

■ ECOCRITICISM, CULTURAL EVOLUTIONISM, AND ECOLOGIES OF MIND

Notes on Calvino's *Cosmicomics*

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■ “Ecology,” like Aristotle’s being, can be conceived in many ways. Ernst Heinrich Haeckel, the German biologist who coined the term in 1866, defined it as “the economy of nature,” the “comprehensive science of the relationships of the organism to the environment, which in the widest sense includes all conditions of existence” (Haeckel 1866: I, 236, my translation). Yet over time ideas, just like organisms, evolve, multiplying and differentiating. Today not only do we speak of “ecologies” in the plural form, but ecology, as the “comprehensive science of the relationships,” has become a paradigm, a model of thought based on the articulated interconnections of elements with each other and with the environment in which they are situated. Such elements can be living beings, but also ideas, cultures, imaginative forms. Correspondingly, the term “environment” can be used to denote both the natural and the social context of such interrelated phenomena.

In the early 1970s, the British epistemologist Gregory Bateson introduced the concept of “ecology of mind” as the process of mutual actions occurring between ideas and, more in general, between nature and culture, ideas and environment. This vision is underpinned by “the notion that ideas are interdependent, interacting, that ideas live and die. [...] It is a sort of complex and living tangle that fights and collaborates, like the one that can be found in woods on the mountains, made of trees, plants and animals living there, indeed, in an ecology” (Bateson 1997: 399-400). Bateson’s ecology of mind sheds new light on the way ideas develop and spread. Due to the symmetry existing between the levels of reality, the structure of our interpersonal relationships or that of our learning processes mirror the organization of the biosphere: all these levels can be thus considered as parts of a recursive communicative

order, a feedback process that turns elementary information into complex structures. From the point of view of both biology and culture, the basic ecological principle is thus information, and not bare energy. In this perspective, the self and the natural order constitute an information system. Their unity explains how ideas and environment form an interdependent web of ecological principles. Here the dualism between mind and body, spirit and matter, self and nature is explicitly rejected. And, since such a dualism is basically the premise of every form of humanism, one can conclude that there is nothing “humanistic” or spiritual in the life of the mind. This expression—“life of the mind”—has, in turn, to be meant literally.¹

These introductory remarks are useful to understand the grounding theoretical assumption of ecocriticism, namely, the idea that environment and culture actively permeate each other. As interpretative method, ecocriticism implies a literary ecology that is, in turn, a form of ecology of mind. In the framework of literary ecology, text and world build a complex information unit. Unified in a feedback loop, literary text and world are ecologically interdependent, in the sense that they establish a relation of action and re-action: just like the world acts on literature, conditioning its creative categories, literature may act on the world, conditioning our lifestyles and our relationships to nonhuman nature and beings. Between literature and the world there is a relation characterized by reciprocal interference and by a potentially mutual influence, and literary works might play an active role in exhibiting the values related to this mutuality. This implies the idea of a literature functional to a specific educational purpose: if literary works are read and interpreted in an “ecologically conscious” fashion, they become a potential instrument for ethical and environmental education, thus orienting human interactions with the more-than-human environment in more responsible directions (see Iovino 2010b).

Yet how did this idea come about? The expression “literary ecology” appeared for the first time in 1972 as the subtitle of a book called *The Comedy of Survival*. Its author was Joseph Meeker, an American ecologist and literary scholar, a friend of Konrad Lorenz and of Norwegian eco-philosopher Arne Naess. In *The Comedy of Survival* Meeker addresses an unprecedented question:

Human beings are the earth’s only literary creatures. If the creation of literature is an important characteristic of the human species, it should be examined carefully and honestly to discover its influence upon human behavior and the natural environment – to determine what role, if any, it plays in the welfare and

¹ See also Bateson (1972) and Bateson (1979). On Bateson’s epistemology, see e.g. Harries-Jones (1995).

survival of mankind and what insight it offers into human relationships with other species and with the world around us. Is it an activity which adapts us better to the world or one which estranges us from it? From the unforgiving perspective of evolution and natural selection, does literature contribute more to our survival than it does to our extinction? (Meeker 1972: 3-4).

