

Article

# Beelines: Joyce's Apian Aesthetics

Rachel Murray

Department of English, 3-5 Woodland Road, The University of Bristol, Bristol BS8 1TB, UK;  
rm14948@bristol.ac.uk

Received: 31 May 2017; Accepted: 14 June 2017; Published: 16 June 2017

**Abstract:** This article examines the presence of apian life in James Joyce's body of work in light of Maurice Maeterlinck's discovery at the turn of the twentieth-century that honeybees communicate using a complex system of language. In December 1903, Joyce offered to translate Maeterlinck's book-length study *La Vie Des Abeille (The Life of the Bee)* (1901) for the *Irish Bee-Keeper*, and the pages of the journal later resurface on a book-cart in *Ulysses*. Beginning with a discussion of the 'economy of bee life' in *Stephen Hero*, this article explores Joyce's career-long fascination with nonhuman modes of communication, tracing his fascination with apian intelligence through close readings of Bloom's bee-sting in *Ulysses*, as well as through the swarm of references that appear in *Finnegans Wake*. Finally, it argues that bees offer new ways of reading Joyce's work, opening up new lines of connection between the fields of literary criticism and apiculture, and drawing the reader's attention to the peripheral hum or murmur at the edges of human speech.

**Keywords:** James Joyce; *Stephen Hero*; *Ulysses*; *Finnegans Wake*; Maurice Maeterlinck; bees; apiculture; swarm intelligence

---

## 1. Introduction

Pausing on his way home to contemplate a bedraggled looking workhorse pulling a road-sweeper, Leopold Bloom sympathises with the 'poor brute', reflecting: 'it was no animal's fault in particular if he was built that way' (Joyce [1922] 1986, p. 541). The sight of this beast of burden, occurring as it does towards the end of the 'Eumaeus' episode of *Ulysses* (1922), prompts a broader contemplation of his fellow creatures: 'Nine tenths of them all could be caged or trained, nothing beyond the art of man barring the bees' (Joyce [1922] 1986, p. 541). In Bloom's eyes, bees occupy a special position in the realm of human-animal relations, existing outside of the systems of control and exploitation to which 'brutes of the field' such as horses increasingly fell victim during the Industrial Age (Joyce [1922] 1986, p. 541).<sup>1</sup> While even the wildest creatures may be subdued using the right methods: 'Whale with a harpoon hairpin, alligator tickle the small of his back and he sees the joke' (Joyce [1922] 1986, p. 541), bees remain free from the shackles of human sovereignty.

Bloom's account of the exceptional status of bees echoes contemporary developments in the study of apiculture; at the turn of the twentieth-century it was discovered that honeybees (*Apis mellifera*) are able to communicate with one another using a complex system of language, the sophistication of which was thought to surpass human modes of understanding.<sup>2</sup> Bees are thus not so much ungovernable as unreadable, with their sign systems remaining largely incomprehensible to the anthropoid observer. Taking Bloom's remarks as its starting point, this essay traces Joyce's efforts to go 'beyond the art

---

<sup>1</sup> See (Berger 1980). Of course, bees have been taken advantage of for their honey, wax, and royal jelly since the dawn of human civilisation, but they are not put to work in the same way as creatures such as horses and cattle, and must instead be carefully managed.

<sup>2</sup> According to the evolutionary biologist James Gould, honeybees have 'the second-most complicated language in nature', with the exception of humans. *The Honey Bee* (Gould 1988, p. 69).

of man' in his writing, adopting alternative modes of communication inspired by apian language. The low-level hum of bees circulates through a number of texts in the author's *oeuvre*—ranging from the misanthropic Cranly in *Stephen Hero* (1904–1907; First published in 1944), who 'did not seem as intolerant towards bees as towards men' (Joyce [1944] 1969, p. 133), to Bloom's fantasy of owning a beehive 'arranged on humane principles' (Joyce [1922] 1986, p. 586), and culminating in the swarm of hymenopteran references in *Finnegans Wake* (1939). Aside from Philip L. Graham's concordance of bee references in the *Wake*, and Marion W. Cumpiano's account of the economy of honey in the text, the persistent murmur of these creatures in several works in Joyce's *oeuvre* has largely been overlooked (Graham 1962; Cumpiano 1987).

Focussing on the nonhuman elements of Joyce's work opens up new modalities of reading, offering alternative ways of navigating the space of the text. In a recent essay on the animal fables of *Finnegans Wake*, Cliff Mak describes the process of seeking out creaturely references in Joyce's work:

as readers, we hunt down each reference in 'Circe' to a previous figure of Joycean speech or flutter of Bloomean consciousness, sniff out every Homeric allusion, and pant by the shifty waves of Joyce's perspectival tricks. We might, then, recognize the readerly 'busyness' engendered by *Ulysses* as being less 'affectless', as (Leo) Bersani puts it, and more a function of the novel's sadistic impulse to instrumentalize its reader in order to ensure its longevity and import (Mak 2016).

Mak's account of this dogged hunt for examples is also suggestive of an apian 'busyness': traversing a singular path, the reader whizzes past a wealth of extraneous material in search of a viable source of intellectual sustenance, mirroring the ways in which bees tend to hone in on certain flowers on their quest for nectar, ignoring a wealth of other flora. To look for bees in Joyce's writing is therefore to become apian in one's reading, ranging through a series of texts in order to gather a wealth of material, weaving and zigzagging between examples in order to tune into new resonances and sound and to extract new aromas of sense.

The process of seeking out specific examples could easily be accused of being self-serving: the richness and scope of Joyce's body of work is such that finding a source of nourishment is highly likely. At the same time, given the variety of options available and the sheer scale of the enterprise, the reader might also begin to feel like a toiling worker amassing material for the hive mind of Joycean scholarship. *Finnegans Wake*, after all, was purportedly written 'to keep the critics busy for three hundred years' (Joyce 1982, p. 703) and the text seems capable of generating endless lines of enquiry. Yet rather than reducing readers to the status of toiling drones—as is suggested by Mak's account of the text's 'impulse to instrumentalize'—this article will suggest that by encouraging us to adopt a more unconventional path through the literary text, Joyce's writing fosters new modes of knowing and interacting with the world at large.

A reading of this nature, which traces something of a beeline through Joyce's prose *oeuvre*, maps out affinities between apparently discrete textual entities such as bees and tuning forks, the hive and the radio – cross-pollinating examples in order to draw out new semantic possibilities. Rather than focussing on human trajectories, the emphasis is instead on the busy network of apian flight paths that weave their way through his body of work. Such a shift in focus involves the redrawing of lines but it is far from linear; instead, we might think of Gilles Deleuze and Felix Guattari's definition of the 'line of flight or deterritorialization according to which (things) change in nature and connect with other multiplicities' (Deleuze and Guattari 2014, p. 8).

Deleuze and Guattari give the example of the relationship between a wasp and a wasp-mimicking orchid that lures the wasp towards it by pretending to be a mate, arguing that the orchid 'forms a map with the wasp' that 'fosters connections between fields' (Deleuze and Guattari 2014, p. 12). As well as fostering new links between the text and its environment, attending to bees in Joyce's writing enables us to forge new connections between the fields of literary criticism and apiculture. To cultivate an awareness of the cultural as well as the environmental significance of bees in our present era, which

has seen their numbers fall rapidly, is thus to attempt to counter the forces that are contributing to their disappearance.

