

ARTICLE

DARWIN IN BRAZIL: SCIENTIFIC DISSEMINATION IN THE FORM OF COMICS

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DARWIN IN BRAZIL: SCIENTIFIC DISSEMINATION IN COMICS¹

ABSTRACT: This article aims to analyze the comic book “Darwin: no Brasil”. The magazine in question is a comic approach that aims to show children and teenagers some ideas about the naturalist and his journey in Brazil of the 19th century. In the work analyzed, the serious figure takes on a different version of most materials, with a profusion of colors printed on paper with a higher quality than that of comic books. It is not easily found on magazine stands, but rather in physical and virtual bookstores. For the analysis of the magazine, some pages were investigated with the purpose of indicating how the comic artist uses visual resources in combination with verbal language, and how they complement each other, contributing to the propagation of the scientific message. The results indicated the complexity of disseminating scientific knowledge in a compact verbal-visual format. As a strategy to communicate the naturalist's journey to readers, the author created a narrative with a visual and linguistic nature in the comics. The attempt to present scientific questions in comics fulfilled the purpose of conveying part of Darwin's story in Brazil, exploring the emotions, but did not provoke reflections, possibly due to the

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author's intentions in discussing the issues of slavery as well as Darwin's view of the Brazilian society at the time. However, the reflections presented should not be seen as a rejection to the work “Darwin in Brazil”, but as a precaution for those who make the material available to children and adolescents.

Keywords: Charles Darwin, Brazil, Comics, Scientific dissemination, Children, and young people.

DARWIN NO BRASIL: A DIVULGAÇÃO CIENTÍFICA EM QUADRINHOS

RESUMO: O presente artigo tem como objetivo analisar a revista em quadrinhos “Darwin: no Brasil”. A revista em questão é uma abordagem em quadrinhos que pretende mostrar às crianças e adolescentes algumas ideias do naturalista e sua jornada no Brasil do século XIX. Na obra analisada, a figura sisuda ganha uma versão diferente da maioria dos materiais, com uma profusão de cores impressas em papéis com qualidade superior à dos gibis. Não é encontrada com facilidade nas bancas de revistas, mas sim em livrarias físicas e virtuais. Para a análise da revista, algumas páginas foram investigadas com o propósito de indicar como o quadrinista utiliza os recursos visuais em combinação com a linguagem verbal, e como eles se complementam contribuindo para a propagação da mensagem científica. Os resultados indicaram a complexidade de divulgar o conhecimento científico em um formato verbo visual compacto. Como estratégia para comunicar a viagem do naturalista aos leitores, o autor criou uma narrativa com natureza visual e linguística nos quadrinhos. O intento de apresentar questões científicas em quadrinhos cumpriu o propósito de veicular parte da história de Darwin no Brasil, explorou as emoções, mas não provocou reflexões, possivelmente dado as intenções do autor em discutir as questões da escravidão e o olhar de Darwin para a sociedade brasileira da época. Contudo, as reflexões apresentadas não devem ser vistas como uma rejeição à obra “Darwin no Brasil”, mas como uma precaução para aqueles disponibilizam o material para as crianças e adolescentes.

Palavras-chave: Charles Darwin, Brasil, História em quadrinhos, Divulgação científica, Público infanto-juvenil.

DARWIN EN BRASIL: DIFUSIÓN CIENTÍFICA EN CÓMICS

RESUMEN: Este artículo tiene como objetivo analizar el cómic “Darwin: no Brasil”. La revista en cuestión es una aproximación cómica que pretende mostrar a niños y adolescentes algunas ideas sobre el naturalista y su viaje en el Brasil del siglo XIX. En la obra analizada, la figura seria adquiere una versión diferente de la mayoría de los materiales, con profusión de colores impresos en papel de mayor calidad que el de los cómics. No se encuentra fácilmente en los quioscos de revistas, sino más bien en librerías físicas y virtuales. Para el análisis de la revista, se investigaron algunas páginas con el propósito de indicar cómo el dibujante de historietas utiliza los recursos visuales en combinación con el lenguaje verbal, y cómo estos se complementan, contribuyendo a la propagación del mensaje científico. Los resultados indicaron la complejidad de difundir el conocimiento científico en un formato verbal-visual compacto. Como estrategia para comunicar el viaje del naturalista a los lectores, el autor creó en las historietas una narrativa de carácter visual y lingüístico. El intento de presentar cuestiones científicas en los cómics

cumplió el propósito de transmitir parte de la historia de Darwin en Brasil, exploró emociones, pero no provocó reflexiones, posiblemente dadas las intenciones del autor al discutir las cuestiones de la esclavitud y la visión de Darwin de la sociedad brasileña de la época. Sin embargo, las reflexiones presentadas no deben verse como un rechazo a la obra “Darwin en Brasil”, sino como una precaución para quienes ponen el material a disposición de niños y adolescentes.