Drawing on Darwin's theory, Meeker considers literature as one of the outcomes of human evolution. In evolutionary terms, literature, like language, results from an instinct that human beings share with other living beings, and which is comparable for example to the instinct birds have to communicate by way of singing. The answer Meeker provides to his question is that literature, generally considered, does not contribute either to our survival or to our extinction. There are, however, literary genres, which are more evolutionarily "strategic" than others. In this respect, he maintains, comedy is more useful than tragedy to our survival. Whereas the latter is based on conflict, comedy's structure implies horizontality, adaptability, and co-evolution. Meeker supplements this model with a "play ethic" in which the principles of evolutionism are combined with those of ethology (Konrad Lorenz authored the preface to the first edition of Meeker's book), and implicitly with Friedrich Schiller's aesthetic vision, according to which human beings fully accomplish their "humanity" through their impulse to play (*Spieltrieb*): the act of playing, in fact, reconciles the apparently antithetical human tendencies to form and matter, law and freedom.²

Based on intra- and inter-species cooperation, Meeker's play ethic is at once horizontal and inclusive. It implies a distinction between "finite" and "infinite" games. Finite games are based on rules and competition, and are finalized to obtain a reward. The infinite game's only finality is, instead, "infinite playing": its rules are not fixed and competition is almost absent.

We can chart the "ecological" differences between comedy and tragedy as follows:

COMEDY

Ecological behavior:
Cooperation

Intra- and inter-species unity:
Circularity

TRAGEDY

Anti-ecological behavior:
Competition

Separateness between life-forms:
Linearity

² See Friedrich Schiller, *Briefe über die ästhetische Erziehung des Menschen* (1795). Meeker's ideas have ushered in the discipline of evolutionary narratology (see e.g. Carroll 2004; Boyd 2009).

The characters adapt to the outer world and evolve with and within it	The characters clash with the outer world, culminating in a final catastrophe
Open and inclusive system of values	Unchangeable and self-referential system of values
Picaro	Tragic hero
Picaresque novel: reconnection of humanity and environment	Arcadia: pathos, fracture between humanity and environment
Horizontal and democratic vision	Elitist and hierarchical vision

This interpretation of literary genres emphasizes two key-points: 1. the necessity of developing creative but not exclusively competitive relationships between human beings and nonhuman nature; and 2. the possibility of using fictional works to express the ethical implications of such relationships in a narrative form, supplementing literature with an ethical-educational dimension. In the broader discourse of environmental culture, Meeker's theory aims to show that educational models based upon cooperation, (social as well as ecological) interdependency, and horizontality are to be preferred over models based on dualism and competition. This is an invitation to go past the anthropocentric and instrumentalist vision according to which only humans are endowed with an intrinsic ethical value, whereas nonhuman nature and life are considered as mere instruments. It is an invitation to privilege models based on complexity over models based on a human-centered hierarchy.

Celebration of complexity and reversal of ontological hierarchies are *Leitmotiven* in Calvino's work. His amazingly multifarious corpus includes a complete range of ecocritical motifs, whether naturalistic, theoretical, or eco-social. His whole narrative universe is dominated by the idea of nature. From the representation of an "alienated" nature within the urban landscape in his early novels and tales, such as *A Plunge into Real Estate*, *Smog*, and *Marcovaldo*, to the postmodern tales of *Mr. Palomar* and *The Cosmicomics*, nature is an extremely evanescent, problematic, ironic, and slippery subject. In *Marcovaldo*, for example, nature appears as "mischievous, counterfeit, compromised with artificial life" (*Presentazione 1966 all'edizione scolastica di "Marcovaldo"*; Calvino 2003: I, 1233. My translation). At the same time, nature is "always there," lurking around the corner, silently hidden in unexpected places and unfamiliar or funny forms: a white gorilla in a zoo, bacteria in a piece of cheese, a couple of mating turtles, the enigmatic figures printed in a deck of ancient tarot cards, incumbent rubbish in an invisible city that

ceaselessly “renews itself,” or the cheerful, primeval chaos of a new-born universe, as in *The Cosmicomics*. In Calvino’s novels and tales, this ambivalence becomes a mirror game that, showing humans an estranged nature, finally reveals the self-estrangement of humans, who are themselves “artificial” beings.

