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solving the mystery OF “ANGELICA FARFALLA”

Primo Levi and the origin of life

If we were to draw an analogy between short stories and paintings, “Angelica farfalla” (“Angelic Butterfly”), by the Italian chemist and writer Primo Levi (1919–1987), would be an outstanding miniature. It encapsulates, in no more than a few pages, a wealth of famous and infamous names, plain and concealed references, detailed descriptions and vague but alluring allusions: a work of painstaking precision, which leaves the reader craving to explore all its secrets. In light of the peculiarity of “Angelica farfalla” as a mystery story, this article will show that its non-linear structure and apparently missing details can be considered as a subtle invitation for the reader to investigate further, in order to reconstruct the exact sequence of the events described in it. Once the text is scanned for hidden sources, there appear figures that went unnoticed before, and that contribute to a more insightful interpretation. I have isolated four main hints, which, once put together, reveal the main objective of Levi’s story: showing the distorted perspective of Nazi eugenics on one side, while revealing its counter-discourse on the other. Connected to Levi’s refusal of a teleological vision of human destiny that infers the conclusions from the origins, such a discourse is an attack on the idea of neutrality not only of science, but of cultural artifacts in general. Science, poetry, anthropology and mythology, at first thwarted toward a diabolical goal, collaborate in Levi’s work to dismantle a false original myth and to present an argument for a monogenetic path of humankind whose direction is neither certain nor irreversible. Moreover, some motifs open new possible references for Levi’s anthropological interests, broadening the scope of his ideas on magic and its role in his literary works.

Thematising Nazi eugenic experimentalism in a sci-fi context, the story has caught the critics’ attention for its parodical overturn of Nazi ideology,[[1]](#footnote-1) its mythical allusions,[[2]](#footnote-2) and for the prominence given to metamorphosis, a theme dear to Levi.[[3]](#footnote-3) Yet, what the story portrays is, first and foremost, the resolution of a mystery which the investigators manage to uncover but refuse to openly state. The events are not reordered in a linear timeline, the prime suspect is nowhere to be found, and the only testimony leaves aside an unspeakable event. However, the pieces are all there for the reader to assemble: my analysis is the result of this operation.

Axolotls and Butterflies

Published in the weekly journal *Il Mondo* (*The World*) on the 14th of August 1961 and included in *Storie naturali* (*Natural Histories*, 1966), “Angelica farfalla” portrays an Allied research team, in a fictional Berlin immediately after the war, investigating a failed experiment by a Nazi scientist, Professor Leeb, meaning to create a new form of human beings, identical to angels. From the remains found in the room used as laboratory and the testimony of Gertrude Enk, a girl leaving nearby, they eventually discover that the human subjects, instead of becoming angels, had mutated into vulture-like beasts. They were then killed and eaten by the hungry citizens, in an act of involuntary cannibalism.

Of the four essential hints presented in the story, three appear in Leeb’s research manuscript, as discussed in a conversation between the investigators, their colonel and other characters. First, the idea of a diet-induced metamorphosis, inspired by a strange amphibian, the axolotl; second, a quotation from Dante’s *Purgatory*; third, a reference to Alfred Rosenberg’s *Myth of the Twentieth Century*; finally, the concealed suggestion that the mutated people were not only butchered in the room, but eaten *raw* on the spot. The first three are indeed the clearest, and Alessandro Cinquegrani discussed them in an interpretation of the story as a parody of Nazism, but our readings only partially concur.[[4]](#footnote-4)