## 2. Joyce and Maeterlinck

Joyce learned of the language of bees in the early stages of his literary career: in December 1903, the young author wrote to the editor of the *Irish Bee-Keeper*, J. M. Gillies, offering to translate the poet and dramatist Maurice Maeterlinck's 1901 book-length essay *La Vie des abeilles* (*The Life of the Bee*) into English (Joyce 1982, p. 141). Having dropped out of his medical studies in Paris and returned to Dublin to be with his dying mother earlier that year, Joyce had made the decision to embark on a 'career of letters', spending much of his time reading, writing, and attending the theatre (Joyce 1982, p. 140). By September, Joyce was familiar enough with Maeterlinck's Symbolist plays to chide a fellow aspiring author for misunderstanding them, and it was during the same period that he turned his attention to Maeterlinck's popular study of apiculture (Joyce 1982, p. 135).<sup>3</sup>

According to Joyce's brother Stanislaus, the experienced apiarist Gillies looked over *The Life of the Bee* and declined the author's offer, remarking: 'I don't think Maeterlinck ever kept a bee in his life' (Joyce 1982, p. 141). In fact, by the time that he began work on the text in 1899, the Belgian polymath had practised beekeeping for over two decades, even installing an observation hive in his workroom that travelled with him when he moved from the Normandy countryside to central Paris (Teale 2006). Maeterlinck was the first to observe that bees have evolved a complex a system of communication, passing information to one another about the location of distant food sources with the movement of their bodies and with the particular frequency of their hum (Winston 2014, p. 210). It wasn't until 1953, however, when Austrian ethologist Karl von Frisch published his findings on the complex language of bee-movement, that scientists would begin to recognise the significance of Maeterlinck's discovery.

Although *The Life of the Bee* sold widely and received rapturous reviews, Gillies was far from alone in the scientific community in refusing to take a poet's findings seriously. A key reason for this was Maeterlinck's unapologetically literary style, with him frequently dramatizing his subject matter, and drawing conclusions from his observations that verge on flights of fancy. Describing the inhabitants of the hive as they prepare to swarm, the author remarks gnominically: 'Never is the hive more beautiful than on the eve of its heroic renouncement, in its unrivalled hour of fullest abundance and joy' (Maeterlinck [1901] 1995, p. 34). In his preface to the text, Maeterlinck explains that instead of functioning as a 'practical manual or scientific monograph', the text unfolds in a 'somewhat livelier fashion' with 'freer ( . . . ) reflections' (Maeterlinck [1901] 1995, pp. 15–16). As though emulating the 'riotous' energies of the hive, Maeterlinck posits that this 'livelier' approach to bees 'consists in giving free rein to the spirit of initiative possessed by the bees' thus 'providing ( . . . ) opportunities for veritable discoveries' (Maeterlinck [1901] 1995, p. 161). To be open to the language of bees, Maeterlinck suggests, is to become bee-like in one's observations, adopting freer patterns of thought than the more fixed trajectories of scientific enquiry.

Karl von Frisch would later formalise the dance language of bees into set patterns, as is apparent from the illuminating but somewhat schematic diagrams depicted in his Nobel Prize winning study, *The Dance Language and Orientation of Bees* (1967).<sup>4</sup> In contrast to von Frisch's more circumscribed account of the "round dance" and the "waggle dance" of bees, Maeterlinck's informal understanding of bee language emphasises the limitlessness of apian communication, frequently marvelling at the

<sup>3</sup> Joyce references Maeterlinck in *Stephen Hero*, which he began writing in early 1904, see (Joyce [1944] 1969, p. 44). In *Ulysses*, Stephen Daedalus quotes Maeterlinck before paraphrasing his ideas: 'We walk through ourselves, meeting robbers, ghosts, giants, old men, young men, wives, widows, brothers-in-love, but always meeting ourselves', see (Joyce [1922] 1986, p. 175). Moments later, his friend Buck Mulligan proclaims: 'Our players are creating new art for Europe like the Greeks or M. Maeterlinck', *Ulysses*, p. 177. Roland McHugh, who not only provided the first authoritative gloss of Joyce's *Wake*, but was himself a practicing entomologist, hears 'Maeterlinck (books on insects)' as well as the German word 'Schmetterling: butterfly', in Joyce's hybrid word 'smetterling', see (McHugh 2016, p. 417).

<sup>4</sup> See Figures 28, 29 and 46 in (Von Frisch 1967, pp. 29, 57).

ways in which their gestures ‘elude comprehension’ (Maeterlinck [1901] 1995, pp. 52, 111). With this context in mind, Bloom’s impression of bees in *Ulysses* as occupying a unique position ‘beyond the art of man’ appears to correspond to a particular moment in the history of apiculture, in which the language of bees was newly recognised, but not yet ‘caged’ within scientific parameters. Joyce’s interest in bees could therefore be said to relate to their unique irreducibility to human structures of order and control, remaining something of a closed system whose complexities can never fully be grasped.

Despite being dismissive of Maeterlinck’s findings, Gilles did agree to take Joyce on as a sub-editor of the *Irish Bee-Keeper*, but by the latter’s own admission he only kept the role for ‘about twenty-four hours’ (Joyce 1982, p. 141). Joyce’s flirtation with apiculture, brief as it may have been, could easily be dismissed as something insignificant: a moment of financial opportunism by a jobless twenty-one year old who had recently abandoned a stable medical career for the life of an impoverished writer. Yet by honing in on Joyce’s fleeting involvement with the *Irish Bee-Keeper*, the tattered of pages of which resurface on a book-cart in ‘Wandering Rocks’ (Joyce [1922] 1986, p. 199), it is possible to identify a source for the many learned references to bees in the author’s work, as well as to uncover compelling evidence of the author’s fascination with nonhuman modes of communication.

Just as it took scientists several decades to recognise the significance of Maeterlinck’s findings, so have readers of Joyce only recently begun to examine the role played by nonhuman entities in the author’s work.<sup>5</sup> In her 2014 essay ‘The Animals of *Finnegans Wake*’, Margot Norris examines the ‘*Wake*’s project of setting human cultural figures and narratives into the much larger horizon of [...] the natural world’ (Norris 2014). Alison Lacivita, in her 2015 study *The Ecology of Finnegans Wake*, takes this argument a stage further, contending that Joyce’s final text ‘explores the possibilities of other forms of communication, be it through the legibility of the physical landscape or the “speech” of the river and the sea’ (Lacivita 2015). Lacivita suggests that the representation of nonhuman life in Joyce’s work does not necessarily take the form of direct mimesis but rather that of osmosis, asserting itself at the level of form as well as content by seeping into the language of the text.

With regards to bees, the form of representation adopted by Joyce is that of a resounding hum or murmur—the throng of a busy background ecology that flits in and out of the human sphere of action. In his *Life of the Bee*, Maeterlinck speculates that the inhabitants of his hive must be able:

to give expression to thoughts and feelings, by means either of a phonetic vocabulary or more probably of some kind of tactile language or magnetic intuition, corresponding perhaps to senses and properties of matter wholly unknown to ourselves (Maeterlinck [1901] 1995, p. 81).

