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Cross-readings and ecoliteracy in children's pop-up books

Cruce de lecturas y ecoalfabetización en libros pop-up para la infancia

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ABSTRACT

The purpose of this paper is to analyse two pop-up books aimed at children, written by Anouck Boisrobert and Louis Rigaud, called *Popville* (2009) and *Wake up, Sloth!* (first published 2009 and 2012, with accompanying texts by Joy Sorman and Sophie Strady respectively). These books were originally published in France by Hélium Editions, but they can now be found in several western countries and in many languages including Catalan, Dutch, English, French, German, Italian, Portuguese and Spanish. This paper examines the verbal text of the aforementioned books as well as their visual aspect, produced by sophisticated paper engineering, with a view to questioning how they achieve one of their goals: the development of readers' ecoliteracy (Orr, 1992) by their involvement in the reading process. This issue seems to be one of the main trends in children's literature in western societies nowadays, transcending the traditional and almost omnipresent role that nature plays as scenario in many children's narratives.

RESUMEN

El objetivo de este texto es analizar dos libros *pop-up* destinados a la infancia, escritos por Anouck Boisrobert y Louis Rigaud, titulados *Popville* (2009) y *Dans la forêt du paresseux* [*En el bosque del perezoso*] publicados por primera vez en 2009 y 2012, con textos de apoyo de la autoría de Joy Sorman y Sophie Strady, respectivamente. Estos libros se publicaron originalmente en Francia, en Hélium Éditions, pero pueden encontrarse ya traducidos en varios países occidentales y en muchos idiomas, incluyendo el catalán, holandés, inglés, francés, alemán, italiano, portugués y castellano. Este artículo analiza el texto verbal de los libros antes citados, así como su elaborado componente visual, construido gracias a una sofisticada ingeniería del papel, con vistas a reflejar la forma en que estas publicaciones alcanzan su objetivo: el desarrollo de la consciencia ecológica de los lectores (Orr, 1992) a través de su implicación en el proceso de la lectura. Esta cuestión parece constituir una de las principales tendencias de la Literatura Infantil en las sociedades occidentales contemporáneas, trascendiendo el papel tradicional y casi omnipresente que la naturaleza desempeña como escenario de narrativas infantiles.

Introduction

The aim of this paper is to analyse two pop-up books aimed at children. These books present peculiar characteristics on what concerns linguistic and visual features, promoting reader's ecoliteracy (Orr, 1992) through innovative narratives and their involvement in the reading process.

This study establishes a path that begins with a brief reflection on the reception of wordless pop-up books, framing them as picturebooks. Then it presents the essential features of what can be understood as ecoliteracy, in the extent this concept is relevant to the present analysis. It continues with the presentation of the corpus and the methodology. Then it advances with the analysis of the verbal and the visual components of the corpus. Specifically, it analyses the construction of frames and the modalisation used, and their visual aspects, produced by sophisticated paper engineering. Finally, it presents some conclusions based on the analysis.

Wordless pop-up books: other types of picturebooks

Children's picturebooks have been the object of increasingly frequent analysis due to its experimental and innovative nature and are hailed as the most original contribution (Hunt, 2001) to children's literature in the field of Literature and even of Arts. The modern picturebook and its long term tradition of illustration as a publishing medium, which creates a synergic association between text and image, started in the 1960s (Durán, 2009). Its development results from the combination of the progress of graphic art and printing techniques, as well as changes in society, both in terms of forms of communication and the emergence of culture for the masses and global consumerism. Other key factors include the ludic and entertainment value of the book, which have become increasingly important, as well as artistic and cultural influences such as cartoons, the cinema (particularly animated cinema) and written discourse such as advertising and the written press.