This is coupled to a fictional strategy that, especially in Calvino’s late works, becomes more and more anti-metaphysical and anti-subjectivist. Nature in fact is visible and eloquent only if the human ego recedes from its usual categories and languages. This both reverts and enlarges our cognitive patterns: “It is only after you have come to know the surface of things (...) that you can venture to seek what is underneath. But the surface of things is inexhaustible,” Mr. Palomar concludes (Calvino 1985: 55). Only in a perceptive and conceptual horizon made of silent communication and patient observation do humans acquire familiarity with the world in which they happen to be: a world both *before* and *after* the human one, and inhabited by beings showing that “the world of man is neither eternal nor unique” (Calvino 1985: 86). Being at once anthropomorphic and anti-anthropocentric, Calvino’s narrative technique displaces the focus from human speech to the world’s countless voices, demonstrating that only if the ego is silent does the world become narratable.

This idea influences the way Calvino represents the human subject, and it deeply conditions the place humans have in his “creative cosmology.” The human, for Calvino, always contains the sense and the matter of its own otherness. Shedding light on the multiple embodiments of such otherness, Calvino criticizes self-referential and unilateral images, thus disclosing new points of view on the human itself.³

The Cosmicomics is an important chapter in this anti-anthropocentric and “Darwinian” poetics. Published in 1965, this collection of short stories is a very intriguing case study for ecocriticism. It can be considered as a form of “ecological” story-telling not only because it is an expansive narrative game endowed with all the features enunciated by Meeker, but also because the comic genre is “ecologically structured.” In other words, comedy is here an inclusive meta-genre, in which two other genres – young adult literature and science fiction – co-emerge and interact with each other. In this interaction, while science is depicted in playful, ironic and fable-like tones, the evolutionary perspective of the stories lends scientific support for criticizing anthropocentrism.

The Cosmicomics is a “muddled” story of the universe. Scientific hypotheses give Calvino the cue for imagining adventures whose main

³ For an interpretation of Calvino’s work in the broader framework of ecocriticism and posthumanist philosophy, see Iovino (forthcoming).

character is always the same: the multiform (and unpronounceable) Qfwfq. Qfwfq is everything: he is a nebula, a simple cluster of primordial matter, a dinosaur on the verge of becoming extinct, a brand new mammal, just emerged from its previous evolutionary stage of pulmunate fish. Qfwfq is everything and nothing, because he is uncatchable and indefinable. He is, we could say, the universe itself in its endless synchronic and diachronic metamorphoses, the whole presenting itself in all its different fragments.

For an idea of how science and fable are deeply and ironically intertwined, we can read some of the stories' beginnings.

Here, for example, inspiration is drawn explicitly from Darwinian theory:

THE DINOSAURS

The causes of the rapid extinction of the Dinosaur remain mysterious; the species had evolved and grown throughout the Triassic and the Jurassic and for 150 million years the Dinosaur had been the undisputed master of the continents. Perhaps the species was unable to adapt to the great changes of climate and vegetation which took place in the Cretaceous period. By its end all the Dinosaurs were dead.

All except me, – Qfwfq corrected – because, for a certain period, I was also a Dinosaur: about fifty million years, I'd say, and I don't regret it; if you were a Dinosaur in those days, you were sure you were in the right, and you made everyone look up to you (Calvino 1968: 95).

THE AQUATIC UNCLE

The first vertebrates who, in the Carboniferous period, abandoned the aquatic life for terrestrial, descended from the osseous, pulmunate fish whose fins were capable of rotation beneath their bodies and thus could be used as paws on the earth.

By then it was clear that the water period was coming to an end – old Qfwfq recalled, – those who decided to make the great move were growing more and more numerous [...]. But just at that time the differences among us were becoming accentuated: there might be a family that had been living on land, say, for several generations, whose young people acted in a way that wasn't even amphibious but almost reptilian already; and there were others who lingered, still living like fish, those who, in fact, became even more fishy than they had been before (Calvino 1968: 69).