Maeterlinck envisages a form of communication that involves the entire body—both of the individual worker and of the collective—a twisting, vibrating, hypersensitive mode of interaction. This observation, which appears to have informed Leopold Bloom’s understanding of the beyond-ness of bees, is also redolent of Joyce’s efforts to cultivate a more ‘tactile language’ in his body of work. Consider for instance Derek Attridge’s reading of the language of *Finnegans Wake*:

its instability and shiftiness, its material patterns and coincidences, its intertextual slidings, its freedom from determining sources or goals, its independence from its referents, even its refusal to be bound by a single language system (Attridge 1988).

The jostling of sound and sense, the collision of signifiers, the refusal of the text to lie still on the page, evokes a kind of irrepressible vitality that cannot be ‘trained or caged’ into weary workhorse words. This is a language that has been freed from its instrumental function and released from the yoke of English with its freighted legacy of colonial oppression. If, as Maeterlinck suggests, the language of

---

<sup>5</sup> See (Rando 2009; Ellmann 2006). Further back, critics have examined the presence of insects in *Finnegans Wake*. See (Senn 1966; Hart 1967; Connor 2000; Michel-Rabaté 2001).

bees surpasses ‘the limits of human understanding’ (Maeterlinck [1901] 1995, p. 34), Joyce’s writing could also be said to exceed the parameters of a strictly anthropocentric mode of expression.

In the *Wake* in particular, the reader is invited to tune into the fuzzy edges of language, its verbal and non-verbal articulations, its techniques of ‘recirculation’ (Joyce [1939] 2010, p. 3) and refrain, as well as the background murmur of allusion and intertextual references. In the same way that Maeterlinck’s discovery of a bee language challenged existing perceptions of animal intelligence, Joyce’s writing necessitates a radical readjustment of the representational structures by which human beings interact with the world. Jussi Parikka has noted that the mode of bee-communication observed by Maeterlinck ‘happens not on the level of consciousness, human language and concepts, but as affects of murmur, whisper and a refrain that even the bees might not hear but sense in some uncanny way’ (Parikka 2008). These remarks are reminiscent of the experience of trying to make sense of Joyce’s writing from *Ulysses* onwards; as well as necessitating a dance of the intellect as the mind struggles to untangle the material with which it is confronted, the text often resembles a mode of communication that is extra-sensory, a pattern of signs and sounds that seem to exist beyond the limitations of the eye and ear.

From early on in his writing career, bees are closely linked to Joyce’s interest in the peripheral hum or murmur surrounding human speech. In his early prose fragment *Stephen Hero*, parts of which were developed into *A Portrait of the Artist as a Young Man* (1916), Stephen and his friend Cranly discuss ‘the economy of bee life’ while revising for their exams. The conversation prompts Stephen to recall the following lines from Percy Shelley’s *Prometheus Unbound* (1820):

“I will watch from dawn to gloom

The lake-reflected sun illumine

The yellow bees in the ivy-bloom.”

“Illume?” said Cranly.

“You know the meaning of “illumine”?”

“Who wrote that?”

“Shelley.”

“Illume—it’s just the word, d’ye know, for autumn, deep gold colour.”

“( . . . ) sometimes Shelley does not address the eye. He says ‘many a lake-surrounded flute.’ Does that strike your eye or your sense of colour?” (Joyce [1944] 1969, pp. 133–34)

An alternative mode of sensory experience arises from the boys’ contemplation of the ‘yellow bees’; in identifying a way of seeing in Shelley’s poetry that ‘does not address the eye’, Stephen appeals to a separate colour-sense that, unbeknownst to him, was later identified in bees.<sup>6</sup> Although Joyce does not include the next line of the poem: ‘nor heed nor see what things they be’, the passage as a whole resonates with Maeterlinck’s assertion that apian life forms ‘elude comprehension’ (Shelley [1820] 2009; Maeterlinck [1901] 1995, p. 52). Shelley’s language appears to mimic this bee-like elusiveness by refusing to yield to Cranly’s dismissive dictionary definition—‘it’s just the word, d’ye know, for autumn, deep gold colour’—and by eliciting only trite responses from the boys, who describe it as ‘spiritual’, ‘mystical’ and ‘beautiful’ (Joyce [1944] 1969, p. 134).

The conversation further deteriorates when Cranly’s friend Glenn interrupts their discussion, and Cranly reacts by replacing the phrase ‘yellow bees’ with the more colloquial ‘red-arsed bees’ of ‘Wickla’. Glenn then reductively paraphrases the lines, remarking pompously: ‘it seems to me undeniable ( . . . )

<sup>6</sup> Karl von Frisch discovered that bees perceive an ultraviolet spectrum that is invisible to the human eye, and it was later discovered that their chromatic sense is related to the workings of their memory, see (Von Frisch 1950, pp. 1–24; Mensel and Backhaus 1991).

that the bees are in the bloom' (Joyce [1944] 1969, p. 135). Joyce mingles these disparate readings of the poem, gesturing both to the variety of perspectives that arise from this collective act of interpretation, as well as to the limitations of this hermeneutic endeavour; having failed to 'illuminate' their contents, the boys heedlessly contort the lines in a futile attempt to make Shelley's bees work for them. Only Stephen is content to remain in a state of unknowing; after embracing the 'gloom' of the poem, his sense of the ways in which the sound patterning of the words appears to exceed their sense becomes heightened, with him repeating the lines of the poem several times as if to give separate voice to their multiple resonances.

The patterning of 'bee' and the unvoiced line 'things they be' chimes with Bloom's subsequent account of the beyond-ness of bees in *Ulysses*, resonating with future as well as previous literary works. Few could fail to notice the polymorphousness of the /b/ phoneme in speech—as noun (a bee), as verb, (to be, being), as prefix (beset, begrudge), and as letter (b). Bees appear complicit with the disruptive liveliness of Joyce's language, conjuring 'polysemantic verbal patterns' (Schlauch 1973) from even the most elementary units of speech. In a reading of Alfred Tennyson's 'The Princess' (1847), Jane Wright argues that the 'bee's hum, or murmur ( . . . ) might be called voice's other,' tracing the ways in which it figures a multitude of background murmurs, including allusion and intertextual references, the cacophony of critical responses to the poem, as well as that 'which the poem cannot, or at least does not, clearly articulate (a hum of alternative ideas, niggling recognitions ( . . . ))' (Wright 2015).

Reading Wright's essay alongside *Stephen Hero*, it is possible to discern an allusive echo in the text's repetition of 'illuminate' of Tennyson's euphonic evocation of the 'murmur of innumerable bees' (emphasis added) (Tennyson [1847] 2009), just as the polyphonic criticism of the boys echoes the multitude of critical responses that have arisen in response to both Shelley and Joyce's writing. Absent from this otherwise comprehensive account of the bee's myriad murmurings, though, is the unmistakable hum of the nonhuman—the disruptive vibrations that the bee brings to bear on the anthropocentric sphere of literary language. Turning now to Joyce's *Ulysses*, it is possible to discern the role of bees in opening up new senses (in both senses of the word) in its protagonist, as well as in its readers.