The picturebook, with its chameleon like nature and range of forms, is difficult to define or classify, thereby requiring constant reformulation in its critical analysis, which has been abundant in theoretical and reflexive approaches. The studies emphasise the richness and creative characteristics of the experimental development of picturebooks through processes which focus on various aspects such as the relationships between image and text¹ and the analysis of picturebooks' architecture and construction (Nodelman, 1990; Shulevitz, 1997; Nikolajeva and Scott, 2001; Durán, 2002 and 2009; Linden, 2006; Ramos, A. M., 2010; Roig-Rechou et al., 2011; Moya, 2014), or thorough research into the target readership's reaction to picturebooks (Baddley and Eddershaw, 1994; Lewis, 2001; Arizpe and Styles, 2003; Sipe, 2008), or both of the above, particularly in publications which bring together different researchers in order to create the most wide ranging and inclusive critical analysis possible (AA. VV. 2005; Sipe and Pantaleo, 2008; Colomer et

¹ In a posthumous article, Lawrence Sipe (2012) reflects on the theoretical approaches to this issue in an interesting way, outlining the different standpoints and analysing the discourses, namely in relation to the metaphors used to define picturebooks. This research follows on from previous studies, in particular the one published in conjunction with Wolfenbarger (Wolfenbarger and Sipe, 2007), collating and organising the reflections and research carried out into these publications.

al., 2010a and 2010b; Zaparaín and González, 2010): 'it is in the nature of post-modern picturebooks to continue to experiment: break boundaries, question the *status quo*, challenge the readers/viewer, reflect technological advances, and appeal to the young' (Goldstone, 2008, p. 117). These characteristics help to explain the multimodal and hybrid appeal of the picturebook, associating it to a rare collectible toy or even a work of art.

However, in the case of the wordless picturebooks and pop-up books which are under analysis in this paper, critical analysis² has been more restrained. One reason is that these publications are often associated with the toy book or the educational book, which are not included in the realm of literature. Pop-up books which are specifically included in interactive and three dimensional books, as proposed by Salisbury (2005), or according to Sophie van der Linden's animated books (2006), are created by specific designers, who are specialists in the manipulation of paper and help the illustrators, or both design and illustrate. Almost always included in the paraliterary field, picturebooks are mostly thought of as books for very young 'readers', which aim to be ludic and entertaining, the ultimate goal of their creation (Bellorín, 2010). Besides defining them in terms of their tridimensionality, Teresa Durán (2002) highlights the various forms and designs they can have, which are clearly challenging in terms of their construction. Moya's (2014) book³ analyses the *intersemiosis* between verbal and visual elements in picturebooks, by applying Halliday's Systemic Functional Linguistics and Kress and van Leeuwen's Visual Social Semiotics. His analysis reveals how the verbal and visual modalities contribute to each other's meaning and makes the potential of combining verbal and non-verbal language in picturebooks, multimodal objects by definition. The element of surprise, challenging the readers' expectations at every turn of the page, relates well with the suggestion of movement and action. Included in the group of these publications are the highly elaborate proposals by Robert Sabuda or David A. Carter, or the book *Midnight Play* (1994), by Květa Pacovská, which also has poetic elements to it. Its specificity lies in the tangibility of the book, on which the creative work focuses, exploiting all its possibilities to the fullest, going beyond its limits. These limits include size, bidimensionality and their static, passive and predictable nature. As it becomes a rare collectible, imbued with aesthetic and ludic appeal, the book is capable of interacting with the reader, allowing manipulation of the book even, surprising and amazing them with truly ingenious creations, which can be compared to special effects.

The same concept can be associated with wordless picturebooks, which also exploit the material potential of illustrations and the idea of the book as an object, making the most of their ludic dimension (Nikolajeva, 2008). Wordless picturebooks, which are only sporadically published⁴, appear to require a particular set of competences from their readers, which allow them to verbalise/textualise (Nikolajeva and Scott, 2001) an implicit narrative (Linden, 2006) in the sequence of the images. They are almost exclusively structured

2 The critical and academic approach for the analysis of pop-up books is almost inexistent.

One important exception is an exhaustive study by Boyce (2011), on the book *Haunted House*, by Jan Pienkowski, drawing attention to the complexity of the book and the depth of the reading it promotes, which is not compatible with preconceived ideas about these publications. The author also lists some of the advantages of reading pop-up books, particularly those which through the narrative action, go beyond the artful paper constructions. 'The way that pop-ups empower readers to take control of the temporal sequencing, moving back and forward through them as they wish, and their ability to amuse and surprise even through repeated readings, inspire strong memories in readers. So many children and adults speak of pop-up books that they have read in very familiar terms, remembering them with great fondness, often recalling quite small details which have particularly interested them.' (2011, p. 254). Another Francophone exception is the thematic volume of the journal *Hors Cadre[s]*, dedicated to pop-up books (n° 4, 2009).