We begin with the axolotl (*Ambystoma Mexicanum*). As the colonel explains, the curious creature is neotenic, i.e. able to reproduce in a larval state and to live its whole life without reaching an adult form (a terrestrial salamander). Furthermore, the moulting can be induced by feeding the animals with thyroid extract: this leads the mad scientist to imagine that humans could become angels through an adequate diet. Levi’s use of scientific articles as sources of inspiration is renown. The author himself, in “Romanzi dettati dai grilli” (“Novels Dictated by Crickets”) in the collection *L’altrui mestiere* (*Other People’s Trades*), defines the ethological articles of *Nature* and *Scientific American*, as well as Konrad Lorenz’s books, as containing “*i semi di uno scrivere nuovo*”[[5]](#footnote-5) (“the seeds of a new style of writing”[[6]](#footnote-6)). Recently, moreover, Enrico Mattioda proved the tight relations between Levi’s stories and *Scientific American* at least since 1966.[[7]](#footnote-7) In this case, however, Levi drew the motif from an older article published in *Nature* by Julian Huxley: “Metamorphosis of Axolotl Caused by Thyroid-feeding” (1920). As reconstructed by Peter Bowler, Huxley’s research thrilled British society at the time, as popular newspapers such as the *Daily Mail* reported it under the headline “The Secrets of Life”.[[8]](#footnote-8) It also gave his brother Aldous an idea for the final plot twist of his *After Many a Summer* (1939) which Levi probably had in mind. Parodying American eugenics and cult of beauty, the novel closes with the protagonists’ encounter with the Earl of Gonister whose diaries seemed to hold the secret to eternal life: eating nothing but raw fish guts. Now 201 years old, having shed his neotenic traits, the earl has become a big ape.

In the words of the colonel, the axolotl has lived “*indisturbato da non so quanti milioni di anni*”[[9]](#footnote-9) (“undisturbed for I don’t know how many millions of years”[[10]](#footnote-10)). Its antiquity, once paired with what Caspar Henderson defined as a “disconcertingly human appearance”,[[11]](#footnote-11) seems to allude to an ancestral origin of humankind. Most of all, it can reproduce in a single lifespan a major step of evolution, the abandoning of water and the beginning of life on earth, through metamorphosis. Yet, apparently, it does not need to do that. For these characteristics, it could be easily related to similar findings in the work of Ernst Haeckel (1834–1915), Darwin’s main supporter and populariser in Germany. The theory he made famous (now abandoned) states that ontogeny recapitulates phylogeny, i.e. the individual development since hatching repeats, even if imperfectly, the whole species’ evolution from a universal common ancestor. His importance for Levi’s stories of metamorphosis has already been underlined by Marco Belpoliti who analysed not only short stories such as “Il fabbro di se stesso” (“His Own Maker”) but also the 1980 poem “Autobiografia” (“Autobiography”), linking recapitulation theory to Empedocles’ life and philosophy.[[12]](#footnote-12) In fact, one of Leeb’s manuscript’s chapters is already linked to Empedocles, being titled “*I fondamenti fisiologici della metempsicosi*”[[13]](#footnote-13) (“The Physiological Basis of Metempsychosis”[[14]](#footnote-14)).

In line with his own time, Haeckel considered evolution as a linear progression, with Western civilisation at the top. While the axolotl was for him an “exceedingly curious case” showcasing “the great stride from water-breathing to air-breathing animals”, its neotenic form represented a “low stage of development”.[[15]](#footnote-15) Indeed, the German scientist was a controversial figure. Founder of the Monist League, he supported pacifism, feminism and homosexual rights, and was censored after the Nuremberg laws were enacted. However, despite his monogenist position, he was also a eugenicist who distinguished different species of humans to be ordered hierarchically. His apparent contribution to the Nazi ideology of racial cleansing has been an object of debate. Critics as extreme as Richard Weikart claimed that “Haeckel’s devaluing of ‘primitive’ races […] would be the first step towards a genocidal mentality”,[[16]](#footnote-16) while others, e.g. Robert Richards, defined such theses as producing “a mono-causal analysis that quite distorts the historical picture”.[[17]](#footnote-17) Indeed, as Diane Paul summarised, “[i]n Germany, as elsewhere, evolutionary theory provided a resource for groups with disparate agendas, including socialists and other radicals, free-market and collectivist-oriented liberals, Fascists, eugenicists who opposed racism and racial purists”.[[18]](#footnote-18)

Still, Levi’s axolotl is the perfect counterexample to a positivist evolutionism, while simultaneously confirming the common origin of all living beings. A creature in-between two worlds, apparently content with its own impurity, it resembles Levi himself who liked to identify with a hybrid being, like a centaur or an amphibian.[[19]](#footnote-19) It also reflects Levi’s own idea of evolutionism, whose anti‑anthropocentric character entailed, as Pierpaolo Antonello wrote, a confusion of animal and human, deriving from a common ancestry: indeed a fertile ground for literary creation.[[20]](#footnote-20)