Palabras clave: Charles Darwin, Brasil, Cómics, Divulgación científica, Infancia y juventud.

INTRODUCTION

Comic books are a widespread narrative resource nowadays. With the evolution of the mass communication vehicles – radio, television, magazines, and newspapers – the cultural industry gradually became an essential component in the everyday life of people (HORKHEIMER and ADORNO, 2002). Soap operas, series, charges etc. started to be consumed by different audiences, from various social strata, often making use of simple and accessible language with availability at reasonable prices (MCLUHAN e FIORE, 1969). The cultural industry impacted the collective imaginary in the contemporary world in ways that the popular culture and erudite culture would never do, defining trends and shaping opinions. Comic books, particularly those articulating image and text in their own manner, had a profound influence on children and adolescents mainly, even considering that not all the comics work is addressed to children or can be considered a mass-consumption product. Figures such as Batman, Spider Man, Snoopy, Mafalda and Mônica acquired a permanent place at the symbolic universe of successive generations (ECO, 1979). In this sense, the comics books represent currently a widely disseminated media and receive several applications. They are present in schools, in social life and the Internet, and they can be used as vehicles for information, awareness and entertainment (GUIMARÃES, 1999).

Will Eisner (1989), in his book, classifies the comics as the main vehicle for the sequential art. This concept is later expanded by McCloud (1995) in his book *Understanding Comics*. In his book, the author states that the comics are formed by “Pictographic images and other juxtaposed images in a deliberate sequence destined to transmit information and/or produce a response in the viewer” (MCCLOUD, 1995 p.9). Taking this definition as a starting point, comics can be considered an artistic expression that “is inserted within a more general category that can be called Visual Art and that encompasses those forms of expression in which the viewer to appreciate them, uses mainly the sense of sight” (GUIMARÃES, 1999 p. 4). However, this genre can appear with other types, such as literature, biography, scientific dissemination etc.

Some authors, like Rodrigo Patto Sá Motta (2006), have dedicated themselves to demonstrate how cartoons and charges interfered in discussions of political and social nature throughout the Brazilian history. In the area of science, the genre of scientific dissemination occupied, as well, the pages of comic books: we already have literature dedicated to the discussion of possible uses of comics in the teaching-learning process as a tool for scientific literacy (SANTOS e SILVA, 2011). It is not uncommon that renowned scientists, such as Isaac Newton, Sigmund Freud, Albert Einstein, and Stephen Hawking, become characters in graphical narratives, a strategy used to bring the everyday reader (particularly young people) closer to the scientific world. It is not a surprise that the naturalist Charles Darwin, who caused

a huge disturbance in the academic debates at the second half of the 19th century, is himself one of the scientists with more frequency as protagonist in comic books. Still in the 19th century, several charges in newspapers and magazines caricatured Darwin connecting his face, for example, to the body of a monkey, as a way to call attention to controversial aspects (and, quite often, misunderstood) of his theory (Rowne, 2001). The presence of Darwin in comic books can be observed even today. Darwin is someone that even today lives in the popular imagination, being known and acknowledged as one of the greatest scientists who has ever lived and who changed the way how we see the world around us (SHAPIM, 2010). As Sigmund Freud (1976) astutely noted, the theory of the evolution of the species represents, together with the heliocentric theory of Copernico and the psychoanalytic theory of the unconscious mind, the great “narcissistic wound” that marked the modern subjectivity, challenging the self-image that the modern Westerners had about themselves. The Darwinism reveals that far from being the “owner” of the planet, the human being is an animal among many others, a perspective that imposes challenges for example to the Western religious traditions according to which man is made “in the image and likeness of God.” In this sense, the discoveries of Darwin went beyond the dimension of theoretical-scientific debates, and became object of comments in fictional books, theater plays, movies, paintings and, also, comic books. Darwin then became part of our vision of the world and is one of the main representations that the popular imagination has about what it means “to be a scientist.”

