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Shared Micro-worlds Literary and Artistic Depictions of Insects*

Общие микромиры
Литературно-художественные
образы насекомых

Абстракт

В статье анализируются субъектные образы насекомых в новейшей литературе. В центре внимания автора – стратегии повествования о становлении отношений с животными, существенно отличающимися от человека. Рассматриваются различные писательские стратегии, используемые Сельей Ахавой в романе *Nainen joka rakasti hyönteisiä* (рус. Женщина, которая любила насекомых), а также художественные практики, примером которых служит артбук *The Language of Bugs* (рус. Язык насекомых), созданный насекомыми и Чжу Инчунем.

Ключевые слова: насекомые, Сельей Ахава, Чжу Инчунь (朱赢椿), исследования животных, животные

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Abstract

The article analyzes subjective representations of insects in contemporary literature. The author focuses on narrative depictions of ways of establishing relationships with such uniquely different animals. She illustrates various writing strategies employed by Selja Ahava in her novel *Nainen joka rakasti hyönteisiä* (The Woman Who Loved Insects) and artistic approaches exemplified by the art book co-created with insects by Zhu Yingchun, *The Language of Bugs*.

Keywords: insects, Selja Ahava, Zhu Yingchun (朱赢椿), animal studies, animal

* The article constitutes part of my doctoral dissertation entitled *Obdarzanie troską. Reprezentacje zwierząt w literaturze od przełomu XX/XXI wieku w kontekście badań zookrytycznych* (Giving care. Representations of animals in literature since the turn of the 20th/21st century in the context of zoocritical research), written at UKEN under the supervision of Professor Ryszard Nycz, PhD, DSc, and Professor Marcin Urbaniak, PhD, DSc (UKEN).

Is an Insect a Person?

In spite of numerous gaps in the general knowledge on insects, the description and contemporary systematics of insects partially resolve the issue of their identities; however, it does not resolve the issue of their agency. Responding to the question of whether an animal is someone or something, Katarzyna Kłosińska – a Polish linguist – said:

Unfortunately, animals are not referred to by a separate pronoun; at the same time, the pronoun we choose (who or what) depends on our feelings and convictions concerning this matter. It goes without saying, however, that typically the pronoun “who” is reserved for human beings¹; hence animal names should be substituted with “what.” In the case of our pet dog or cat, which are considered household members, the use of the pronoun “who” hinges upon our relationship with them.²

The scholar assumes that the Polish language does not treat animals as subjects and agents. In simplified terms, the form *who* refers to human beings, while the form *what* concerns other animals, plants, and objects. Her definition is characterized by strong contrast and a clearly drawn boundary between the human beings and everyone else. This leads to the first paradox stemming from this assumption, which has its basis in systematics and biology. After all, human beings are animals. Due to this fact, one may argue that animals should also be much closer to humans on a linguistic level, as opposed to plants or objects. As all the species belong to a single systematic category, the distinction between humans and non-humans points to a particularly sophisticated form of anthropocentricity in language. The second paradox in Kłosińska’s response lies in her approval of the use of the form reserved for human beings for animals that are in a close relationship with them, which may apparently result in granting agency to specific animals. Thus, the agency of animals is reduced to an anthropocentric gesture towards an individual animal rather than the species as a whole. This linguistic conservatism is quite telling of a certain imaginative framework, according to which the humans introduced a certain world or symbolic order – an order that is slowly collapsing. Another issue concerns the question of whether insects are animals at all. From the point of view of biology, the answer is obvious. From a linguistic perspective, the answer is far less obvious. In legal terms, although insects are classified as animals, they are generally excluded from

¹ In the Polish language.