 Above all, by furtively quoting Julian Huxley, Levi is referring to a Darwinian scientist who wrote extensively to disprove the Nordic and racist theories fuelling Nazi ideology (e.g. in his 1939 pamphlet *‘Race’ in Europe*), and was chosen as the first director of UNESCO in 1946–1948. As early as 1950, UNESCO published the first “Statement on Race” to disprove the notion’s scientific validity. Clearly, then, Professor Leeb was cherry-picking the information he needed for his own research and thwarting the ideals of the people he quoted. As the colonel explains, his manuscript is “*una ben curiosa mistura di osservazioni acute, di generalizzazioni temerarie, di teorie stravaganti e fumose, di divagazioni letterarie e mitologiche*”[[21]](#footnote-21) (“a very curious mixture of acute observations, rash generalizations, extravagant and obscure theories, literary and mythological digressions”[[22]](#footnote-22)). The confusion of recapitulation theory and Empedoclean philosophy is but one example of this deliberate distortion: another is to be found the second hint, that relating to Dante.

We read that Leeb chooses to quote Dante in his manuscript’s epigraph, but the actual verses (like the title of Huxley’s article) are not present in the text. All we know is that “*è questione di vermi, di insetti lontani dalla perfezione e di «angeliche farfalle»*”[[23]](#footnote-23) (“[it] alludes to worms, insects that are far from perfection, and ‘angelic butterflies’”[[24]](#footnote-24)). The clue can be easily traced back to *Purgatory*’s canto X, set in the first circle of the mountain. There, the souls’ pride is purified by carrying enormous rocks on their backs. So disfigured are they that, at first, Dante doubts their human nature. His eventual realisation is preceded by an invective against the trust human beings put in earthly glory:

*non v’accorgete voi che noi siam vermi*

*nati a formar l’angelica farfalla,*

*che vola a la giustizia sanza schermi?*

*Di che l’animo vostro in alto galla,*

*poi siete quasi antomata in difetto*

*sì come vermo in cui formazion falla?*[[25]](#footnote-25)

“can you not see that we are worms, each one

born to become the Angelic butterfly

that flies defenseless to the Judgement Throne?

What have your souls to boast of and be proud?

You are no more than insects, incomplete

As any grub until it bursts the shroud.”[[26]](#footnote-26)

These verses will root in Levi’s mind and be reproposed in 1981 in “Le farfalle” (“Butterflies”) in *Other People’s Trades*, a brief essay opposing Darwin’s evolutionism to the anthropocentric illusion that butterflies are beautiful to please humans. In fact, if observed under a microscope, “*gli occhi enormi e senza pupille, le antenne simili a corna, l’apparato boccale mostruoso ci appaiono come una maschera diabolica, una parodia distorta del viso umano*”[[27]](#footnote-27) (“the enormous eyes without pupils, the hornlike antennae, the monstrous buccal apparatus all appear to us as a diabolical mask, a twisted parody of the human face”[[28]](#footnote-28)). Retrospectively, the disconcerting appearance could be paired with the human-birds of “Angelica farfalla” whose faces resemble, in the words of Gertrude Enk, “*le teste delle mummie che si vedono nei musei*”[[29]](#footnote-29) (“the heads of mummies you see in museums”[[30]](#footnote-30)). Yet, more importantly, Dante’s tercets in the *Purgatory* respond to other verses in *Inferno*’s canto XXVI – the words pronounced by the proud Ulysses to his companions, which Levi recounts reciting in Auschwitz in *Se questo è un uomo* (*If This is a Man*): “*Considerate la vostra semenza: / fatti non foste a viver come bruti, / ma per seguir virtute e canoscenza*”[[31]](#footnote-31) (“Consider your sowing: you were not made to live / like brutes, but to follow virtue and knowledge”[[32]](#footnote-32)). As Piero Boitani commented, in *If This is a Man* Levi subverted the fascist interpretation of the canto (a nationalist and idealist one), and rediscovered Ulysses as both a modern hero and an image of the *lager*’s prisoners, defeated by an overpowering force.[[33]](#footnote-33)