Taking this into account, we investigate the dialogism inferred from the verbal-visual articulation of the magazine "Darwin in Brazil." In this text, we aim to address the following question: how does the verbal-visual text of the comics guide and direct the reader's understanding towards the representation of the scientist and his work, his observations about Brazilian society, as well as the significance of the scientist's journey to Brazil for the construction of his theory?

In view of the importance of the theory of evolution, as well as the wide circulation of the magazine “Darwin no Brasil,” this article analyzes aspects of the structure and communicative operation of this magazine as a tool for scientific dissemination for the young public.

THEORETICAL AND METHODOLOGICAL REFERENCES

According to Ramos (2014), in the scientific dissemination genre there is a socially accepted “set of conventions” which admits certain choices and the execution of certain linguistic acts. For this author, scientific dissemination addressed to the young public has two objectives: inform and capture the reader’s attention. For Ramos (2014), one of the characteristics of a scientific dissemination text is that the author presents the truth as absolute, and knowledge is exposed as being stable, definitive, unproblematic, unquestionable, contrasting with the scenario that is specific of the knowledge of the investigation, which is admittedly unstable, temporary, problematic, controversial.

As it is fundamental to catch the reader’s attention in the texts of scientific dissemination, the press uses several verbal and visual strategies and sometimes they break the barrier that separates serious journalism from the sensationalist press. So, according to Ramos (2014), in the area of media dissemination of science it is possible to identify a set of traits that are more or less recurrent in this kind of speech: Excessive simplification, creation of contrasts, focus on the conclusions, corresponding depreciation of procedures, narrativization, etc.

According to Ramos (2014), the scientific dissemination for the children and young people

has special consideration for the knowledges and life experiences of this audience. Aspects such as ludic dimension and humor gain emphasis and functionality in the articles. In what concerns the internal organization of the texts, the interaction between verbal text and image acquires a fundamental role. As per Moirand (1992), one of the marks in this genre is didacticism, “showing” the real, reconstructing it through drawing and even reinforcing the authority of the enunciator by the creation of as “rhetoric of evidence” (RAMOS, 2014).

In the editorial market there are different comic books about Darwin. The organization of each of these materials is constituted by verbal-visual signs that express an ideology. The magazines present a concrete enunciative unit, organized by a theme. The theme manages the edition and selection of the texts that integrate the magazine. As per what we know, a magazine about the life of Darwin is organized around factors of more importance in his journey. In this case, most of the magazines emphasize the biography of the scientist. It is perfectly realistic to discuss the legacy of a scientist without approaching aspects of his biography. The life history of an intellectual person not always offers important insights that help us to understand the development of the theoretical work of that person. The attempts to reduce the production of an author to the idiosyncrasies of his existence are in general rejected by historians of sciences as an indication of “psychologism.” In the case of Darwin, however – especially due to the strong political and cultural effect triggered by his reflections, life and work are merged together in imagination of collectivity. Talking about the evolution theory is, most of the times, talking about the place of Darwin in history (Darwin’s face has become easily recognizable in view of the diffusion of his image by the cultural industry). In this way, the cover and the comics are elaborated around a thematic content.

As a genre, a scientific dissemination comic book presents a more or less stable model that allows for its immediate recognition as an informative genre. At the same time, each magazine presents an individual style that makes it recognizable by the name it bears on its cover, in this case, the name of Darwin and his passage through Brazil. As comic books compete for space with others of the same nature in the market, their persuasive effect arises from the convergence of aesthetic treatment of verbal language articulated with the visual. Consequently, the prior discussion of the magazine's content follows a refined production process, and despite presenting real facts about Darwin's life, they distance themselves through the articulation of verbo-visual aesthetic procedures. Thus, in comic books about Darwin, one perceives the evaluative tone of facts according to the perspective of the production team trying to meet the expectations of presumed readers. In this sense, the selection of the material analyzed occurred for two central reasons. First, considering it relevant that the magazine's theme is Darwin's journey in Brazil and that the comic artist read Darwin's diary to produce the work. Secondly, considering that the visual representations are unique and engage children and teenagers with the subject.