² Katarzyna Kłosińska’s reply to the question: “Zwierzę – co czy kto?” [Animal – What or Who?], 24.01.2016, <https://sjp.pwn.pl/poradnia/haslo/zwierze-co-czy-kto;16553.html> (retrieved: 20.08.2024).

the protection afforded by animal welfare regulations. As a result, they are not subject to the oversight of ethical committees and may be harmed or killed in scientific experiments and research without legal consequences such as fines or other sanctions. Studies suggest that insects have the ability to feel pain. The debates to date disregarded the existence of nociception in insects.³ As a result, they were excluded from the process of drafting animal welfare legislation. The perception of pain thus seems to be a major factor in recognizing a given species as *someone* rather than *something* – not a human being or a person, but no longer an object. Authors of the paper “Can Insects Feel Pain? A Review of the Neural and Behavioural Evidence” assessed nociception in insects at two developmental stages – adult specimens and nymphs at the first stage of development using Birch et al.’s (2021) eight criteria. They proved that flies, cockroaches, termites, and mosquitoes met as many as six of the them, indicating that they were highly likely to feel pain; bees, wasps, ants, crickets, grasshoppers, butterflies, and moths met three or four of the eight criteria, and each of the studied insects met at least one. The authors express clear concerns about the current legal and ethical relationship between humans and insects.⁴ Furthermore, groundbreaking research on consciousness in insects was conducted by prominent neuroethologists Andrew B. Barron and Colin Klein. The authors argue that the evolution of consciousness must be examined within a phylogenetic framework. From this perspective, the recognition of consciousness requires evidence that at least one clade of invertebrates, namely, the insects, possesses a minimal form of consciousness – that is, a basic capacity for subjective experience shared by organisms descending from a common ancestor.⁵ The capacity for subjective experience is linked to the ability to feel touch, taste, smells, sounds, as well as pain, pleasure or fear, and does not necessarily include the ability of introspection or thinking about one’s experiences.

Traces of Presence

In literature, the dominant way of representing insects involves motifs, symbols, and allegories.⁶ There are rare cases of works where they are not used as poetic figures

³ Matilda Gibbons et al., “Can Insects Feel Pain? A Review of the Neural and Behavioural Evidence,” *Advances in Insect Physiology* 63 (2022): 155–229, <https://doi.org/10.1016/bs.aiip.2022.10.001>.

⁴ Gibbons et al., “Can Insects Feel Pain?”

⁵ Andrew B. Barron and Colin Klein, “What Insects Can Tell Us about the Origins of Consciousness,” *Proceedings of the National Academy of Sciences* 113, no. 18 (2016): 4900–4908, <https://doi.org/10.1073/pnas.1520084113>.

⁶ See Zofia Stefanowska, “Świat owadzi w czwartej części *Dziadów*,” in *Studia romantyczne*, ed. Maria Żmigrodzka (Wrocław: Zakład Narodowy im. Ossolińskich, 1973), 289–312; Grzegorz

aimed at presenting deeper meaning concerning humans or merely a mention in the description of a landscape, but rather as full-fledged protagonists and agents driving the plot or influencing the entire structure of the presented world. We are unable to build relationships with insects because they are extremely close and distant at the same time. These morphologically distant creatures do not take well to anthropocentric appropriation – they belong neither to the wild nor the domesticated beings. They inhabit corners of ceilings, basements, cracks in floorboards, air vents, kitchen cupboards – brazenly crossing established property boundaries and divisions between what is human and animalistic. Citing Julia Kristeva, Monika Żółkoś notes that the way insects violate systemic and symbolic boundaries is hardly the only source of our repulsion and a sense of unease. They also violate the “cultural order, based on the separation of the clean and the unclean.”⁷ They feed and live on food scraps and debris. Patrycja Cembrzyńska points out that entomophobia also stems from their “weapons” – the stings, which violate one’s personal space and bodily integrity, as well as from their ability to reproduce rapidly.⁸ Insects crawl into spaces occupied by humans; even though human beings keep developing sophisticated forms of dealing with this hostile takeover. We do not have the right tools to develop relationships with insects. We lack the verbal and non-verbal means, while they lack facial expressions; additionally, their (mostly) small size as well as wild and untamed nature make them often eluding anthropomorphization in everyday contact. How does literature deal with describing their experience if one needs to establish a relationship to understand another being’s world? The process of building relationships is based on accepting ignorance.