As a Christian depiction of human destiny, Dante’s invective in the *Purgatory* stands in complete opposition to Ulysses’ words, preaching confidence in a foreordained fate instead of doubt and discovery. Even more effectively, the *Comedy*’s words are stripped from the victims and appropriated by the executioner. Once again, Leeb’s reading is biased, as he decides to ignore the reproach against pride to feed his own analysis of the axolotl’s case: if humans are “born” to become butterflies, it means their destiny is already in their origin, etched in their genes. Enrico Mattioda proposed a reading of Levi’s work based on the refusal of the circle as a static model of perfection, to be substituted by the dynamic notion of feedback loop: the maintenance of an input-output stability in a system, that can be schematised as an up/down movement. This is found both in biologic life, which for Levi can be described through the movement of a carbon atom in a graph, reaching a peak of energy to then fall down towards death, and in the descent/ascent of Dante’s *Comedy*: “*Se non teniamo conto del principio di retroazione”* writes Mattioda*, “non potremo capire perché a Levi interessasse tanto Dante*” (“If we do not keep into account the feedback loop principle, we will never understand why Levi was so interested in Dante”).[[34]](#footnote-34) This very opposition between circle and feedback loop is present in Leeb’s partial judgement, which transforms the souls’ ascension (up) after their sinful fall (down), re-establishing the equilibrium, into an earthly circular return to a predetermined original prerogative.

Nazis and Maenads

Two hints remain to be analysed. I shall begin with the butchering and eating of the raw human-birds. This motif is not transparent: the reader has to reconstruct it by following the clues that Levi lists with utmost care. Gertrude Enk’s testimony is crucial in its incompleteness. She alone breaks the code of silence: differently from her father, for whom “*[n]oi tedeschi, meno cose sappiamo, meglio è*”[[35]](#footnote-35) (“[w]e Germans, the less we know, the better”[[36]](#footnote-36)), she resolves to talk, describing not only whatever peek she could have of the experiment, but also the actions of her fellow countrymen:

*­– Gli avevano fatto la festa, con dei bastoni e dei coltelli, e li avevano già fatti a pezzi. Quello che era in testa a tutti doveva essere l’infermiere* [*…*] *Anzi, mi ricordo che a cose finite si prese la briga di richiudere tutte le porte, chissà perché: tanto dentro non c’era piú niente.*[[37]](#footnote-37)

“They had killed them, with clubs and knives, and they had already chopped them to pieces. I thought I recognized the leader as the attendant; […] In fact, I remember that when it was all over he took the trouble to close the doors, who knows why, since nothing was left inside.”[[38]](#footnote-38)

The euphemistic expressions “*fare la festa*” and, especially, “*a cose finite*” suggest Gertrude’s reticence to describe the gruesome events, but the reader can work them out by going back to the story’s beginning. The investigators find the room locked (i.e. nobody broke in after the butchering). Inside, it is “*vuota: non un mobile*” (“empty: not a single piece of furniture”) save for “*due pali robusti, paralleli*” (“two large parallel poles”) – to which, as later discovered, the birds had been chained – while on the floor, among the rubbish, are “*ossa, penne*” (“bones, feathers”) and what will be identified as blood and guano.[[39]](#footnote-39) The bones are found scattered, and are collected in a bag. These particulars, along with the mob’s vehemence, lead to believe that the human-birds were eaten on the spot, and the lack of sources, and of traces, of fire in the room indicates that they were eaten raw: these are the terrible “*cose*” to which Enk is referring. While the mob was unaware of eating former humans, the attendant, having supervised the experiment, certainly knew what he was doing.

It is easy to argue for a mythological background of many of Levi’s *Storie naturali*: indeed, the already quoted “literary and mythological digressions” of Leeb’s research invite us to do so. Federico Pianzola, for example, sees Leeb as part Prometheus, part Dr. Frankenstein, and considers him as an example of the risks of a theoretical science without any pragmatical basis. While this is certainly correct, not Prometheus but the vultures are eaten, and not by Prometheus, but by a hungry mob.[[40]](#footnote-40) At the same time, cannibalism, and the reference in Leeb’s diaries to the planned “*[o]pferung*”[[41]](#footnote-41) (i.e. sacrifice) of the human samples, conjure a distinct anthropological shade. If we connect sacrifice, metamorphosis, and what in Greek were called *sparagmos* (the tearing or cutting of a victim into pieces) and *omophagia* (the eating of raw flesh), one figure seems to stand alone: the Greek god Dionysus. Known especially through Euripides’ *Bacchae*, and made famous by Nietzsche, his myth and cult had become an issue of cultural anthropology through James Frazer’s *The Golden Bough* (1890, first Italian edition in 1925). Levi mentioned him, quoting Rabelais, as an example of wondrous birth in the epigraph of *Storie naturali*.[[42]](#footnote-42)