The magazine *Darwin no Brasil* is the only work produced by Flávio D'Almeida in the field of scientific dissemination; the author's other comic works are focused on humor. The presumed audience of the work seems to be primarily children and teenagers, given the author's style, lexicon, and the publication's number of pages.

According to the cartoonist², usually Darwin's journey in Galápagos is more depicted, but

² Informações extraídas do site: <https://www.reporterdiario.com.br/noticia/155022/livro-em-hq-conta-expedicao-de-darwin-pelo-brasi/>

most people are unaware of Darwin's passage through Brazil. Therefore, the cartoonist seeks to portray the naturalist as a young scientist who is amazed by what he discovers in our country. To do this, the author delved into Darwin's travel diaries for two months to revisit the itinerary Darwin took during his passage through our country.

Flávio Dealmeida is a cartoonist from Rio de Janeiro and produced the analyzed material at the request of Vieira & Lent Publishers, known for publications in the field of scientific dissemination and also children's and young adult literature, aiming to “combine knowledge with the pleasure of reading”. Produced to commemorate the 200th anniversary of Charles Darwin's birth, it was launched in 2009 and reissued in 2012, the edition analyzed in this article. The story aims to create a narrative about his journey on the Beagle ship, focusing on the scientist's passage through Brazilian territory. The magazine *Darwin no Brasil* has 48 pages, with notes from the author about the Beagle journey.

Thus, “Darwin no Brasil” is a comic approach intended to show children and teenagers some ideas of the naturalist and his journey in 19th-century Brazil. In the analyzed work, the serious figure gains a different version from most materials, with a profusion of colors printed on papers of superior quality compared to regular comics. It is not easily found in newsstands but rather in physical and virtual bookstores.

For the analyses, we used the entire verbal-visual text of the magazine, including the cover. To do this, we mapped dialogic relationships established between verbal and visual texts, aiming to identify points of convergence and divergence between the texts regarding the structural aspects and communicative functioning of the magazine as a tool for scientific dissemination aimed at children. Based on the studies of Oliveira (2010) and Ramos (2014), the methodological procedures included: (i) description of the comic book's graphic design; (ii) analysis of the selection of episodes from Darwin's story in Brazil; (iii) verbo-visual resources used by the author to emotionally engage, surprise, and involve the reader; (iv) examination of dialogic relationships established between verbo-visual utterances; (v) analysis of dialogic movements in relation to the didactic and media sphere.

Due to the impossibility of investigating all pages of the comic book 'Darwin in Brazil,' we chose for analysis the pages that evidenced intersections between reality and fiction in the language of comics, and points of convergence and divergence in verbo-visual language. Another criterion for choosing pages was the identification of sections of the story where ludic, didactic, and informative compositions were present on the pages.

ANALYSES AND RESULTS

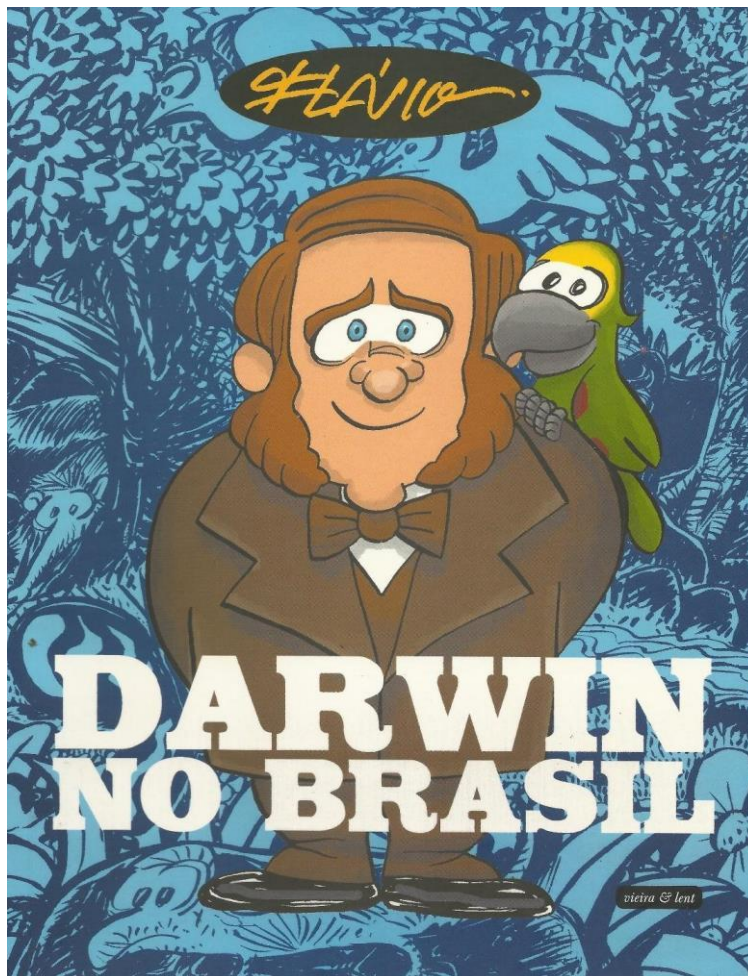
In the image of the comic book “Darwin no Brasil”, the scientist is portrayed with dark beard, a fact that is not common in most of the images that present the naturalist (ALMEIDA and LIMA, 2016). Still in this image, in the foreground, he appears with a macaw on his shoulder, and in the background, there is an illustration of the wild nature. We can see also, the younger Darwin smiling to the reader, looking directly to the reader. According to Vieira and Silvestre (2015, p.62-63), the look in the eyes is especially important in a composition, as in the fragment below:

The analytical study on how to represent the look in the images of the actors can be quite revealing and, at the same time, bring contributions to the construction of the sensorial meaning, considering that the reader of the multimodal text will tend to believe in the information about the actor, as a result of the interaction or almost interaction established by the look represented

in the image. The look represented in the eyes can either offer information or request it.

Therefore, by positioning the look in Darwin's eyes towards the reader, the author tries to create a connection between the reader and the image of the scientist, as if they were talking to each other and the reader was being invited to read the publication. This fact becomes more evident by the friendly expression in the face of the scientist portrayed on the cover below:

Figure 1: Cover of the magazine “Darwin no Brasil”



Source: Darwin no Brasil, Editora Viera & lent, 2012

The composition of colors is also important when the reader creates meaning by looking at this cover. According to Vieira et Silvestre (2015, p. 58), “The color language connects specific cultural modes.” In this sense, certain colors correlate to certain thoughts with relation to the reader. Therefore, the selection of the blue background is probably related to a possible intention of the author to address one of the colors of the Brazilian flag, thus creating an association between Darwin and the country. This relation is even more stressed by the figure of a macaw placed at the shoulder of the scientist, which together with the cover color, completes the color palette associated to the Brazilian flag. Even the selection of the animal species seems relevant since the macaw is one of the most iconic animals in Brazil's fauna. As we can see in the background, the main image of the scientist seems to be surrounded by exuberant forests, corroborating the idea that Darwin is inserted in such an environment. Since the very first contact with the publication, we associate the figure of Darwin with nature and, more

specifically, with Brazil. In this sense, on the cover, we observe a dialogical relation of ratification, considering that both verbal and visual elements talk to each other to achieve this association. Another distinctive element is the trait of the cartoonist, which is the graphical interpretation of Darwin. In this regard, the expressivity in the face of the characters with single traces reaffirms the production of the drawings using the comics language.

On the first page, we observe Darwin in advanced age who will, by request of his grandson, narrate the story of his trip in Brazil, as seen in Figure 2:

Figure 2: Invitation to read the comics.



Source: Darwin no Brasil, Editora Viera & Ient, 2012

As previously mentioned, colors in a comic book serve a narrative function. In this case, regarding the main character, they remain consistent from one panel to another, aiding reader recognition. In the story, it can be observed that Darwin's face is highlighted in pink, while his clothing is dark. The dark clothing alludes to the scientist figure, but Darwin's face stands out in the panels, conveying an affective chromatic sensation linked to kindness, joy, and spontaneity. This visual technique is thus used to evoke emotions in the reader, as affirmed by Ramos (2014) in their research.

The storyline in each panel goes on showing the naturalist narrating his trip in Brazil to his grandson, a fictitious character that is not present in the diaries of Darwin. However, this creation made by the author functions as a motto for the reader “to travel” into the feelings and memories of the

character. And in this process, colors represent the landscapes and the feelings showed by the scientist.

