anymore.

<div align="right">(Iwate Prefectural University)</div>

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Abstract

Joyce in the Machine/ Re-Joyce in the Digital Humanities

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The whole academic area of humanities has been facing a massive decline around the world: the number of students, their job opportunities and financial budgets have been steadily shrinking. So, in the Information Age, something must be done to improve the current situation: the digitization of the literary text to attract many more people in a more accessible way using multimedia features. Readers are required to have a wide range of background knowledge to understand the scholastic texts of James Joyce which cover Irish history, Christianity and European cultures. There have been various kinds of annotations, guidebooks and academic books about Joyce's works in book form. Recently, numerous websites related to James Joyce have been developed in order to offer annotations and articles free of charge. James Joyce himself was very interested in the progress of technology as he described some aspects of the early twentieth-century technological culture in his literary works. Digital Joyce studies might be what the author wanted us to be engaged in. The ultimate digital Joyce tool is probably "Joycestick," a virtual reality game developed by a Boston College team, which enables you to experience the world of *Ulysses* virtually.

■ Key words : technology, machine, Humanities, Digital Humanities, Joycean websites, Joycean mailing lists, "Joycestick" (virtual reality game)