### 3. The Bees Are in the Bloom

The tactile language of bees leaves its mark on the textual body of *Ulysses* after its protagonist, Leopold Bloom, is stung on the chest by an apian assailant. Over the course of the narrative, Bloom's attention is repeatedly brought back to the bee-sting incident, which occurred as he lay sleeping in his garden on Easter Monday, '2 weeks and 3 days previously (13 May 1904)' (Joyce [1922] 1986, p. 584).<sup>7</sup> The event punctuates the text, with Bloom calling it to mind on eight separate occasions. Despite the fact that the sting did not appear to produce an allergic response, for some unknown reason Bloom travelled to the hospital to have his wound dressed with saltwater. The curious prominence given to the bee-sting is such that even his wife Molly makes reference to it in 'Penelope', musing: 'Whit Monday is a cursed day too no wonder that bee bit him' (Joyce [1922] 1986, p. 629). Crucially, Joyce establishes that the sting has left a scar on Bloom's flesh, with its swollen significance on the surface of his body as well as that of the text raising questions as to why this seemingly insignificant occurrence involving a miniscule perpetrator appears to have got under Bloom's skin—figuratively as well as literally.

Bloom's first recollection of the bee-sting occurs as he is making his way through his garden to visit the outhouse in 'Calypso', with his thoughts alighting momentarily on the 'drawbacks' of gardening: 'That bee or bluebottle here Whitmonday' (Joyce [1922] 1986, p. 56). The memory subsequently sharpens a few hours later as Bloom passes the Mater hospital on the way to Paddy Dingam's funeral and recalls the nice young medical student who 'dressed that bite the bee gave me' (Joyce [1922] 1986, p. 80). At the

<sup>7</sup> Incidentally, the 23 May 1904 was the same timeframe in which Joyce was writing *Stephen Hero*, and was not long after he'd offered to translate Maeterlinck's *Life of the Bee* in December 1903.

cemetery where Dignam is buried, the spectre of the bee hovers on the edges of Bloom's thoughts as he muses: 'All honeycombed the ground must be: oblong cells' (Joyce [1922] 1986, p. 89). Passing Trinity College at lunchtime, he again recalls the bee-sting, now giving the student, Dr Dixon, a name (Joyce [1922] 1986, p. 133). Each of these memories directly corresponds to Bloom's movement through space, with these sites therefore taking on new meanings in relation to one another. The bee-sting therefore results in a reorientation of perspective as Bloom connects these discrete spheres of human activity—the hospital, the cemetery, and the university—to one another along apian lines.

As well as remapping his surroundings, Bloom's recurring memory of the bee-sting also directs the reader's attention towards the multiple channels of communication that circulate through the body of the text. That evening, Bloom is distracted by the flight of a bat at twilight on the beach. The movement of its wings, coupled with the tang of sea-air redolent of the 'salve of volatile salt' (Joyce [1922] 1986, p. 317) that the doctor used to dress his sting, transports Bloom back to another recent bee encounter:

Who knows what they're always flying for. Insects? That bee last week got into the room playing with his shadow on the ceiling. Might be the one bit me, come back to see. Birds too. Never find out. Or what they say. Like our small talk. (Joyce [1922] 1986, p. 309)

The second bee, which shadows the first, echoes the return of the incident in the narrative as well as its larger patterns of repetition and refrain. Somewhat comically, Bloom traces a line of continuity between the two events, in which the insect remembers its crime and returns to survey the damage. This imposition of a kind of linear, anthropomorphic model of thought onto the two bees is reflected in the human terms by which Bloom attempts to understand (or rather misunderstand) its actions; not only has it 'come back to see', but it also seems to 'say' something.

By translating the unfathomable language of the bee onto the level of 'small talk', a codified exchange of social niceties, Joyce signals the hidden complexities of non-verbal language—the nuances of which appear to escape Bloom. Here and elsewhere, the language of the text prompts a heightened awareness on the part of the reader regarding the mysteries of human communication—its subtle undertones and minute gestures. Likening the language of the birds and the bees—a coupling of apian and avian life that recalls the language of sexual euphemism—to the multiple layers of communication contained within the apparently trivial realm of human speech, Joyce invites the reader to look beyond the apparent smallness of this event in the larger body of the narrative. Indeed, the syntax of the passage, gradually compressed down to smaller units, takes on an expanded significance, with the terse statement 'Never find out' subtly directing the reader's attention back to Bloom's most obvious oversight during the text: his wife's affair with Blazes Boylan.

Boylan's surname is itself suggestive of another form of epidermic inflammation—a boil—that recalls the tender swelling of the bee-sting. The return of the bee may therefore be linked to the murmur of Bloom's subconscious—the 'shadow' of an impending sting of painful awareness. Flitting in and out of the narrative, this buzzing antagonist reflects the 'freer' movements of the narrative's busy workings, diverting the reader's attention away from a singular, teleological trajectory to multiple open-ended paths of narrative activity. As Bloom's mind moves back and forth to the bee-sting over the course of the text, its somewhat hypnotizing recurrence offers little by way of explanation other than a swarm of unanswered questions: why did Bloom need hospital treatment for the sting? Why does Molly find it significant that he was stung on Whitmonday? Why didn't the bee die when it stung him? Bloom's bee-sting resists a rational explanation, functioning instead as a disruptive pattern—a 'cicatrice' (Joyce [1922] 1986, p. 584) on the textual surface.

A 'boyl' is also a type of flowering plant, and given the references in 'Lotus Eaters' to the 'Language of flowers'—a covert system of floral communication between lovers that was popularised in the nineteenth-century, Joyce may also be signalling that Bloom's 'Queen' (Joyce [1922] 1986, p. 61)

is getting her nectar elsewhere (Joyce [1922] 1986, p. 64).<sup>8</sup> Circling back to the passage from *Stephen Hero* for a moment, we are alerted to possible resonances between Shelley's 'ivy-bloom' and Bloom himself—who also goes by the pseudonym of Henry Flower, fantasises about living in 'Flowerville', and whose father's former surname, 'Virag', is Hungarian for flower (Joyce [1922] 1986, pp. 587, 372). It is common knowledge that bees tend not to sting unless antagonised, and it could be that the creature that stung the supine Bloom mistook him for a source of pollen. This would render the contact between bee and Bloom one of symbiosis rather than predation—a procreative interaction capable of implanting new ideas in his mind, as well as in that of the reader.

The idle Bloom (Whitmonday is a public holiday after all) is effectively jump-started by the bee-sting, infected with a lively apian energy that is then reflected in the busy trajectory of his thoughts throughout the day. Joyce himself appears to have developed something of a bee in his bonnet about this incident, as is evidenced by the fact that the fair copy of *Ulysses* contains only two mentions of the bee-sting, while a further six references were added at the proof stage (Thirlwell 2009). Joyce's fleshing out of the encounter seems designed to produce a sharpening of the readerly senses; by inserting the bee-sting into the body of the narrative at various intervals, Joyce delivers several sharp reminders of the presence of nonhuman life. This piquing of readerly interest might also be likened a kind of pricking up of the ears; in his *Life of the Bee*, Maeterlinck argues that bees 'have many harmonies to which our ears are not attuned' and yet they 'teach us to tune our ear to the softest, most intimate whisper' (Maeterlinck [1901] 1995, pp. 36, 45).

To become aware of bees in *Ulysses* is also to become attuned to the hum of other marginal voices in the text. Bloom's account of their 'small talk' shares certain affinities with his contemplation of the blind stripling in 'Lestrygonians', who taps his way through the streets of Dublin:

the eyeless feet, a flatcut suit of herringbone tweed. Poor young fellow! How on earth did he know that van was there? Must have felt it. See things in their forehead perhaps: kind of sense of volume. Weight or size of it, something blacker than the dark. Wonder would he feel it if something was removed. Feel a gap. Queer idea of Dublin he must have, tapping his way round by the stones. Could he walk in a beeline if he hadn't that cane? (Joyce [1922] 1986, pp. 148–49).