In agreement with Ramos (2014), the adult character assumes the role of enunciator, as if pervaded by the absolute truth about scientific facts, whose objective is to transmit to the child the curiosities about Brazilian fauna and flora as well as the evolution theory. This connection between the characters ensures the didactic and also mediatic speech through the emotional invocation.

In the subsequent pages, the image of an elderly man gives way to an equally caricatured image of a young Darwin who narrates his time spent in Brazil in the 19th century. The publication tries to exhibit the scientist's visit to the country, making the first-person narrative the most convincing choice for conveying the character's emotions. The naturalist's enchantment with Brazil is vividly expressed in panels depicting him in the forests. In these pages, in line with Oliveira (2010), verbal and visual elements interact, confirming and reaffirming meanings. Thus, the illustrations and text attempt to demonstrate Darwin's fascination with the Brazilian forests as explicitly as possible, using striking colors and depicting a dense forest, as illustrated in Figure 3.

Figure 3: Astonishment of Darwin with the Brazilian forests.



Source: Darwin no Brasil, Editora Viera & lent, 2012.

The colors have a persuasive effect over the reader. Besides, the interaction between the verbal text and the imaging system furnishes the idea of the fascinating forest seen by the naturalist. The

drawing of the forest, the insects, and flowers “depict the real” to the reader reinforcing the authority of the enunciator by the creation of a “rhetoric of evidence” (Ramos 2014). In this way, comic books offer a dynamic and visually appealing approach to exploring the idea of species diversity.

The variability of the bubbles (speech balloons), which is characteristic of the comics language, is also a composition element of the narrative. In the story under discussion, we can observe in the bubbles the decision to illustrate Darwin in a more emotional and personal tone. The act of bringing the naturalist with active voice in the panels makes him to become more real and closer to the reader than with the use of captions that are so commonly used in comic books for scientific dissemination.

Darwin’s fascination towards the nature in Brazil that is described in the panels above can also be seen on the writings of Darwin himself. In his diary he writes about the first contact he has with the forests in Bahia:

Delight, however, is not a sufficient term to entail the emotions felt by a naturalist who sees himself for the first time surrounded by the Brazilian forest. The elegance of the lawn, the newness of the parasitical plants, the beauty of the flowers, the glossy green of the foliage and, above all, the exuberance of the vegetation in general overwhelmed me with admiration. The most paradoxical of the combinations between sound and silence pervades by the shadow of the trees. (DARWIN, 2008. p. 14)

The astonishment and admiration by the Brazilian woods is expressed above in a passage of the diary. However, the absence of a scale in the drawing and the dialogue of Darwin with the species in the forest complies with the purposes of genre and breaks the barrier that separates what is real from what is imaginary. The ludic dimension is presented to the assumed public. According to Ramos (2013), the intersections between reality and fiction are quite common in this genre because the comics are intended to entertain, and they use resources to make the reader imagine situations. The most notable of these intersections is in the narrative resource, on which the entire work is based, expressed in the first person by the naturalist himself to his grandson. This kind of event is not precise. However, by showing one of Darwin’s family ties, the author reveals a facete of the naturalist that goes beyond the scientist and brings him closer to the universe of the readers, thus presenting a more accessible figure.

An aspect portrayed by the history that is distant from these intersections is the testimony of tropical storms described by Darwin in his diaries (see Figure 4). To express them, the author uses onomatopoeia as a resource to demonstrate the power of the tempests and he uses the visual language to represent the sound of thunders and falling rain. On the last panel in the page, we observe that the naturalist compares the rains of the tropical forest to those of cold weather regions. This comparison is present in his diary in the following way:

After wandering about for some hours, I decided to go back to the landing place; before reaching it, however, I was overtaken by a tropical storm. I tried to find shelter under a tree that was so thick that would never been penetrated by common English rain. Yet, here, in a couple of minutes, a little torrent flowed down the trunk. It is to this violence that we must attribute the verdure in the bottom of the wood because if the showers were like those of a colder clime, the moisture would be absorbed or evaporated before reaching the ground. (DARWIN, 2008. p.398)

During his travels around the world aboard the *Beagle*, Charles Darwin also made observations about the tropical woods that he found. In fact, Darwin was impressed by the huge diversity of plant and animal species in the tropical forests. He noticed that there were plenty of different live

forms coexisting within a relatively small space. His observations concerning the ecosystems were of great importance to understand how plants and animals had adapted certain specific features to survive under the unique conditions of the tropical woods, such as competition for light and high humidity. On one of the pages, the cartoonist depicts the significance of the rains to the tropical forests (Figure 4):

Figure 4: Darwin taken aback by a tropical storm.