Here, the author plots cosmologic hypotheses and physical theories:

AT DAYBREAK

The planets of the solar system [...] began to solidify in the darkness, through the condensation of a fluid, shapeless nebula. All was cold and dark. Later the Sun began to become more concentrated until it was reduced almost to its present dimensions, and in this process the temperature rose and rose, to thousands of degrees, and the Sun started emitting radiations in the space.

Pitch-dark it was, – old Qfwfq confirmed, – I was only a child, I can barely remember it. We were there, as usual, with Father and Mother, Granny Bb'b, some uncles and aunts who were visiting, Mr. Hnw, the one who later became a horse, and us little ones (Calvino 1968: 17).

WITHOUT COLORS

Before forming its atmosphere and its oceans, the Earth must have resembled a gray ball revolving into space. As Moon does now: where the ultraviolet rays radiated by the Sun arrive directly, all colors are destroyed, which is why the cliffs of the lunar surface, instead of being colored like Earth's, are of a dead, uniform gray. If the Earth displays a varicolored countenance, it is thanks to the atmosphere, which filters that murderous light.

A bit monotonous, – Qfwfq confirmed, – but restful, all the same. I could go for miles and miles at top speed, the way you can move when there isn't any air about, and all I could see was gray upon gray (Calvino 1968: 49).

Here, finally, the creative horizon is offered by Einstein's relativity theory:

THE FORM OF SPACE

The equations of the gravitational field which relate the curve of space to the distribution of matter are already becoming common knowledge.

To fall in the void as I fell: none of you knows what that means. For you, to fall means to plunge perhaps from twenty-sixth floor of a skyscraper [...]: to fall headlong, grope in the air a moment, and then the Earth is immediately there, and you get a big bump. But I'm talking about the time when there wasn't any Earth underneath or anything else solid [...]. You simply fell, indefinitely, for an indefinite length of time. [...] Now that I think about it, there weren't any proof that I was really falling: perhaps I had always remained immobile in the same place, or I was moving in an upward direction; since there was no above or below these were only nominal questions and so I might just as well go on thinking I was falling, as I was naturally led to think (Calvino 1968: 115).

THE LIGHT-YEARS

The more distant a galaxy is, the more swiftly it moves away from us. A galaxy located at ten billion light-years from us, would have a speed of recession equal to the speed of light, three hundred thousand kilometers per second. [...]

One night I was, as usual, observing the sky with my telescope. I noticed that a sign was hanging from a galaxy a hundred million light-years away. On it was written: I SAW YOU. I made a quick calculation: the galaxy's light had taken a hundred million years to reach me, and since they saw up there what was taking place here a hundred million years later, the moment when they had seen me must date back two hundred million years. Even before I checked my diary to see what I had been doing that day, I was seized by a ghastly presentiment: exactly two hundred million years before, not a day more nor a day less, something had happened to me that I had always tried to hide (Calvino 1968: 125).

Moving from apparently abstract concepts and from situations that are totally outside the field of human experience, Calvino enacts a narrative/cognitive hybridization: he translates scientific hypotheses and theories into the language of our everyday life; he anthropomorphizes and familiarizes them, disguising them as the setting for ordinary situations. In so doing, he shapes a world which describes itself in human terms, long before the human could even be thought as possible. This technique generates a double paradox: on the one hand, the paradox of situations which are humanly non observable, but that become meaningful only when observed by a human eye (e.g.: a universe without colors); or that become definable only within the sensorial system of human experience (e.g.: a fall into the void, in the absence of gravity force and also of spatio-temporal coordinates: *The Form of Space*). On the other, the paradox of a human that, in all these estranged and un-experienceable situations, is already and always “at home,” with all its emotional and relational dynamics, embodied in the chaotic genealogies of aquatic uncles, dinosaurs, nebulae, horses, and cosmic rays. These paradoxes produce a ludic mechanism and a fictional technique which perfectly fit in the “ecology” of the comic genre, as defined by Meeker.