The term 'beeline', invites a comparison between the heightened perceptions and purposeful movement of the stripling and Maeterlinck's account of the 'tactile language' and 'magnetic intuition' of bees. Forced to experience his surroundings with other parts of his body—his 'eyeless feet', his 'forehead perhaps'—the stripling's ability to 'feel' his environment is heightened. By contrast, Bloom's fumbling able-bodied language as he observes the stripling—qualifying the blind man's 'kind of sense' 'perhaps', 'weight or size'—recalls his clumsy account of bee-language in 'Nausicaa'. Yet if Bloom's language is most hapless when it comes to representing this haptic experience, then his blundering efforts also allow Joyce to touch upon the incommunicability of alternative ways of being, opening up the text to alternative modes of experience that it doesn't attempt to subjugate within the realm of human speech.

Bloom's struggle to enter into the experience of the stripling is analogous to the experience of reading the text, with Joyce mapping out alternative lines of communication that may be registered albeit not fully comprehended. Apprehended along apian channels, the 'buzzing prongs' of the tuning-fork and the 'buzz' of the vibrating cat-gut that Bloom plays with in 'Sirens', as well as the two stuck flies that 'buzzed' on windowpane in 'Lestrygonians', followed by Stephen's assertion: 'I am other I now. ( . . . ) Buzz. Buzz', resemble a network of interconnected expressions—the chatter of nonhuman life (Joyce [1922] 1986, pp. 217, 228, 144, 156). These sympathetic vibrations speak not only of an assertion of presence—the intrusion of acoustic elements into the text that do nothing to advance the instrumental (pun intended) function of narrative—but also of a mode of sonic interference that

---

<sup>8</sup> For more on floral communication in *Ulysses* see Jacqueline F. Eastman (1989); see also Michael O'Shea (1986).

places the communicative norms of human speech under pressure. A buzz is defined not only as a ‘sibilant hum, such as is made by bees, flies, and other winged insects’ but as the ‘confused or mingled sound made by a number of people talking or busily occupied; busy talk, ‘hum’; hence, a condition of busy activity, stir, ferment (emphasis original)’ (Thirlwell 2009). This dual meaning suggests that the sound of bees resembles a cacophony of human voices, the overlapping of which results not only in the distortion of language but also in a clamour of semantic possibility, as is reflected in the subsequent mutation of the word ‘buzz’ in the 1940s to mean a ‘feeling of excitement ( . . . ) a thrill’ (OED 2017a).

Throughout *Ulysses*, the frequent assemblage of voices that exceed a purely verbal function, such as the busy ferment of human and nonhuman voices in ‘Sirens’, expresses not a specific identity but rather a kind of collective liveliness—a noisy assertion of vitality that refuses to be ‘caged’ within the parameters of human speech. Turning now to *Finnegans Wake*, it is possible to observe Joyce’s development of an aggregate model of communication that recalls Maeterlinck’s account of ‘the spirit of the hive’ (Maeterlinck [1901] 1995, p. 31).

#### 4. Entering the ‘HummingSphere’

If Bloom’s bee-sting is suggestive of the ways in which apian life works its way into the body of *Ulysses*, then *Finnegans Wake* could be described as the radical re-formation of the individual units of speech, which together take on the collective intensity of a kind of textual superorganism. A key instance of this occurs in Section 2.3 of the *Wake*, ‘Tales at the Inn’, which consists of a series of overlapping and interweaving stories told by various regulars at Humphrey Chimpden Earwicker’s bar, and is punctuated throughout with interruptions from other customers, as well as snatches of news, entertainment, and weather reports from a nearby radio. Channelling parts of the episode through some of its many critical responses, this final section will examine its systems of communication in relation to theories of swarm intelligence.

‘Tales at the Inn’ begins with an act of retuning, as Joyce hones in on HCE’s radio apparatus, ‘equipped with supershielded umbrella antennas for distance getting and connected by the magnetic links of a Bellini-Tosting system’ (Joyce [1939] 2010, p. 309). This quotation has been read in relation to Joyce’s interest in the transformative effect of new technologies on human speech, as well as an analogy for the text’s interpenetration of multiple voices, and as a kind of technological blazon of the human body—its ‘umbrella antennas’, for instance, being ears (Connor 1993; Benjamin 2013b; Bishop 1986). Another way of interpreting this anatomical hybridity, however, is as a sign of Joyce’s efforts to open up the text to nonhuman frequencies that were made audible for the first time by these new technologies. The passage could therefore be read in relation to what Douglas Kahn terms ‘natural radio’—the sferics, tweaks, whistlers, and choruses of electromagnetic waves, geothermal rumblings, and lightning pulses (Kahn 2013).<sup>9</sup>

‘Tales at the Inn’ continually gestures towards the commingling of human and natural soundscapes, be it the incursions of weather, the ‘whackawhacks of the sturm’, or the radio broadcast of a singer attempting birdsong ‘twittwin twosingwoolow’ (Joyce [1939] 2010, pp. 335, 360). The latter transmission in particular evokes the conjunction of human and nonhuman utterances generated by wireless technologies. Lacking a vocabulary for these new sonic frequencies, early listeners would frequently liken the background murmurs, shrieks, and crackles to animal sounds. Thomas A. Watson, assistant of the inventor of the telephone Alexander Graham Bell, likened the background interference heard while listening to the receiver to ‘the chirping of a bird’ (Kahn 2013, p. 360), while in remarks that also appear to channel Tennyson, the naturalist W. H. Hudson likened the sound of telegraph

<sup>9</sup> This list of environmental sounds is taken from <http://naturalradiolab.com/> (accessed on 19 May 2017). John Durham Peters uses the term ‘elemental media’ to describe the way in which new technologies have enabled us to tune in to our natural surroundings in new ways, arguing: ‘environments are also media. Water, fire, sky, earth, and ether are elements (...) that sustain existence’, see (Peters 2015, p. 3).

wires to 'that most magical and human-like sound of insect life ( . . . ) the sound of innumerable bees' (Hudson [1900] 1906).<sup>10</sup>

The inventor of the radio, Guglielmo Marconi, was quick to discern a parallel between his new device and the heightened sensory capacities of the invertebrate body, adopting the term 'antenna', which previously denoted the 'sensory appendages on the heads of insects' to describe the radio's protruding aerial receptors (OED 2017b). Similarly, the term 'hum' originally denoted the 'low continuous sound made by a bee or other insect' and was later expanded to incorporate the sound of 'machinery in motion' (OED 2017c). In Joyce's description of the radio's 'antenna' and 'magnetic links', it is possible to discern an echo of Maeterlinck's description of the 'magnetic intuition' of bees, aided by their 'mysterious antennae'.