3 See also Moya and Pinar (2007) and Moya (2011).

4 There is still limited analysis. Exceptions include the collated reflections in volume 3 of the journal *Hors Cadre[s]* (2008), in particular the theoretic-

to take full advantage of a sequential relationship (Nikolajeva and Scott, 2001) from one scene to another, created as a double spread, in which the turning of the page symbolises the passage of time and creates an instrumental relationship between and among the images. These books are an interesting challenge for readers of different ages and with varying reading competencies, as happens with the classics by Raymond Briggs (*Snowman*, 1978) and Quentin Blake (*Clown*, 1995) or more recently in *The Arrival* (2006), by Shaun Tan, as well as a significant part of Suzy Lee's works.

The classification of these publications as pre-reading books has been questioned, particularly due to the complexity of the challenges and readings some of them inspire (Nières-Chevrel, 2010; Ramos and Ramos, 2011). The interpretative ability of the readers is not limited to textual/verbal decoding and the visual cues also provide important interpretative implications, as the abovementioned works show. Bosh and Durán both support this theory and defend the viewpoint that reading is an activity which involves the decoding and interpretation of verbal and/or visual signs. In the case of a wordless picturebook, the reader's task consists in:

identificar los signos particulares descifrando las conexiones con los objetos que representan, *reconstruir las secuencias* de los diferentes significados a partir de las relaciones espaciales y temporales de los signos presentados en un espacio y orden determinados, y *comprobar o refutar las hipótesis* de lectura que se van generando continuamente a la espera de que se cumpla esa expectativa de coherencia global que por convención narratológica conlleva en álbum (2009, p. 40)⁵.

The challenge of this task stems from the various meanings of the visual signs, which are far more varied than the verbal ones, and therefore allow an almost infinite number of combinations. Besides this, there is a lack of training in the area of visual literacy, and it is not usual for there to be formal investment in the development of reading skills. According to Bosh and Durán (2009), the reading of wordless picturebooks takes place at a slower pace, compelling the careful and lengthy observation of the images and the differences between them, as well as the successive toing and froing from page to page to confirm/refute the interpretative hypotheses. However, more importantly, the reader plays a fundamental role in the active and participative reading, and is the creator of possible meanings, thus requiring considerable effort and collaboration.

Ecoliteracy

From the multiple interpretative possibilities of the reading of picturebooks, the issue of the analysis and promotion of ecoliteracy is particularly relevant nowadays.

This term involves duality, the proverbial two sides of a coin. On the one hand, it evokes a dimension of knowledge and skills which is as broad ranging

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cal framework by Sophie van der Linden (2008). For this researcher, despite the range of formats and the construction of wordless picturebooks, there are some common aspects which can help to define the genre: the pertinence/relevance of the format, the cohesion between the pages and the use of the double spread. According to her, the relevance of these features and the high level of aesthetics that some wordless picturebooks show may suggest that they are to some extent the most perfect and complete form of the genre, and indeed what lies in store for the genre. Besides some specific analyses on particular books, the bibliography available on wordless picturebooks focuses on their pedagogical use in different contexts and with clear target readerships, as the text by Jalongo et al. (2002) exemplifies. There is also a lot of bibliography available on their use with children with special educational needs and with different levels of disability and/or impairment, on the development of oral and reading competencies or with a view to the integration of immigrant communities.