Emptiness thus has a significance as a reminder of what has been removed and what has previously filled the space. At the same time, it demands the realization of its inherent potential, which results in a paradoxical outcome – the blank spaces are thus the most crowded, laden with competing narratives, endless signs, alternate histories.⁹

Igliński, *Niesławne, pospolite, znikome. Robaki i owady w twórczości polskich wieszczów na tle tradycji literackiej* (Olsztyn: Uniwersytet Warmińsko-Mazurski, 2022); *Owady w literaturze, kulturze, języku i mediach*, eds. Ewa Borkowska, Andrzej Borkowski, Maria Długolecka-Pietrzak (Siedlce: Wydawnictwo Naukowe IKRiBL, 2021); *Narracje o Zagładzie – Zwierzęta/Zagłada* 3 (2017); Paulina Cembrzyńska, “O kreaturach. Lekcja entomologii,” *Teksty Drugie*, no. 4 (2016): 375–393. <https://doi.org/10.18318/td.2016.4.24>; *Zoophilologica. Polish Journal of Animal Studies*, no. 2 (2016); Monika Żółkoś, “Mikro-formy i makro-lęki. Owady jako wyzwanie dla animal studies,” in *Zwierzęta i ich ludzie. Zmierzch antropocentrycznego paradygmatu*, eds. Anna Barcz, Dorota Łagodzka (Warszawa: Instytut Badań Literackich, 2024), 34–45.

⁷ Żółkoś, “Mikro-formy i makro-lęki,” 39.

⁸ Cembrzyńska, “O kreaturach,” 377–378.

⁹ Katarzyna Szalewska, “Figury nieobecności / Retoryka pustki,” *Białostockie Studia Literaturoznawcze*, no. 8 (2016): 25.

The agreement on the lack of similarities between insects and human beings, the lack of boundaries and communication may allow some form of relationship to exist, which can result in a redefinition of the status of insects. Selja Ahava tackles this issue in her novel *Nainen joka rakasti hyönteisiä* (The Woman Who Loved Insects). The author tells the story of Maria, a character who is based on the lives of Maria Sibylla Merian and Isabella Bird. Merian was an eminent pioneering German entomologist who illustrated, described and discovered the four-stage developmental cycle of butterflies, and documented the metamorphoses of many other insects. Ahava's character breeds insects – first in the attic and then in her garden shed. She spends the vast majority of her time with the insects, observes the stages of their development and then catalogues them, draws illustrations and sells the resulting albums. Her relationship with insects begins in early childhood when she puts the first caterpillars in a box, learning patience, as well as humility towards the knowledge she is acquiring and acceptance of the unknown:

A butterfly cocoon hangs off a plant like a wilted leaf. When you detach a mature cocoon from the plant and slice through its outer shell with a sharp blade, you will see the butterfly inside, a moving and living creature.

But if you are too impatient and cut the cocoon too soon, you will not find a butterfly – instead, you will only see a clear, viscous fluid leaking out from the inside. Everything that happens inside the cocoon remains hidden from our view; and if we try to force our way in there, our reward will be the lost miracle of life dripping out.¹⁰

Once the caterpillar has formed a cocoon, it begins to secrete enzymes that digest caterpillar's entire body – with the exception of its DNA with the record of the next phase of development. As a result, at some point of the process, the insect turns into a liquid that is subsequently consumed by the emerging butterfly or moth. This sophisticated metamorphosis is a biological miracle, which strikes at our notions of permanent, unchanging, and robust philosophical constructs of identity. The radical change inherent to the process of losing and rebuilding oneself thus becomes something permanent, primordial, and natural. The butterflies inspire the protagonist to take on challenges that impact her life, but also teach her to let go and grieve. Immutability turns out to be a figment of human imagination. Later, Maria reflects:

Is it good for humans to invade privacy and look into places where the human eye is hardly welcome? What if we opened up a human being in the same way? Could

¹⁰ Selja Ahava, *Kobieta, która kochała owady*, trans. Justyna Polanowska (Warszawa: Relacja, 2022), 49.

we see the future they are destined for in their guts? Do we all have the seed of our future shape inside of us?¹¹

The protagonist does not anthropomorphize insects and, while acknowledging their animal nature, allows them their intimacy. This gesture of offering privacy and her acceptance of their secretive life that stems from the natural order brings her closer to the butterflies and helps her build a close relationship with them. Close enough to spur reflection on the similarities between insects and humans, as well as the possibility of shared experiences. Ignorance is not depicted as a lack of knowledge, but transcending the boundaries of knowing, which results in an affective opening to the experience of the other.

We ought to start by shifting our perspective, – understanding the concept of ignorance in terms of the lack of knowledge [...] is related to defining knowledge as an absolute point of reference.¹²

According to the art historian and philosopher Georges Didi-Huberman, ignorance represents a different manner of perception, which changes the purpose of looking at things closer from “distinguishing and recognising, to name every perceived thing at all cost,”¹³ to “taking a step back and refraining from explanations.”¹⁴ Only such a moment allows for abandoning and transcending the knowledge of the object and experiencing it in an effective manner. At that point, according to Didi-Huberman, our attention is disrupted and the moment of conclusion is suspended, which allows us to develop our interpretations in all directions – between what is visible and the lived experience.¹⁵ Maria, pondering the unknown aspects of insect life and their bodies, comes to a liberating conclusion.

I am not going to guess – I'll let the esteemed biologists find the explanation. I am content with drawing what I see with my own eyes on paper, even if it is just a mere stinky black insect.¹⁶

The protagonist's perception of insects shifts as a result. She stops trying to discover what can be seen, instead getting immersed in experience and participation.

¹¹ Ahava, *Kobieta, która kochała owady*, 109.

¹² Georges Didi-Huberman, *Przed obrazem. Pytanie o cele historii sztuki*, trans. Barbara Brzezicka (Gdańsk: słowo/obraz terytoria, 2011), 19.

¹³ Didi-Huberman, *Przed obrazem*, 16.

¹⁴ Didi-Huberman, *Przed obrazem*, 16.

¹⁵ Didi-Huberman, *Przed obrazem*, 16.

¹⁶ Ahava, *Kobieta, która kochała owady*, 96.

Observation without preconceptions, cultural biases and prejudices and inherent evolutionary knowledge allows her to affectively experience the insect world. Despite the lack of a shared communication code, insects have a causal impact on the way she experiences the world.

In the words of Emmanuel Levinas, Maria accepts the Otherness of the insects, recognizes the Identity in them, and the gaze,¹⁷ which affirms one's own existence, is mutual.

Women would gasp in disgust when I touched the hairy back of the caterpillar only to watch it curl into a ball. While listening to the denizens of the Ladies' Club, I almost wanted to ask them: Has any of you ever been touched like this? Has anyone ever wanted to understand you, to get to know you and focused all of their attention on you? Has anyone ever believed in your secret life? I wanted to say: 'These caterpillars have more meaning and their lives have provided more insight, beauty and knowledge than any of our formless, pointless daily lives.'¹⁸

According to Levinas, the gaze has nothing to do with the sense of sight – it is mediated by the touch, as the protagonist touches the caterpillar, thus triggering a real and physical interaction, which allows them to share the fleeting experience and be with each other. As she touches the caterpillar, she wants to perceive its movement and the life it signifies to experience it and literally touch it. The mutual perception of each other's existence with the same sense and at the same time is tantamount to a mutual recognition of existence and seeing our reflection in the Other. This act of getting close forms a bond in a way that is incomparable to any of Maria's relational experiences. As a result of this encounter with the caterpillar, she takes a closer look at male-female relationships and begins challenging their notion, disrupting the understanding that insects are insignificant, invisible or imperceptible, as opposed to human beings, who are privileged in that regard. On the one hand, she highlights the status of women before the first wave of feminism and underscores their negligible social standing and meagre position in marriages, often due to obligation or tradition; on the other, she elevates the animals.