In fact, among the characters with which Qfwfq interacts in the course of his countless metamorphoses, one can count: 1. tight cooperation—sometimes in the form of a playful antagonism (*The Light-Years, How Much Shall We bet?, A Sign in Space, Games Without End*, etc.); 2. intra- and inter-specific unity (in *The Dinosaurs*, for example, the encounter between the last dinosaur and the “New Ones” is described through a narrative climax, which moves from the distress caused by the discovery of an “alien” – whether a stranger, an enemy, someone racially “other” – to conflict, and eventually to cooperation and peaceful mutual acceptance). Finally, Qfwfq himself is a Picaro, a character that, by definition, adapts to the world and evolves with it, passing through unlikely adventures (*The Distance of the Moon*), successful or failed rejoining (*Without Colors, The Aquatic Uncle*), and, ultimately, a complete “subversion” of values, which are re-conceptualized in horizontal and non-hierarchical terms (*The Dinosaurs, The Spiral*, etc.). The frame of all this is an “infinite game,” whose only purpose is the self-realization of the universe. In its very structure and title, Calvino’s book is indeed a comedy of the universe, a cosmological Darwinism, the collective evolutionary biography of the world. In creating such a text, Calvino seems to narratively translate David Orr’s idea that “[e]cological literacy presumes that we understand our place in the story of evolution” (Orr 1992: 92-93). In fact, spontaneously and freely, Qfwfq is and becomes a huge number of things, reminding us of the permeability and continuity between all beings existing in a universe made of energy and matter. The narrative

outcome is a world, which is anthropomorphic in its representation but non-anthropocentric in its horizon of meanings and values.

The critical impact of this strategy is powerful. In fact, the ecological and Darwinian vision of the interdependence among life-forms challenges the dualisms conveyed by instrumentalism and anthropocentrism. These dualisms are not only set on the ecological level, between human and nonhuman nature, but they also act on the social level, between dominating and dominated societies and subjects. It is fruitful, here, to apply another interesting development of Bateson's theory, namely the idea of "literature as a cultural ecology," as formulated by Hubert Zapf. Literature, according to Zapf, "acts like an ecological principle or an ecological energy within the larger system of cultural discourses" (Zapf 2006, 49-70: 55).⁴ It is a "sensorium" and a dynamic principle through which a culture can objectify, develop and shape its inner dialectics and its values, and it functions as "cultural-critical meta-discourse," "imaginative counter-discourse," and "re-integrative interdiscourse" (see Zapf 2006). This means that, on the one hand, literature represents deficits, imbalances, and contradictions, "within dominant systems of civilisatory power" (Zapf 2006: 62).⁵ On the other hand, it has a compensative and balancing function, orienting the evolutionary dynamics of cultural discourse toward the reintegration of "what is marginalized, neglected, repressed or excluded" (Zapf 2006: 56). Zapf writes:

[B]y breaking up closed circuits of dogmatic world views and exclusionary truth-claims in favour of plural perspectives, multiple meanings and dynamic interrelationships, literature becomes the site of a constant, creative renewal of language, perception, communication, and imagination (Zapf 2006: 56).⁶

Acting as an ecological and ethical principle, literature can therefore underpin "conscious" dynamics in the evolution of cultural systems. It helps establish different orders of priorities and creates communication between "central" and "marginal" subjects. "Otherness" is in this way

⁴ See also Zapf (2002: 3): "Literatur verhält sich in Analogie zu einem ökologischen Prinzip oder einer ökologischen Kraft innerhalb des größeren Systems ihrer Kultur"; and Zapf (2008).

⁵ See also Zapf (2002: 64).

⁶ See also Zapf (2002: 6): "Literatur erfüllt so im Haushalt der Kultur die Aufgabe, eindeutige Welt- und Selbstbilder zu subvertieren und auf das von ihnen ausgeblendete Andere zu öffnen; eindimensionale Realitätskostrukturen in mehrdimensionale Bedeutungsprozesse zu überführen; das von dominanten kulturellen Diskursen Ausgegrenzte zu artikulieren und in seiner ganzen Vielgestaltigkeit der symbolischen Erfahrung zugänglich zu machen, das heißt für die Erneuerung kultureller Kreativität zu aktivieren."

relocated in the historical-social dialectics as a necessary form of cultural biodiversity.⁷ As an ecological principle, literature thus aims at restoring balances, elements, and functions of cultural ecosystems.