⁵ *identifying* the particular signs, *decoding* the associations with the objects they represent, *reconstructing the sequences* of the different meanings, using the spatial and temporal relationships of the signs presented in a particular space and order, and *corroborating or refuting* the reading

hypotheses which are created to ensure that the global coherence of the narrative in a picturebook is met (2009, p. 40) (our translation, original italics).

as possible, a holistic arrangement of the phenomena, taking into account their complexity and their ecological relationships. It implies the understanding of things and their states as systems, with interrelated elements that establish relationships of mutual dependence.

In any system, the constituent parts are interrelated rather than isolated, and the nature of the whole is always different from the plain sum of its parts (Capra, 1996). This also entails that human's interaction with the system will affect the entire network, not just the immediate and visible involved parts.

The other side of the coin represents the adoption of a particular frame of mind which incorporates knowledge, but requires individual accountability for our actions and an awareness of the role of each human being in their relationship with the world and all its components. It means that individuals must have conscience that, ultimately, they will receive the return of their own actions; they must be aware of this circumstance, integrate it in their lives and act accordingly. Besides, an ecological awareness is not compatible with framing man as the centre of the universe, but as one living creature among many others, interacting and depending on each other.

In this way, ecoliteracy is not something external and instrumental to the individual, a set of encyclopaedic data available to be retrieved from memory at specific times for specific purposes. On the contrary, it involves a shift in the paradigm of understanding and action: 'ecological literacy (...) includes the more demanding capacity to observe nature with insight, a merger of landscape and mindscape' (Orr, 1992, p. 86). Ecoliteracy is, in its most profound sense, the complete education of the human being (not just instruction).

The difference between instruction and education is well established for other frames. In this frame, values like interdependence, harmony or respect for every other being are crucial. The ability to enlarge our vision and consider each issue associated to others is an enduring challenge, as it is contemplate contexts and extended time periods. A new paradigm, different from the mechanistic one, must give individuals a deeper, larger and longer understanding of the world and of our everyday actions.

So, ecoliteracy is not restricted to the specific relationship between humans and nature; however, in this case, the books under analysis and the analysis itself select the relationship between humans and their ecosystem as a central issue.

Corpus and methodology

This study analyses two pop-up books aimed at children by Anouck Boisrobert and Louis Rigaud, *Popville* (2009) and *Wake up, Sloth!* (first published in 2009 and 2012, with accompanying texts by Joy Sorman and Sophie Strady respectively). These books were originally published in France by Hélium Editions, but they can now be found in several western countries and in many languages including Catalan, Dutch, English, French, German, Italian, Portuguese and Spanish.

The internal organisation of both books is slightly different, with implications for each reading. *Popville* is a wordless pop-up book which includes a final editorial peritext that proposes a possible interpretation of the images and which ends up being more restrictive than the images actually suggest. In turn, *Wake up, Sloth!* contains a verbal text in each double spread, creating a three dimensional picturebook. These works differ (and justify the analysis) from other pop-up books by the investment in creating a message that goes beyond the simple playfulness typically associated with handling a pop-up book.

The aim is to examine how these books work, taking into account:

- a) Their verbal text – their discursive strategies, namely the construction of frames and the modalisation used, going further and deeper than a mere content analysis and examining the linguistic materiality of the books;
- b) Their visual aspects, produced by sophisticated paper engineering and the call to action that these pop-up books offer.

A further objective of the study is to question how these books achieve their apparent goal: the promotion of the readers' ecoliteracy (Orr, 1992) through their involvement in the reading process. By way of their organisation and dynamics, these pop-up books comply with what Lakoff (2010) defends as an adequate strategy to convey environmental issues. He suggests that we should

provide a structured understanding of what you are saying. Don't give laundry lists. Tell stories that exemplify your values and rouse emotions. Don't just give numbers and material facts without framing them so their overall significance can be understood. Instead find general themes or narratives that incorporate the points you need to make (2010, p. 79-80).

This issue seems to be one of the main trends in children's literature in western societies nowadays, transcending the traditional and almost omnipresent role that nature plays as scenario in many children's narratives.