A palpable 'Hum' circulates through the body of the text, disrupting exclusively human modes of interaction. There are countless references to 'The mar of murmur mermers to the mind's ear', to 'drums and bones and hums in drones', and 'hummers (...) all vociferated echoing', all of which contribute to the general 'humming-sphere' of the text (Joyce [1939] 2010, pp. 254, 485, 404, 453). Human communication itself begins to take on a bee-like quality: when barmaid Kate comes down to the pub to deliver a message to Earwicker from his wife upstairs, 'the king of all dronnings kissed her beeswixed hand' (Joyce [1939] 2010, p. 333). Kate's arrival, figured as that of an insectile 'Enterruption', and her message, the contents of which are only relayed indirectly, cause something of a buzz in the bar, as the patrons gossip about Earwicker and his wife (Joyce [1939] 2010, p. 332). This incident highlights the way in which throughout the *Wake* the message is less important than the process of its transmission and distortion: Joyce's frequently emphasises that the contents of speech are subject to processes of receiving and repetition in an endless 'recirculation' of rumour and gossip regarding matters ranging in severity from missing trousers to incest.<sup>11</sup>

The hive-like dynamics of the 'Inn' become increasingly audible when connected with Joyce's description of the bar as a 'bierhiven', which intermingles the term 'beehive' with that of 'beer-heaven', and is also suggestive of the 'beehivour' (Joyce [1939] 2010, pp. 315, 430) of its patrons. As apiarist Mark L. Winston notes, bees are 'acutely aware of the environment outside the hive, and there's constant chatter reporting on the external world' (Winston 2014, p. 200). In the Chapelziod bar, the commingling of stories, songs, gossip, radio programmes, evokes a similar process of informational exchange, with the episode resembling an ongoing process of environmental feedback—both in the sense of receiving information and in terms of electronic distortion. 'Wind from the nordth. Warmer towards muffinbell, Lull' announces the radio at one point, interrupting the conversation at the bar with a weather report (Joyce [1939] 2010, p. 324). This constant process of updating is partly due to the fact that the world of the *Wake* remains in constant flux: 'every person, place and thing in the chaosmos of all ( . . . ) was moving and changing every part of the time (Joyce [1939] 2010, p. 119). Throughout the text, individual narratives, identities, and timeframes are forever colliding and reforming anew, appearing in new combinations of sound and sense. While he was writing the *Wake*, Joyce remarked to Arthur Power: 'In writing, one must create an endlessly changing surface, dictated by the mood and current impulse in contrast to the mood of the classical style' (Power 1974). These remarks hint that the text is engaged in a process of environmental feedback, continually reshaping itself in response to its surroundings.

Readers of Joyce have sometimes characterised the *Wake* in terms that could be considered swarm-like; Patrick Parrinder notes 'the spiralling flights' of its narrative, while Samuel Beckett imputes a 'furious restlessness to the form' of the text (Parrinder 1984; Beckett [1929] 1972).<sup>12</sup> William York Tindall, channeling the psychologist William James's famous observation regarding the chaotic

<sup>10</sup> Douglas Kahn drew my attention to these quotations in *Earth Sound Earth Signal* (Kahn 2013, pp. 28, 50).

<sup>11</sup> As Roy Benjamin notes: 'Interference is the message', 'Noirse-Made Easy: Noise in *Finnegans Wake*', *Comparative Literature Studies*, Volume 50 (Benjamin 2013a, p. 671).

<sup>12</sup> Beckett is of course referring to Joyce's *Work in Progress*, an early fragment of *Finnegans Wake*.

nature of perception, remarks that the *Wake* ‘seems a buzzing as well as a blooming confusion’ and this statement also aptly reflects the intensification of apian life from the ‘blooming’ (i.e., coming into being) of bee references in *Ulysses* to the ‘buzzing’ intensity bee-life in Joyce’s final prose experiment (Tindall 1995).<sup>13</sup> Curiously, however, as Finn Fordham’s compendious catalogue of *Wake* readings attests, the text has yet to be read as a model of swarm intelligence, a concept that arose in popular science in the late nineteenth-century before becoming one of the dominant themes of Maeterlinck’s *The Life of the Bee* (Fordham 2007).

In ‘The Swarm’, Maeterlinck describes how, when the colony reaches a certain size, the decision is made for it to divide in two, resulting in the formation of a breakaway group that transports the old queen to a new location, reproducing itself in the act of swarming. This decision, Maeterlinck suggests, is the product of a self-governing intelligence: ‘it is not the queen but the spirit of the hive, that decides on this process’ (Maeterlinck [1901] 1995, p. 35). In order to successfully establish a new colony, each member of the swarm must respond carefully to its surroundings, continually feeding back on its environment as it embarks on its journey, and even aborting the mission if a new home cannot be secured. The process of constant decision-making anticipates the work of algorithm, and the ability of the swarm to rapidly process a steady stream of data meant that in the later decades of the twentieth century this natural phenomenon inspired new developments in artificial intelligence.

Crucially, the self-governing nature of the swarm is redolent of Margot Norris’s account of the ‘decentered universe’ of *Finnegans Wake*, the result of ‘an intellectual shift which locates meaning in relationships ( . . . ) rather than content’ (Norris 1976). The text resembles a vast information system in its innumerable combination of assemblages, exceeding the governing intelligence of any individual mind—its own author’s included—and generating a swarm of critical readings that continually feedback on this vast assemblage. That the swarm resembles a system of language is evident from its various etymologies: the term is said to derive from the Sanskrit word *svāratī*, which means ‘sounds, resounds’, from *svāra*, ‘sound, voice’. It is also connected with the Latin *sur-* in *susurrus*, ‘hum’ (OED 2017d). The swarm is thus a form of collective utterance consisting of a multitude of individual voices sounding and resounding as one.

The swarm also resembles a mode of physical communication or body language: the OED posits that the etymological meaning of the term may be that of ‘agitated, confused, or deflected movement, in which case ‘swarm, n.’ and ‘swerve, n.’ might arise from ( . . . ) the same base’ (OED 2017d). The latter term is present in the opening lines of the *Wake*, which describes the movement of the Liffey ‘from swerve of shore to bend of bay past Eve and Adams’ (Joyce [1939] 2010, p. 3), and has been read as a model for the veering trajectory of the text. Drawing on the echo of ‘even atoms’ in the final words of this statement, Jonathan Pollock and Sean Braune read the *Wake* in terms of its textual atomism, linking the ‘swerve’ to Lucretius’s theory of the *clinamen*, or the unpredictable swerve of atoms, the collision of which results in the production of new forms (Pollock 2013; Braune 2010).

Swerving slightly further off course for a moment, it is possible to discern a similar overlap between the movement of bees and atoms in fellow modernist D. H. Lawrence’s reading of Einstein’s theory of Relativity. In his 1921 essay ‘Fantasia of the Unconscious’, Lawrence remarks that the universe ‘isn’t a spinning wheel. It is a cloud of bees flying and veering round’, adding, ‘now that the multiple universe flies its own complicated course quite free, and hasn’t got any hub, we can hope also to escape. We won’t be pinned down, either’ (Lawrence 2004). Although Lawrence is describing the ways in which Einstein’s findings liberated the modern subject from conventional patterns of social

---

<sup>13</sup> In his *Principles of Psychology* (1890), the philosopher and psychologist William James describes the way in which individual consciousness is bombarded by sense data prior to it being processed by the mind, likening this experience to that of a baby ‘assailed by eyes, ears, nose, skin, and entrails at once, feels it all as one great blooming, buzzing confusion’, see (James 1981, p. 462). The phrase ‘blooming, buzzing confusion’ quickly became something of a catchall phrase to describe the chaotic nature of subjective experience. The phrase is used twice in Samuel Beckett’s first published novel *Murphy*, which was read by Joyce, see (Beckett [1938] 1963).

behaviour, his remarks are also suggestive of the ways in which developments in contemporary science inspired writers to develop new models of relation between human beings and the world that they inhabit. Lawrence's account of the 'multiple universe', which resonates with the *Wake's* 'chaosmos of All', sheds light on the ways in which bees came to be associated with an unfettered mode of creative expression in the early decades of the twentieth century (Joyce [1939] 2010, p. 118).