As I watched the larva and observed its secret life, I expected nothing from it. I did not claim to know it, I did not utter a single word about its expectations or needs. Its secret allure persisted, even though it kept shedding successive layers until I got

¹⁷ See Emmanuel Levinas, *Totality and Infinity: An Essay on Exteriority* (Pittsburgh: Duquesne University Press, 1969), 1–307; Emmanuel Levinas, *Ethics and Infinity* (Pittsburgh: Duquesne University Press, 1985), 1–136.

¹⁸ Ahava, *Kobieta, która kochała owady*, 104.

everything I wanted and everything I could get – and I wanted nothing more than to witness its life and metamorphosis.¹⁹

Maria encounters the caterpillar. She does not succumb to the temptation of anthropomorphization or to sympathize with its plight; she does not endow the insect with emotions that characterize human relationships (such as maternal love) and tries not to impact its existence. She is a quiet observer. This silence gives rise to an effective way of communicating, which can be accessed only after rejecting the anthropocentric cultural codes and conveyed in silence, as its intensity eludes any attempt at describing it with words.

Affective Journeys across the Microcosm

Zhu Yingchun (朱赢椿), an award-winning artist and book designer from Nanjing, China, has created *The Language of Bugs*, which he describes as being written by all kinds of insects, arachnids, and molluscs. The artist placed water tanks filled with vegetable-based ink in his garden, so that the animals crawling through them could leave prints of their paths on the pages. He sees these traces as fascinating artistic expressions of creative nature. He claims that although insects often remain unseen and lack degrees, titles, or resources, anyone who takes the time to observe them can discover their artistic prowess. Zhu describes himself as a mere scribe documenting the works of bugs.²⁰ One can confidently assume that insects crawling among the dirt do not possess the cognitive ability that could enable them to consciously and deliberately create works of art; however, the marks they leave on the sheets of paper, when properly treated by Zhu Yingchun, gain an aesthetic value and fit into human canons of beauty. That is why the artistic agency attributed to insects by the Chinese designer sparked controversy, as he does not document their artistry expressed by means of movement, corporeality, and vitality. In fact, the artist interfered with their agency by giving it a shape and form, putting it in a certain framework, cataloguing and putting it into context. Even though the cover of the book states that “[t]his book is not written by humans,”²¹ it still bears the author’s full name, which ultimately establishes him – according to his own words written on the cover – as the author (not even a co-author) of the work.

¹⁹ Ahava, *Kobieta, która kochała owady*, 104–105.

²⁰ Zhu Yingchun – TED Global Idea Search, published by Joy Wang on 20.01.2021, <https://www.youtube.com/watch?v=e7y9cRVPr70> (retrieved: 1.09.2024).

²¹ Zhu Yingchun, *The Language of Bugs* (Melton: Acc Art Books, 2018), front cover 1.

Each insect leaves a different trace, which highlights the extraordinary variability and diversity of their movement. *The Language of Bugs* is an art book created through the movements of insects, containing no words in its main text and therefore defying any reading according to the conventions we know. The readers are thus forced to perceive the book affectively, and the author leaves them no choice but to immerse themselves in the experience of the insect world. Sofia Bister wondered whether the book can be considered a work of literature at the intersection of text and visual arts, as it does not employ any conventional language, instead focusing on movement and dynamics.²² This lively gesture somewhat forces the readers of Zhu's art book to focus on the corporeal and transient experience of animals that have left a trace of their actions. As a result, the act of reading becomes almost meditative or contemplative, leading the reader to reflect upon the temporary nature of the movement of insects. The artist focuses on each and every insect – they are no longer considered a collective; instead, they are afforded individuality. The traces left by individual gives rise to a polyphonic melody in which each specimen can still be given a spotlight. This makes it different from Ahava's work, where insects became the object of interest both as individual animals, as well as representatives of the species observed from the point of view of a natural scientist.