***Popville* and *Wake Up, Sloth!* by Anouck Boisrobert and Louis Rigaud**

The starting point for the approach used in the analysis of these two books is that visual and/or verbal narratives contain positive messages in relation to ecoliteracy.

Popville

Popville is an elaborate creation of paper engineering, which recreates the process of the construction of a city from a single building in the centre of a green space as the reader turns the pages, transforming it into an urban environment: the houses and the buildings constructed by humans start to take up more space and grow in area as well as in size until they take up the entirety of the double spread and at the end go beyond the edges of the page with the opening of the side flaps on the final spread. To some extent, the book recrea-

tes the story of urban development and the idea of going beyond the edges of the page can symbolise what happens in cities which continuously encroach upon new spaces as they grow.

In turn, the green spaces become reduced as the city grows, rapidly replaced by buildings, also illustrating the way humans increasingly occupy ecosystems. At the end, very little 'green' is left and the concrete, although bright and colourful, dominates the entire space (see Figures 1 to 3).

Figure 1. *Popville*, 1st opening



Figure 2. *Popville*, 3rd opening

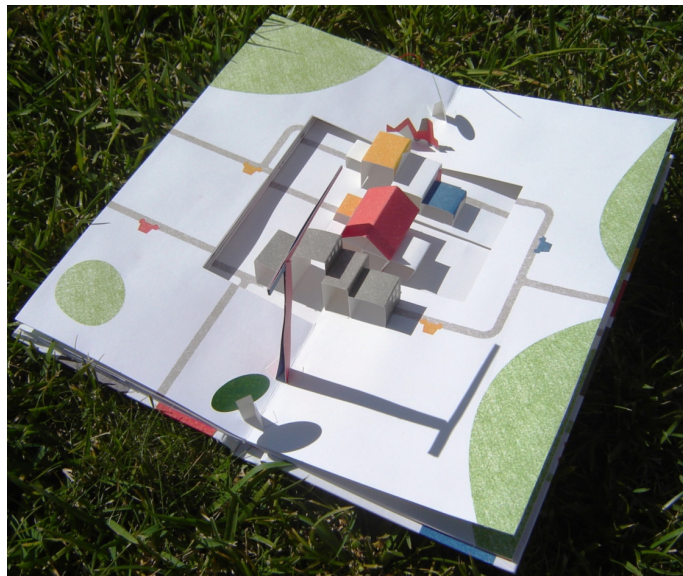


Figure 3. *Popville*, 6th opening



As such, the narrative illustrates, in a way which is friendly for young readers, a close relationship between urban development and nature, encouraging reflection about the taking over of nature, and its implications on ecosystems.

Obviously, this reading depends on the reader's cultural background and ideology – the visual narrative doesn't point clearly in any direction, be it praise or criticism of the planning and land use. Still, environmental concerns of Western societies and the mainstream discourse about the relationship between man and environment are certainly involved in shaping interpretation.

However, the proposed reading of this wordless pop-up is somewhat different from what is suggested in the final peritext, which expresses elation at urban development. The frames present in the narrative indicate this, some of them through the use of powerful metaphors and comparisons.

The first of these is the one which depicts the agents of change. At the beginning, there were 'men, women and children', but when the urban building work begins, they congregate with a sole purpose and become a 'community':

On that day the people weren't scattered (...). On that day, men and women from the red brick church built in the middle of nowhere became carpenters, engineers, bricklayers, construction managers, crane operators and roofers. They became auto-builders, pioneers of a promised land on which to build upon⁶.

In this way, individuals complement and help each other, and achieve their common goal together. This is a frame which is naturally framed in a

⁶ The analysis is made using the Portuguese edition. The segments were translated by the authors of this analysis.

positive way by creating something desirable and the rhetoric inherent in the narrative leads the reader to a positive assessment of the transformation.

The space which is initially described as 'empty' and 'bare' around the red brick church, creating a negative feeling, becomes a space of personal and collective satisfaction, inverting the feeling so that it becomes positive.