As Jeffrey S. Drouin notes, the *Wake* 'contains numerous reference to Einstein', and Joyce was reported to have reacted favourably upon hearing in 1931 that the head of the BBC, Harold Nicolson, had described him as 'the Einstein of English fiction' (Drouin 2015). Joyce's awareness of the parallels between the energy of matter, the multivalent properties of speech, and the swarming of bees is suggested by the *Wake's* playful punning on the word 'atom' (incapable of division), 'etym' (meaning, root) and 'entymology' (entomology, from 'entomos' or insect, divided into sections; also etymology, the study of word origins). This dense cluster of signifiers is particularly suggestive of a mode of textual reproduction achieved through lexical division and reduplication (Joyce [1939] 2010, pp. 353, 417).<sup>14</sup>

The *Wake* also adopts the figure of the swarm to evoke the quest for epistemological certainty that the text simultaneously invites and thwarts: those attempting to uncover the epistolary identity of Shem the Penman are likened to 'a swarm of bisses honeyhunting', and describing Earwicker's evasion of the police after committing an act of indiscretion in a local park, his son Shaun (Yawn) remarks: 'The seeker from the swayed, the beesabouties from the parent swarm' (Joyce [1939] 2010, pp. 124, 496). The reader too is positioned as a kind of busybody (beesaboutie) eavesdropping for the juicy details of Earwicker's salacious crimes, picking up only snatches of detail in the pursuit of answers. To try and listen in to the text is to be deafened by a noisy clamour of possibilities, in which information is amassed and dispersed too quickly to be processed by the human mind. The reader is left 'buzzing is (or her) brains', becoming 'bedizzled and debuzzled' as thoughts veer back and forth, travelling in multiple directions and forging a host of new cerebral pathways (Joyce [1939] 2010, pp. 223, 234).

As is the nature of swarm intelligence, no single element or idea unlocks the mysteries of *Finnegans Wake*; its meaning cannot be communicated by linear units of speech, such as the sentence or the paragraph, but rather through the relatedness of its individual elements. The text therefore resembles a swarming without settling, a form of expression perpetually in transit, and which in Lawrence's words 'hasn't got any hub' and instead 'flies its own complicated course quite free'. Resembling a constant stream of communication that records and transmits its surroundings simultaneously, the text registers the unique impulses of the interwar period, tuning in to the restless spirit of the telecommunications age in its evocation of the spirit of the hive. Gesturing forwards in time to the self-governing systems of communication developed by artificial intelligence in the late twentieth-century, Joyce's final text could even be said to anticipate the information age of the present day. Consequently, just as the swarm is remarkable in terms of its status as what Eugene Thacker calls a 'heterogeneous whole', an 'organization of multiple, individuated units', the exceptional status of the *Wake* derives from its connectivity rather than simply its collectivity—both to its surroundings, between its individual elements, and to its future resonances (Thacker 2004). The text is thus able to tune into wider systems of communication in its endless quest for self-coherence, forever gesturing beyond itself and continuing to inform our awareness of the world around us.

Given his fondness for 'entymology', Joyce would likely have known that the word 'swarm' partly derives from the proto-Germanic term *swarmaz*, 'dizziness' (OED 2017d). This definition recalls Bloom's account of the visitation of a second bee 'butting shadow on wall dazed self then me wandered dazed down shirt' (Joyce [1922] 1986, p. 420). Bloom not only confuses two separate bees during this

---

<sup>14</sup> Steven Connor explains that there is 'a significant etymological conversation between the words *atom* and *insect*. An atom, literally that which is without a cut, signifies something indivisible. The English word for insect comes from the Latin *in-* and *secare*, to cut, which is more or less a literal rendering of the Greek *entomos*, meaning with a cut in the middle or on the inside', *Fly* (Connor 2006, p. 90). The *Wake's* contemplation of the 'humble indivisibles in the grand continuum' is thus connected its 'good smetterling of entymology' (pp. 472, 417).

chaotic outpouring of unpunctuated speech, he also adopts the same dazed ‘beehaviour’. In a similar instance of disorientation towards the end of the *Wake*, one of the text’s many storytellers remarks: ‘Follow me beeline and your bumblin’, before adding, ‘And listening.’ (Joyce [1939] 2010, p. 555). There is a paradoxical playfulness to these lines that speaks of a kind of purposeful bewilderment quite unlike that of the bee, and perhaps more akin to that of a blundering human approximation of beelike movement—an aping of the apian. The experience of attempting to find a way through Joyce’s work is often a whirling, lightheaded one, a losing of one’s bearings. And yet to grope around in the ‘gloom’ of Shelley’s poetry as Stephen does, or to struggle like Bloom to describe the ‘small talk’ of bees, is also to get a sense of something beyond the limitations of human experience. It is while stumbling through Joyce’s writing that we become alert to the resonances of nonhuman life, stumbling across new lines of discovery in our giddy quest.

**Conflicts of Interest:** The author declares no conflict of interest.

## References

- Attridge, Derek. 1988. *Peculiar Language: Literature as Difference from the Renaissance to James Joyce*. Ithaca and New York: Cornell University Press, p. 231.
- Beckett, Samuel. 1972. Dante . . . Bruno, Vico . . . Joyce. In *Our Exagmination Round His Factification for Incamination of Work in Progress*. London: Faber, pp. 1–22. First published in 1929.
- Beckett, Samuel. 1963. *Murphy*. London: Picador, pp. 6, 138. First published in 1938.
- Benjamin, Roy. 2013a. ‘Interference is the message’, ‘Noirse-Made Easy: Noise in *Finnegans Wake*’. *Comparative Literature Studies* 50: 671.
- Benjamin, Roy. 2013b. Noirse-Made Easy: Noise in *Finnegans Wake*. *Comparative Literature Studies* 50: 670–87.
- Berger, John. 1980. Why Look at Animals? In *About Looking*. London: Writers and Readers, pp. 3–28.
- Bishop, John. 1986. Earwickerwork. In *Joyce’s Book of the Dark: Finnegans Wake*. Madison: University of Wisconsin Press, pp. 264–30.
- Braune, Sean. 2010. From Lucretian Atomic Theory to Joycean Etymic Theory. *Journal of Modern Literature* 33: 167–81. [CrossRef]
- Connor, James A. 1993. Radio Free Joyce: *Wake* Language and the Experience of Radio. *James Joyce Quarterly* 30/31: 825–43.
- Connor, Steven. 2000. As Entomate as Intimate Could Pinchably Be. In *Modernist Transactions*. Birmingham: University of Birmingham. Available online: <http://stevenconnor.com/insects/> (accessed on 16 May 2017).
- Connor, Steven. 2006. *Fly*. Islington: Reaktion Books.
- Cumpiano, Marion W. 1987. From Honey to Money: A *Finnegans Wake* Spelling-Bee. *James Joyce Quarterly* 24: 468–73.
- Deleuze, Gilles, and Felix Guattari. 2014. *A Thousand Plateaus: Capitalism and Schizophrenia*. Translated by Brian Massumi. London and New York: Bloomsbury.
- Drouin, Jeffrey S. 2015. *James Joyce, Science, and Modern Print Culture: “The Einstein of English Fiction”*. New York and London: Routledge, pp. 1, 5.
- Eastman, Jacqueline F. 1989. The Language of Flowers: A New Source for ‘Lotus Eaters’. *James Joyce Quarterly* 26: 379–96.
- Ellmann, Maud. 2006. Ulysses: Changing Into An Animal. *Field Day Review* 2: 74–93.
- Fordham, Finn. 2007. *Lots of Fun at Finnegans Wake: Unraveling Universals*. Oxford: Oxford University Press, p. 1.
- Gould, James. 1988. *The Honey Bee*. New York: Scientific American Library, p. 69.
- Graham, Philip L. 1962. Bees at the Wake. *A Wake Newslitter* 5: 2–4.
- Hart, Clive. 1967. His Good Smetterling of Entymology. *A Wake Newslitter* 4: 14–24.
- Hudson, William Henry. 1906. *Nature in Downland*. London: Longmans, Green Co., p. 198. First published in 1900.
- James, William. 1981. *The Principles of Psychology*. Cambridge: Harvard University Press, vol. 1.
- Joyce, James. 1986. *Ulysses*. Edited by Hans Walter Gabler. New York: Random House. First published in 1922.
- Joyce, James. 2010. *Finnegans Wake*. Edited by Robbert-Jan Henkes, Erik Bindervoet and Finn Fordham. Oxford: Oxford University Press. First published in 1939.
- Joyce, James. 1969. *Stephen Hero: Part of the First Draft of ‘A Portrait of the Artist as a Young Man’*. Edited by Theodore Spencer. London: Cape. First published in 1944.