The relation between Levi and anthropology is being increasingly recognised in its importance. Not only had he been in contact with Claude Lévi-Strauss in his later years, but he also translated two works by him and one by Mary Douglas.[[43]](#footnote-43) Additionally, anthropology was, with mythology, a source of his reflections on magic. Robert Gordon, in particular, has linked magic in Levi’s works with its anthropological study by figures such as Tylor, Frazer, Malinowski and De Martino, and has described metamorphosis as the main theme through which magic is channelled in the narrative. As he aptly affirmed, “[è] questa compresenza magica condivisa tra scienze antiche e moderne, e le metamorfosi del sé e del reale che ne possono derivare, che è forse la chiave di volta per capire la scienza in Levi, riveduta attraverso le sue dimensioni alchemico-magiche” (“It is this magical compresence shared by ancient and modern sciences, and the metamorphoses of the self and of reality that can derive from it, that could be the keystone to understand Levi’s science, reconsidered through its alchemical-magical dimensions”).[[44]](#footnote-44)

Nonetheless, most of Levi’s actual readings remain hypothetical: let Dionysus be the guide on this difficult terrain. Indeed, sacrifice and magic are fundamental themes of Frazer’s work. In the chapter on Dionysus, he recounted his myth in the version of Nonnus of Panopolis’ *Dionysiaca*, in which the infant god tries to escape the Titans through various metamorphoses but is slaughtered by their knives while in the form of a bull. In similar fashion, the Dionysian rites, connected to the fields’ fertility, included *sparagmos* and *omophagia* of animals or people. They were, at least at first, examples of homoeopathic magic that allowed to share the godly power: “Hence when his worshippers rent in pieces a live goat and devoured it raw, they must have believed that they were eating the body and blood of the god”.[[45]](#footnote-45) While Frazer’s fame in and outside the field strengthens the possibility that Levi read his work specifically, his interpretation of the Bacchic sacrifice was in general quite diffused. Eric Dodds’ analysis stands out for its chronological proximity to “Angelica farfalla”: his *The Greeks and the Irrational* was published in Italian in 1959. In the appendix “Maenadism”, he analysed the sacramental character of the biannual bacchic dances. He defined *omophagia* as resting “on a very simple piece of savage logic […] If you want to be lion-hearted, you must eat lion; if you want to be subtle, you must eat snake; those who eat chickens and hares will be cowards […] By parity of reasoning, if you want to be like god you must eat god”.[[46]](#footnote-46) Now, if we consider that Leeb’s experiments were based on special diets, and that, in the blood samples collected in the room, the Allied chemist found “*sangue, cemento, pipì di gatto e di topo, crauti, birra, la quintessenza della Germania, insomma*”[[47]](#footnote-47) (“blood, cement, cat piss, mouse piss, sauerkraut, beer – in other words, the quintessence of Germany”[[48]](#footnote-48)), it appears that Leeb was following the same kind of “savage logic”: what you eat, you become. The mob which ate the human birds, then, unconsciously repeated the process. In this sense, the resemblance of the vultures’ wings, in Gertrude’s words, with “*le ali dei polli arrosto*”[[49]](#footnote-49) (“the wings of a roast chicken”[[50]](#footnote-50)) can be connected with another of the *Natural Histories*: “Censura in Bitinia” (“Censorship in Bitinia”). In this fictional report on the censorship of a fascist state, chickens are selected as perfect censors for their docility towards social order.