The aforementioned expression 'promised land' carries interdiscursive memories of a mythico-religious nature, in search of paradise on Earth. This frame is compatible with the fact that the building of the entire city occurs around a church, which continues to be the nucleus of the community, preserving its simple originality intact while the city grows around it, evoking aspects of spirituality and values shared in western societies.

The evocation of the 'promised land' constructs a highly positive modalisation frame which runs through the whole book. In addition, the concept that the 'promised land upon which to build' offers the ultimate reason for being, confirmed in the final part of the text which states that 'the people congregate there, live in a community, which achieved its main purpose: to build'. In this way, the act of building is deified, providing a reason for the existence of human beings in a community.

However, it is also possible to identify frames which indicate a negative modalisation of the events. The text refers to 'the deafening sound of the pneumatic drills, the hazy atmosphere created by dust (...), the acrid smell of hot asphalt'. The text goes on to state that 'the factory chimney stacks spit out thick pillars of white smoke, and the high tension wires sizzle'. Everything however, seems to yield to a futuristic vision of the world, destined to be changed by human beings.

This interpretation leads us to question the change and the modalisation present in the text. A responsible environmental point of view will undoubtedly question at least part of this ode to urban development: does the praise of the modification of space, especially when it isn't questioned, favor sustainable development? Can one identify ambivalence between this praise of the construction and criticism of its consequences? After all, what is the enunciator's standpoint regarding to this issue? In this area, which is the dominant message of this narrative?

Wake up, Sloth

The second book analysed, *Wake up, Sloth!* uses a play on words indicated in the title. This *double entendre* is based on the polysemy of the word 'sloth', which refers to the mammal which lives in Central and South America, so called because it is slow-moving, and the negative connotation in western societies of a person who is lethargic and passive, particularly in the Judeo-Christian tradition, and as such labelled as sinful.

Figure 4. *Wake up, Sloth!*[*Na floresta da preguiça*], front cover



This book shares the fact that it is an elaborate pop-up book with the previous one, but differs to it in that it has text on each double spread. It represents the typical narrative morphology of a short story: it begins with a harmonious forest, the ‘forest of the sloth’, so-called because one can find a sleeping sloth hanging from a tree (see Figure 4, from the front cover), either by effort or sheer luck. The harmony in the initial frame is altered when ‘machines with terrible jaws’ cut and ‘pull out’ all the trees, and with ‘a hellish sound, continue their massacre’, causing ‘humans, mammals and crawling serpents’ to flee. The sloth remains passive and inert, still sleeping in the tree, but shortly afterwards, not even the sloth remains and ‘everything is desolate, everything is dead’ and the frame has now become clearly dysphoric.

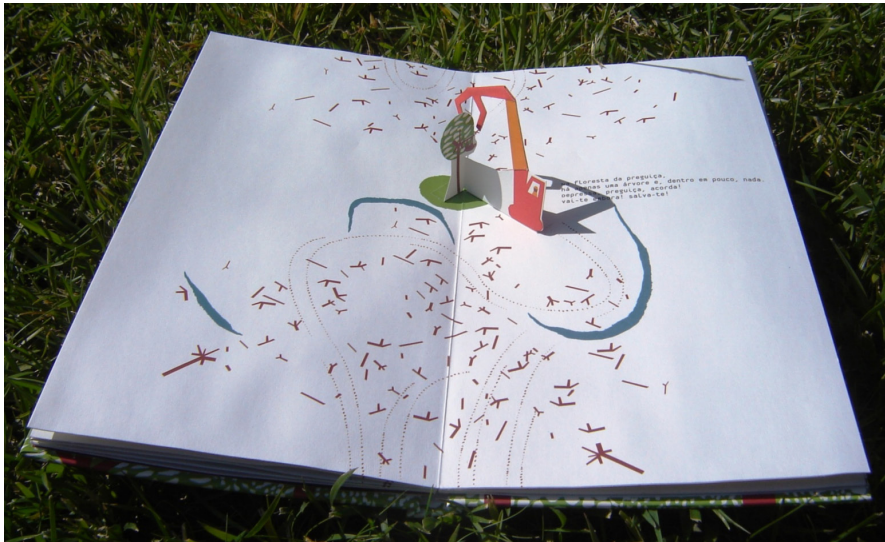
Figure 5. *Wake up, Sloth!* [Na floresta da preguiça], 1st opening