- Joyce, James. 1982. *James Joyce*, rev. ed. Quoted by Richard Ellmann; New York, Oxford and Toronto: Oxford University Press.
- Kahn, Douglas. 2013. *Earth Sound, Earth Signal: Energies and Earth Magnitude in the Arts*. London: University of California Press, pp. 1–4.
- Lacivita, Alison. 2015. *The Ecology of Finnegans Wake*. Gainesville: Florida University Press, p. 5.
- Lawrence, David Herbert. 2004. *Psychoanalysis of the Unconscious and Fantasia of the Unconscious*. Edited by Bruce Steele. Cambridge: Cambridge University Press, p. 72.
- Maeterlinck, Maurice. 1995. *The Life of the Bee*. Translated by Alfred Sutro. London: The Folio Society. First published in 1901.
- Mak, Cliff. 2016. 'Joyce's Indifferent Animals: Boredom and Subversion of Fables in *Finnegans Wake*. *Modernist Cultures* 11: 179–205. [CrossRef]
- McHugh, Roland. 2016. *Annotations to Finnegans Wake*, 4th ed. Baltimore: John Hopkins University Press.
- Mensel, Rudolf, and Werner Backhaus. 1991. Colour Vision in Insects. In *Vision and Visual Dysfunction. The Perception of Colour*. Edited by Peter Gouras. London: MacMillan Press, pp. 262–88.
- Michel-Rabaté, Jean. 2001. Theory's Slice of Life. In *James Joyce and the Politics of Egoism*. Cambridge: Cambridge University Press, pp. 85–106.
- Norris, Margot. 1976. *The Decentered Universe of Finnegans Wake: A Structuralist Analysis*. Baltimore: John Hopkins University Press, p. 3.
- Norris, Margot. 2014. The Animals of Finnegans Wake. *Modern Fiction Studies* 60: 527–43, 528.
- O'Shea, Michael. 1986. *James Joyce and Heraldry*. New York: State University of New York Press, pp. 78–81.
- OED. 2017a. buzz, n.1. In *OED Online*. Oxford: Oxford University Press. Available online: <http://www.oed.com/view/Entry/25493?rkey=ngM87r&result=1&isAdvanced=false> (accessed on 16 May 2017).
- OED. 2017b. antenna, n. In *OED Online*. Oxford: Oxford University Press. Available online: <http://www.oed.com/view/Entry/8277?redirectedFrom=antennae> (accessed on 16 May 2017).
- OED. 2017c. hum, n.1. In *OED Online*. Oxford: Oxford University Press. Available online: <http://www.oed.com/view/Entry/89253?rkey=WamuLK&result=1&isAdvanced=false> (accessed on 16 May 2017).
- OED. 2017d. swarm, n. In *OED Online*. Oxford: Oxford University Press. Available online: <http://www.oed.com/view/Entry/195492?rkey=K05IQ4&result=1&isAdvanced=false> (accessed on 16 May 2017).
- Parikka, Jussi. 2008. Politics of Swarms: Translations between Entomology and Biopolitics. *Parallax* 14: 112–24. [CrossRef]
- Parrinder, Patrick. 1984. Reading the Wake. In *James Joyce*. Cambridge: Cambridge University Press, pp. 219–328.
- Peters, John Durham. 2015. *The Marvelous Clouds: Towards a Philosophy of Elemental Media*. Chicago and London: University of Chicago Press.
- Pollock, Jonathan. 2013. Textual Atomism in Finnegans Wake. In *Renascent Joyce*. Edited by Daniel Ferrer, Sam Slote and Andre Topia. Gainesville: University of Florida Press, pp. 16–24.
- Power, Arthur. 1974. *Conversations with James Joyce*. London: Millington, p. 65.
- Rando, David. 2009. The Cat's Meow: *Ulysses*, Animals, and the Veterinary Gaze. *James Joyce Quarterly* 46: 529–43. [CrossRef]
- Schlauch, Margaret. 1973. *The Language of James Joyce*. Folcroft: Folcroft Library Editions, p. 2.
- Senn, Fritz. 1966. Insects Appalling. In *Twelve and a Tilly: Essays on the Occasion of the 25th Anniversary of Finnegans Wake*. Edited by Jack P. Dalton and Clive Hart. London: Faber, pp. 36–39.
- Shelley, Percy Bysshe. 2009. Prometheus Unbound. In *Percy Bysshe Shelley: The Major Works*. Edited by Zachary Leader and Michael O'Neill. Oxford: Oxford University Press, p. 256. First published in 1820.
- Teale, Edwin Way. 2006. Introduction. In *The Life of the Bee*. New York: Dover Publications, pp. v–vi.
- Tennyson, Alfred. 2009. The Princess. In *The Major Works*. Edited by Adam Roberts. Oxford and New York: Oxford University Press, p. 196. First published in 1847.
- Thacker, Eugene. 2004. Networks, Swarms, Multitudes: Part Two. 18 May. Available online: <http://www.ctheory.net/articles.aspx?id=423> (accessed on 16 May 2017).
- Thirlwell, Adam. 2009. *Miss Herbert: An Essay in Five Parts*. London: Vintage, p. 106.
- Tindall, William York. 1995. *A Reader's Guide to James Joyce*. New York: Syracuse University Press, p. 238.
- Von Frisch, Karl. 1950. The Color Sense of Bees. In *Bees: Their Vision, Chemical Senses, and Language*. Ithaca: Cornell University Press.

Von Frisch, Karl. 1967. *The Dance Language and Orientation of Bees*. Translated by Leigh E. Chadwick. Cambridge: Harvard University Press.

Winston, Mark L. 2014. *Bee Time: Lessons from the Hive*. Cambridge and London: Harvard University Press.

Wright, Jane. 2015. The Princess and the Bee. *The Cambridge Quarterly* 44: 251–73, 254. [[CrossRef](#)]



© 2017 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).