Confronted with the ideologies of mastery, literature's stance is not only cultural and educational, but also eminently political. Calvino is perfectly aware of this when, in his essay *Right and Wrong Political Uses of Literature*, he writes:

Literature is necessary to politics above all when it gives a voice to whatever is without a voice, when it gives a name to what as yet has no name, especially to what the language of politics excludes or attempts to exclude. [...] Literature is like an ear that can hear things beyond the understanding of the language of politics; it is like an eye that can see beyond the color spectrum perceived by politics. [...] [T]he writer may happen to discover areas that no one has explored before, [...] and to make discoveries that sooner or later turn out to be vital areas of collective awareness (Calvino 1986: 99-100).

Hubert Zapf's definition of literature as a "sensorium" of a culture's imbalances and blind spots is a perfect theoretical pendant to this description of literature as a voice, an "ear," or an "eye." The key point of Calvino's discourse is that literature, as an extension of moral imagination, is politically subversive, because it "is one of a society's instruments of self-awareness," and this self-awareness moves on by "challenging authority" (Calvino 1986: 96-99). Such a "challenge" and such "self-awareness" are an invitation to reconfigure identity as a relational concept. In a short writing of 1977, titled "Identity", for instance, Calvino maintains that "the most solid and self-confident identity is nothing but a sort of bag or hosepipe full of swirling heterogeneous stuff," "a bunch of diverging lines finding in the individual their point of intersection" (*Identità*; Calvino 2003: II, 2825-6. My translation). Whether individual or social, identity is definable and understandable only through the relationship it has with all "the rest," with the "outer world": "it is the outside that defines the inside, in the horizon of space, as well as in the vertical dimension of time" (Calvino 2003: II, 2827. My translation). There is no winning without humility in the identity game. And there is no real identity, if one is not willing to listen to "whatever is without a voice," as Calvino said.

This resonates with a passage from the book *The Natural Alien*, written in 1985 by the Canadian philosopher and zoologist Neil Evernden:

Mitochondria, the energy-providing structures within each cell, replicate independently of the cell and are composed of RNA, which is dissimilar to that of

⁷ See Iovino (2006: 38-43). On "conscious evolution," see Ornstein, Ehrlich (1990).

the rest of the cell. Apparently the mitochondria move into the cells like colonists and continue their separate existence within. We cannot exist without them, and yet they may not strictly be “us.” Does it mean that we must regard ourselves as colonies? [...] Where do we draw the line between one creature and another? Where does one stop and the other begin? Is there even a boundary between you and the non-living world, or will the atoms of this page be part of *you* tomorrow? In short, how can you make any sense of the concept of man as a discrete entity? (Evernden 1985: 39-40).

In a very intriguing way, *Qfwfq* is the answer Calvino provides to these questions. However, while Evernden addresses this issue from the point of view of a single cell, Calvino takes the point of view (or the points of view) of the universe. *Qfwfq*'s evolutions confront us with an identity which is anti-subjective, open, and relational. In a word: an ecological identity, one based upon the interrelation between self and environment, inside and outside. *Qfwfq*'s identity is a transitive and transitional identity; one made of “swirling heterogeneous stuff,” being at the same time “the outside” and “the inside,” “in the horizon of space, as well as in the vertical dimension of time.” In spite of the anthropomorphic stance of Calvino's narrative technique, in this work the human is not simply leveled out, but restructured in terms of complexity.

The Cosmicomics calls us to reconsider the psychological models of human-nonhuman interaction that lead to forms of cognitive and environmental alienation as a consequence of a fracture in the “ecology of mind.” Against this eco-ontological fracture, describing identity as a constant exchange of outside and inside implies a renewed awareness of the world. This awareness is an invitation to recognize other existing beings as something that, although not belonging to us, are deeply and essentially akin to us. In that it rejects the idea that humans *possess* the world, this awareness re-creates non-utilitarian and non-hierarchical relationships between self and non-self. The mind, on whose alleged individuality identity is grounded, is not to be considered as an exclusive function of the human subject, seen as ontologically diverging from the natural world. As Bateson theorized, “mind” is rather the creative cybernetic syntax of the systemic human-environment complex. Therefore, to abstract the mind from the world means to prepare our own extinction. As Bateson affirms:

If you put God outside and set him vis-à-vis his creation and you have the idea that you are created in his image, you will logically see yourself as outside and against the things around you. And as you arrogate all mind to yourself, you will see the world around you as mindless and therefore not entitled to moral or ethical consideration. The environment will seem to be yours to exploit. [...] If this is your estimate of your relation to nature and you have an advanced technology, your likelihood of survival will be that of a snowball in hell (Bateson 2000: 468).