Figure 6. *Wake up, Sloth!* [Na floresta da preguiça], 3rd opening



Figure 7. *Wake up, Sloth!* [Na floresta da preguiça], 5th opening



However, after the chaos, hope resurfaces and the narrative recovers the initial harmony: ‘a man comes. Like you, he longs [for] birdsong, animals that love each other, the sweet breeze that gently shakes the leaves on the trees’. So, he ‘decides to plant a new forest’, with hard work and seeds (see Figure 8). And once again trees inhabit the earth, and with them come the sloth, the other animals and humans.

Figure 8. *Wake up, Sloth!* [Na floresta da preguiça], 6th opening



Figure 9. *Wake up, Sloth!* [Na floresta da preguiça], 7th opening

The ecological message is clear, partly based on the polarities of the frames, which are characterised in a highly dysphoric way, from Eden-like harmony (see Figure 5) to total devastation produced by the intervention of destructive machines (see Figures 7 and 8). This results in the increased importance of the harmonious relationship between humans and the remaining living beings that inhabit the planet and the disapproval of the use of space in such a way that violates the natural equilibrium. In addition, there is an implicit call to action, based on the assumed sharing of attitudes with the reader. The latter is directly and strategically referred to as 'you' and is called to take action, in stark contrast with the inactivity of the sloth, who in turn, is inactive, complacent with regard to the destruction and passive in the face of catastrophe, while the damage affects all the other trees and animals. The sloth only acts (escapes) when the last tree – its tree – is cut down (see Figure 7).

The direct reference to the reader appears in every sixth or seventh double spread, with the narrator referring to the sloth and asking the reader 'can you see it?' / 'Look, can you see?', which works as a type of reprise, underpinning the parallelism of the narrative. This strategy encourages proximity between the narrator and the reader, but also encourages involvement in the decoding of the message and taking action, promoting involvement of the reader, who will have to peek through the shapes and images which emerge on the double spread to discover the sloth among the branches of its tree.

The direct call to action is also present in the title of the book, which as previously mentioned, uses a play on words. If the sloth in the title refers to the animal in the story, it can also refer to those who are passive and indifferent to the brutal attack on the global ecosystem, and who only 'wake up' and

take action when their interests and comfort are directly affected. In this way, the title encapsulates the central environmental message of the book, which is a directive illocutionary macro-act and a characteristic feature of environmental discourse (Halliday and Matthiessen, 2004; Ramos, R., 2011).

Nevertheless, this narrative takes some risks in relation to ecoliteracy⁷. One of these resides in the construction of the idea that is it possible, easy and instantaneous even, to make a complex ecosystem like a forest regrow, with all its inhabitants and its symbiotic relationships after total devastation at the hands of human beings. On paper, this is done by the magic of fiction and at the turning of a page, new trees and new animals inhabit the desolate place, instantaneously recovering landscapes, soils and interactions (see Figure 8): in an empirical world, it would be more difficult, if not impossible, to make trees and other age-old plants, timeless rivers, delicate climates and animals of all types which time created and interconnected grow, after their destruction or profound change.

Another risk is absolving humans of their responsibility in the destruction observed in this narrative. It resorts to metonymy⁸, constructing a frame where the machines are the agents of destruction in the natural environment, as if they had intentionality: ‘machines with terrible jaws pull up the first trees’. Hence, the human hand which operates the machine is ‘greenwashed’. This case illustrates what Goatly refers to as ‘grammatical metaphor’ (2001) (here, the object substitutes the agent), in opposition to the ‘congruent discourse’⁹ he advocates.