There are other, more hypothetical – yet fascinating – links in the chain of evolutionary anthropology that leads from Dionysus to Levi. As Dirk Obbink recalled, Dodd’s idea of “Dionysiac sacramentalism”[[51]](#footnote-51) was first developed by another scholar: the Cambridge ritualist Jane Ellen Harrison. In *Themis* (1912), Harrison saw in the Dionysian rites a remnant of a totemistic phase of Greek culture, a “stage in epistemology”[[52]](#footnote-52) in which the tribe identified with a class of animals or objects. In a social evolutionary fashion, she found similar stages in both contemporary and ancient rites. In particular, she linked *sparagmos* and *omophagia* to the Semitic rites which, already in 1889, William Robertson Smith had singled out from the writings of Nilus of Sinai. In the killing and eating of the raw flesh of a camel, Smith recognised “a very typical embodiment of the main ideas that underlie the sacrifices of the Semites generally”.[[53]](#footnote-53) While for him this rite took the form of a gift to God, Harrison believed it stemmed from an earlier stage: a communal banquet to share the totem’s mana.[[54]](#footnote-54)

This commonality in the origins of Semitic and Dionysiac rituals brings us to our last hint: Rosenberg’s *Myth of the Twentieth Century*. Leeb writes a dedication to the Nazi ideologist, and his book is mentioned in the conversation. In it, Rosenberg proposed that the Aryan race spread across the world from nothing less than Atlantis. He proceeded, by means of this rather unstable foundation, to tendentiously connect every positive cultural expression in history to the Aryans, and any degeneration to the mixing with “inferior” races. Cultural features were evaluated by the standards of his own “religion of the blood”. In the case of Greek culture, Rosenberg identified Dionysus with the main enemy of the Greek race’s Aryan strand, linking his rites (through Bachofen) to a supposed matriarchal phase preceding the arrival of the “Nordic” Dorians. The feminine Dionysus was opposed to the “Aryan” masculine triad of Zeus, Athena (born a-sexually and remaining a virgin) and Apollo. Most of all, Rosenberg saw “a direct line from the insanely possessed King Saul, through the earthbound intoxication of Dionysos [*sic*], to the whirling dervishes of Islam”.[[55]](#footnote-55)

Once the connection between Jewish religion and Dionysian rite is proposed as a racial prerogative, a further layer of parodical meaning is revealed. Dionysus is, first of all, an expression of that fluidity between human and animal that is typical of Levi’s narrative in general, and of *Storie naturali* in particular, of which the *lager* is the worst possible example.[[56]](#footnote-56) Moreover, the fashion of his rites allows a link between the maenads and the hungry German citizens, invalidating the theory of a different racial origin and a genetic superiority through the sharing of a similar practice. To this original confusion, Dionysus adds that of gender roles: Euripides’ *Bacchae* starts with Cadmus and Tiresias dressed as maenads and ends with Pentheus who, wearing a peplos and a deer skin, under Dionysus’ spell, is killed by his mother Agave, then torn limb from limb and partially devoured by the maenads’ crowd. In light of Rosenberg’s misogynist obsessions, it should be noted that, in “Angelica farfalla”, the German men could be paralleled with the maenads, while Agave’s role is partially undertaken by the male nurse who brought the humans to a new, animal life, and captained their massacre. If we follow this line, Gertrude Enk, who did not take part to the killing but came back as a witness to tell the story, is not only the narrative’s single heroic character, but also one who assumes a typically male role of Greek tragedy: the messenger or, transliterating from Greek, *angelos*.

Dionysus’ rite is just the last of a series of *double entendres* presented to the reader. The axolotl, usually, does not metamorphose, and Huxley, who induced them to do so, was a dedicated detractor of Nazism; Dante’s verses were, originally, an admonition *against* pride, to keep in mind to avoid damnation; and the idea of a superior race, and of a destiny spelled out from the beginning, reveals its vacuity in the sharing of a practice whose origin was, in Rosenberg’s thoughts, a culmination of anti-Aryanism. Nazi eugenics is not only parodied for its racist idealism, but also made to face a culture which from the same starting point reaches an opposite conclusion: the common origin of all living beings, as well as an uncertainty regarding their path’s direction. We can say that “Angelica farfalla” is based on an extension, beyond the barbed wire, of Levi’s idea of the *lager* as a “*gigantesca esperienza biologica e sociale*”[[57]](#footnote-57) (“gigantic biological and social experiment”[[58]](#footnote-58)) which stages a situation replaying the original struggle for life. The German people, in the dehumanising condition brought by Nazi total war, must break through the doors of Leeb’s laboratory (we could call it a subsection of the *lager*) to survive starvation, literally chewing on “the quintessence of Germany”. By resorting to their basest instincts, and despite any attempt to silence the facts, they eventually prove that, if human beings are exposed to the direst circumstances, no original difference can be found in them.