Bister reflects upon the agency of Zhu's insects, pointing out that in many cases the artist had a clear impact on the process; one of the cited examples involved sprinkling them with water to make them move.²³ This certainly affected the trajectory of their paths and traces, marred by intentional disruption and human hand. This also proves that Zhu Yingchun lacked the patience, which plays a crucial role in establishing a deep bond between Ahava's protagonist and her insects. An animal sprinkled with water is likely to move in a more dynamic and less natural manner, which enables an affective reception of the work of the insect author by the human reader. We can interpret this in such a way that it eludes any logical reasoning, leaving us only the following choice: to shift our perception and look back rather than ahead and trigger the process of remembering in order to bring back the presence of the insect by examining the traces it left behind. The emptiness left by the animal elevates it and gives it agency – in spite of Zhu Yingchun's interference, the animal's existence is clearly marked and can be seen. We might not know anything about these particular insects due to our ignorance of their language. We are never going to get to *know* them in any conventional way; however, *The Language of Bugs* is a memoir dedicated to their remembrance and one of many steps

²² Sofia Bister, "Thinking with Traces: A Posthumanist Reading of Human and Nonhuman Agencies in Zhu Yingchun's *The Language of Bugs*," *Journal for Human-Animal Studies*, no. 10 (2024): 155. <http://dx.doi.org/10.23984/fjhas.136668>.

²³ Bister, "Thinking with Traces," 149. Also see: Zhu Yingchun, *The Birth of the Language of Bugs* (English edition, Melton: ACC Art Books, 2018), 7.

on the path towards opening up to their experiences. Despite being sceptical about the book's posthumanist qualities, Bister concludes that the presence of insects cannot be overlooked because of the marks left behind by their bodies.²⁴ Each sheet of paper they walked through documents their experience and has an affective impact on the reader, who then confronts their ignorance and opens up. Dominick LaCapra claims that one should learn to distinguish absence and loss, as the former is associated with something abstract and supra-historical, while the latter concerns the specific, real and traumatic events.²⁵ In spite of the marked lack of a bond with insects at a personal level, *The Language of Bugs* confronts the reader with their loss – the insects are not abstract entities, but corporeal beings; the book is merely a way for us to discover their physical nature and bid it farewell at the same time. The moment of forging this bond is the moment of loss, as it is mediated by the historical traces left behind in the real world. This startling experience of understanding and mourning, which happen simultaneously and immediately, underpins the affective power of *The Language of Bugs*.

Conclusions: Shared Micro-worlds

It takes a long time to find depictions of insects in which they are not merely conveyors of deeper human meanings or snapshots in landscape descriptions, but rather become fully-fledged protagonists of the literary work, serving as a driving force that propels the plot (as it happens in Ahava's novel) or influences the entire construction of the (fictional) world (as in Zhu's case). Although the analyzed texts differ from one another, both make an effort to give insects subjectivity – in both, there is an attempt to establish contact with them. Zhu Yingchun involves them in his artistic work, while Selja Ahava tries to capture the possibility of such a relationship without falling into anthropocentrism and anthropomorphism (perhaps that is why she does not make them the protagonists of the novel, but rather its driving force). These are not ideal methods, but Ahava and Zhu set in motion the mechanism of bringing insects into presence in the world.

Insects are finally being treated with a modicum of respect and gravity, which entails looking at their lives beyond the confines of the biological form (*zoe*) and finding purpose other than killing and preying on each other.²⁶ They are

²⁴ Bister, "Thinking with Traces," 150–151.