Works like *The Cosmicomics* aim to “diffuse” the mind, presenting it as a site where things connect. The ethical-educational implications of this vision are significant: if we consider mind as a connecting structure, as “a pattern which connects” (Bateson, 1979: 8), we are more inclined to interpret human and natural phenomena in terms of similarity and communication rather than the extreme poles of an irreducible dualism. This allows us to measure the effects of our actions on the scale of an “extended” responsibility, a responsibility expanded in space and time. In other words, the scope of our acts and of our responsibility is not only “intra-species” but also “inter-species,” not only “intra-generational,” but also “inter-generational.” Toward other life forms, such a responsibility consists in the acknowledgement of their intrinsic value; toward other humans, it is a future-oriented project.

What is, then, the function of literature, in such a conceptual and ethical horizon? And what is the function of comedy as a literary genre, in *The Cosmicomics*? The function of literature is to broaden the categories of what is possible, to enlarge moral imagination. By extending the narrative space to include pre-human subjects ironically disguised as humans, Calvino reverts the anthropocentric paradigm. Literature becomes the concrete “compensatory stance” allowing Calvino to “subvert unilateral images of the world and of the self;” it is therefore possible to open the narrative space not only “to the ‘other’ which is hidden *by*” these images but also to the “other” which is hidden *in* them.⁸ In fact, Qfwfq indicates an “other” which is present within the human and at the same time a human which is present in its “other.”

In *The Cosmicomics*, literature is *fabula*, a narration that, through the comic mode, provides us with a cognitive experience of the world—a cognitive experience, which is something more than a construction of the self: “I have always sought out in the imagination a means to attain a knowledge that is outside the individual, outside the subjective,” Calvino writes in his famous *Six Memos for the Next Millennium* (Calvino, 1993: 91). *Fabula*, the fairy tale, is an endless “as if”-game. It is the world *as if*, in any event or story, a moral would *really* exist; it is making nonhuman beings talk *as if* they had a language accessible to humans; it is a reconstruction of the universe *as if* there were a continuity between the forms of the past and those of the future, of human and nonhuman, of real and imaginary. *As if* everything were a game, or *as if* it weren’t: which, from the viewpoint of the universe, is exactly the same thing. *The Cosmicomics* is an evolutionary tale about the nonhuman, about everything that is other-than-human *as if* it were human. It is, we might

⁸ See Zapf, 2002: 6.

say, a Darwinian tale which posits the human as a possibility inside the nonhuman, and not as its intrinsic finality. An ontologically-leveling narrative expedient, Qfwfq's "recapitulation" is a way to reconcile the human with its immanent nonhuman root.

On this non-anthropocentric vision lies Calvino's famous "enlightenment," a philosophy intended not to be a blunt celebration of reason, but to make human beings cognizant about this very reason's boundaries. Such an awareness enables creative strategies: in fact, the recognition of their limits drives humans to imagine better conditions to experience the world and to live in it. This is also the very gist of ecological culture: the self, the ego, helps us experience the world, but the world is not made only for the self. We have to learn to live beyond the self, if we want to have a real experience of the world. In this, ecological culture, a culture of both limit and possibility, is a new enlightenment, a new humanism.⁹

The only way to survive in a changing world, Darwin has taught us, is to evolve. Literary ecology is an invitation to do so consciously, by way of a creative act of responsibility, imagining that even tales and fables could be an extended strategy for a shared (and not exclusively human) survival.

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⁹ On ecological culture as a non-anthropocentric humanism, see Iovino, 2010a.

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