1. #  Alessandro Cinquegrani. “Il nazismo e altri paradossi etologici. Lettura di *Storie naturali*”. In: *Primo Levi*, edited by Mario Barenghi, Marco Belpoliti, and Anna Stefi, Milano: Marcos y Marcos, 2017, pp. 461-475.

 [↑](#footnote-ref-1)
2. #  Giuliano Pianzola. *Le «trappole morali» di Primo Levi: Miti e fiction*. Milano: Ledizioni, 2017.

 [↑](#footnote-ref-2)
3. #  Marco Belpoliti. *Primo Levi di fronte e di profilo*. Milano: Ugo Guanda Editore, 2015, pp. 399, 401, and *passim*.

 [↑](#footnote-ref-3)
4. #  Cinquegrani, “Il nazismo e altri paradossi etologici”, *op. cit.*, pp. 464-465.

 [↑](#footnote-ref-4)
5. #  Primo Levi. “Romanzi dettati dai grilli”. In: *Opere complete*, vol. II, edited by Marco Belpoliti, Torino: Einaudi, 2016, pp. 851‑855 (852).

 [↑](#footnote-ref-5)
6. #  Primo Levi. “Novels Dictated by Crickets”. In: *The Complete Works of Primo Levi*, vol. II, edited by Ann Goldstein, New York: Liversight Publishing Corporation, 2015, pp. 2075-2080 (2077).

 [↑](#footnote-ref-6)
7. #  Enrico Mattioda. “Teorie scientifiche e sapere poetico in Primo Levi”. *Giornale storico della letteratura italiana*, vol. 186, no. 613, 2009, pp. 17-50.

 [↑](#footnote-ref-7)
8. #  Peter J. Bowler. *Science for All: The Popularization of Science in Early Twentieth-Century Britain*. Chicago: The University of Chicago Press, 2009, p. 223.

 [↑](#footnote-ref-8)
9. #  Levi, “Angelica farfalla”. In: *Opere complete*, *op.cit.*, vol. I, pp. 515-523 (519).

 [↑](#footnote-ref-9)
10. #  Levi, “Angelic Butterfly”. In: *The Complete Works of Primo Levi*, *op. cit.*, vol. I, pp. 439-446 (442).

 [↑](#footnote-ref-10)
11. #  Caspar Henderson. *The Book of Barely Imagined Beings: A 21st Century Bestiary*. Chicago: The University of Chicago Press, 2013, p. 2.

 [↑](#footnote-ref-11)
12. #  Marco Belpoliti. *Primo Levi di fronte e di profilo*, *op.cit.*, p. 399.

 [↑](#footnote-ref-12)
13. #  Levi, “Angelica farfalla”, *op. cit.*, pp. 520-521.

 [↑](#footnote-ref-13)
14. #  Levi, “Angelic Butterfly”, *op. cit.*, p. 443.

 [↑](#footnote-ref-14)
15. #  Ernst Haeckel*. The History of Creation: Or the Development of the Earth and Its Inhabitants by the Action of Natural Causes*, vol. 1. Abingdon and New York: Routledge Revivals, 2018, p. 260.

 [↑](#footnote-ref-15)
16. #  Richard Weikart. *From Darwin to Hitler: Evolutionary Ethics, Eugenics, and Racism in Germany*. New York: Palgrave Macmillan, 2004, pp. 109-110. Cinquegrani, too, tends toward this position: see Cinquegrani, “Il nazismo e altri paradossi etologici”, *op. cit.*, p. 463.

 [↑](#footnote-ref-16)
17. #  Robert Richards. *The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought*. Chicago: The University of Chicago Press, 2008, p. 508.

 [↑](#footnote-ref-17)
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23. #  Levi, “Angelica farfalla”, *op. cit*., p. 521.

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37. Levi, “Angelica farfalla”, *op. cit*., p. 522. [↑](#footnote-ref-37)
38. #  Levi, “Angelic Butterfly”, op. *cit*., p. 446.

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