²⁵ Dominick LaCapra, "Trauma, Absence, Loss," *Critical Inquiry* 25, no. 4 (1999): 696–727.

²⁶ I take the liberty of arriving at some generalizing conclusions, as recent studies suggest that such subjectivizing depictions of insects are appearing more and more frequently in literature:

increasingly studied by scholars of various fields, who are concerned about their ability to feel and experience pain,²⁷ their navigational skills,²⁸ the functioning of their memory,²⁹ sentience,³⁰ consciousness,³¹ and self-awareness.³² This new-found interest is associated with increasingly bold literary depictions of insects, which stop being merely a part of the landscape illustrating the overall plot, becoming full-fledged protagonists. In the referenced books, the authors attempt to forge independent artistic bonds with animals. This proves challenging, as insects elude our anthropocentric cognitive tendencies – they lack familiar faces and expressions, gestures, language, and use a communication code that is difficult for humans to understand. Thus, forging these bonds requires us to overcome cultural stereotypes and make an affective attempt at finding a common ground, come to terms with our ignorance, and then transcend it by coming into contact with the other, ceasing to perceive insects as a crawling mass, but rather perceive them as a group of separate individuals. The coexistence of humans and insects is associated with many ethical challenges that, with the advancement of neuroscience, will increasingly accompany humanity. Such non-anthropocentric visions of the world, in which humans are eliminated as autonomous subjects with their own inner world and ethical system, are worth considering.³³

Zwierzęta i ich ludzie. Zmierzch antropocentrycznego paradygmatu, eds. Anna Barcz, Doro-
ta Łagodzka (Warsaw: IBL PAN, 2024), *Narracje o Zagładzie – Zwierzęta/Zagłada* 3 (2017);
Teksty Drugie, no. 4 (2016), *Zoophilologica. Polish Journal of Animal Studies*, no. 2 (2016), Eliz-
abeth C. Brown, *Insects Poetics* (Minneapolis: University of Minnesota Press, 2006), Jean-
Michel Drouin, *A Philosophy of the Insect*, trans. Anne Trager (New York: Columbia University
Press, 2019).

²⁷ Gibbons et al., “Can Insects Feel Pain?”

²⁸ Joanna S. Brebner et al., “Bumble Bees Strategically Use Ground Level Linear Features in Nav-
igation,” *Animal Behaviour* 179 (2012): 147–160. <https://doi.org/10.1016/j.anbehav.2021.07.003>.

²⁹ Jessica A. C. de Bruijn et al., “Automated High-Throughput Individual Tracking System for
Insect Behavior: Applications on Memory Retention in Parasitic Wasps,” *Journal of Neuroscience Meth-
ods*, no. 309 (2018): 208–217. <https://doi.org/10.1016/j.jneumeth.2018.09.012>.

³⁰ David Baracchi and Luigi Baciadonna, “Insect Sentience and the Rise of a New Inclusive Eth-
ics,” *Animal Sentience* 29, no. 5 (2020): 1–6. <https://doi.org/10.51291/2377-7478.1604>.

³¹ Barron and Klein, “What Insects Can Tell Us about the Origins of Consciousness.”

³² Marc Bekoff, “What Does It Feel Like to Be a Honeybee?,” *Psychology Today*, 20.04.2016,
<https://www.psychologytoday.com/us/blog/animal-emotions/201604/what-does-it-feel-like-to-be-a-honeybee> (retrieved: 1.09.2024); Peter Singer, “If Insects Have Consciousness, What Then?,” *Globe
and Mail*, 16.05.2016, <https://www.theglobeandmail.com/opinion/if-insects-have-consciousness-what-then/article30019601/> (retrieved: 1.09.2024).

³³ Debjani Ganguly, “Drone, Form and Techno – Futurities,” *New Literary History* 54, no. 4
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