This absolution is aggravated by the fact that humans first appear after the destruction has taken place: ‘Everything is desolate, everything is dead: the forest and the sloths have disappeared. Here comes a man. Like you, he longs [for] birdsong’ (see Figure 8). Therefore, the frame is constructed in a way which is highly favourable to humans, who appear as agents of harmony rather than the creators of imbalance.

However, even though this book is very clear in its formative intentionality, showing the consequences of a drastic change the ecosystem and destroying all life in it, its potential to promote ecoliteracy may be questioned if the reading is not done with adequate reflection.

Conclusions

The analysis of these books confirms that the promotion of ecoliteracy intersects with traditional literary and aesthetic features in contemporary children’s literature. Nature is not merely a scenario where actions take place, but rather the passive agent of human action, in frames which have spaces modified by humans.

This action of humans on their physical surroundings should be recognised in all its complexity, with the multiple relationships it involves, in terms of active and passive agents and time and space, from a tendentially

7 This message supports the theory expressed by the linguist Michael Halliday who states that human beings are not well prepared to deal with ‘slow motion crises’ (2001, p. 192) and so have a tendency to adapt better to catastrophic change.

8 Regarding visual metonymy in picturebooks, see Moya, 2013.

9 According to Goatly (2002), the congruent relationships occur when there is overlap between syntactic and semantic categories. See also Halliday and Matthiessen, 2004.

holistic and ecological perspective. In the pop-up books under analysis, the interrelationship between all these elements is a crucial factor which enables the reader to understand the network of interdependence among them. This understanding is more complete than the atomistic vision of the world, which is disconnected from its implications, both previous to and following on from each action, or isolated in particular contexts.

As literary works and instruments of communication, these books aim to provoke changes in their readers. This objective is further enhanced by their format and the way they operate, which actively engage and empower the reader (including physically) as they handle the book (not just taking control of the temporal sequence, but also interacting with the material and making grow new trees, as one can see in Figure 8), as well as the co-construction of its meaning. These characteristics are in line with the perlocutionary objective of the second book under analysis, which explicitly challenges the reader, making them the creators of forests.

The discourse produced, which constructs the real context, allows the readers to give meaning to the world, incorporating fictional realities constructed in their symbolic world and thereby acting accordingly. In this way, the double dimension of ecoliteracy is fulfilled: knowledge and conscientiousness, in other words, a particular frame of mind in which empirical data take on specific meanings.

However, after careful analysis, one can conclude that there are two aspects in the promotion of ecoliteracy in these two books which can be called into question. The reading should be carried out from a reflexive and informed perspective (a critical perspective), or else there is the risk that *Popville* includes uncritical praise for urban development, which does not take into account all its implications. The reader's interpretation is more opened due to the absence of the text. In addition, in *Wake up, sloth!*, the lack of human accountability for their own actions was referred to, as well as the possibility of magically and instantaneously fixing the harm caused to ecosystems, which could be perceived as a form of 'greenwashing' of human responsibility for the destruction.

This multiplicity of possible readings reinforces the idea of the complexity of children's literature in general and picturebooks in particular, including pop-up books, which clearly diverges from the idea that they are merely ludic entertainment. Picturebooks demand active, participative and even critical readings (Arizpe and Styles, 2003; Painter et al., 2013), establishing relationships not only between text and image, but also between these two elements and particular referential settings, thus refuting preconceived critical discourse which claims that they are simple works. The books analysed show how they challenge the readers in their construction of meaning. This is the result of a complex process of negotiation and filling in the blanks, which through the books' verbal restraint (or absence of text), is demanding and enables the reader to become a co-author, in the sense that they are the

co-creator of the message. The seriousness and even profoundness of the themes, as is the case here, is perfectly integrated with a three dimensional and interactive format, which requires the reader's intervention, including physical involvement, where the manipulation of the pop-up goes far beyond simple playfulness. Constructed as unique objects, these books excel in the originality of their visual aesthetics, altering the traditional relationship between the reader and the book, with a view to extending that change to their relationship with the environment.

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