Source: Darwin no Brasil, Editora Viera & lent, 2012

However, while the author intended to inform the reader about the amount of the rainfalls and the relation with the variability of the environments, the representation does not show the differences indicated by the verbal element, establishing a dialogic relationship of conflict, since the verbal and visual dimensions oppose each other in the composition of meanings and may lead the reader to a conflicting understanding (OLIVEIRA, 2010). Furthermore, the image of the thunders may be more interesting to

the readers than the idea transmitted, risking ending up by dominating the scientific message. Nonetheless, humor is quite evident on this page as a strategy to connect the reader, when portraying Darwin pulling a face when taken aback by the storm. By incorporating humor into the story, it is possible that readers will become interested in the topic and want to learn about the scientific content presented.

On the subsequent page, as shown in Figure 5, right in the first panel we can read a citation from the diary of Darwin where he refers to the city of Rio de Janeiro as a “wonderful city,” an expression that is currently used by Brazilians nowadays. This reference is more concerned to the feeling that the author has for the city (and his alleged knowledge of the reader’s world) than to the opinions of Darwin himself, who was just amazed by the natural beauties, according to Figure 5. This establishes a dialogic relationship of extrapolation (OLIVEIRA, 2010).

Figure 5: Darwin arrives to Rio de Janeiro.



Source: Darwin no Brasil, Editora Viera & lent, 2012

Still in Figure 5, in the last panel, we see, as an imaging resource, the scientist thinking about all the things he could find during his trip. But then, an imprecise element appears in the story: it is the presence of a crocodile, an animal that does not live in Brazilian habitats. The intention of the author was probably to represent an alligator. But in alligators, it is not possible to see the inferior teeth when they have their jaws closed, which is different from what is depicted in the image. This representation of the animal confuses the reader for portraying a region in which this animal does not live. As the image can lead to a misunderstanding for the reader, the propagated message creates a conflicting relationship, as pointed out in Oliveira's (2010) studies.

According to observations made in his diary, Darwin arrived at Rio de Janeiro on March 4th, 1832 and stayed in the city for approximately one month. During his stay, he performed geological observations, collected rock and mineral samples, and had the opportunity to interact with local habitants. He also recorded impressions about the culture and life in the city. However, unlike the verbal and visual representations contained in Figure 5, the scientist expressed his discontentment during his staying, as indicated by the registration below:

It is never very pleasant to submit to the insolence of men in office; but to the Brazilians who are as contemptible in their minds as their persons are miserable it is nearly intolerable. But the prospect of wild forests tenanted by beautiful birds, monkeys and sloths, and lakes by covies and alligators, will make any naturalist lick the dust even from the foot of a Brazilian. (DARWIN, 2008. p.32)

The considerations of Darwin can be compared to those of Count of Gobineau, who based on racist prejudices, saw in the Brazilian people the manifestation of the “moral decadence” that would result from “miscegenation.” Just like Darwin, Gobineau contrasts the enchantment of the landscape to the horror perceived in the population, which would be dominated by “atavistic vices.” Some difficulties experienced in the trip are described in Figure 6. However, the author selects the representations that he considers as more adequate to the presumed reader who probably would not want to read a material containing repulsive opinions about the Brazilian culture. In this sense, we see the appeal of the media speech to the commercial logic. Therefore, the greatest difficulties experienced by Darwin in Brazil are limited to eating habits and sleeping. In a certain way, these difficulties are a kind of connection to the life experiences of the presumed audience.

Figure 6: Darwin in rural Brazil.



Source: Darwin no Brasil, Editora Viera & Ient, 2012

As shown in Figure 6, in the last panel, Darwin is once again represented in the middle of the forest, happily observing the local fauna and flora. The intense competition of the plants for light, the symbiotic relations, as well as the ecology complexities were not addressed and problematized in the magazine, probably due to the characteristic of the support.

On the last pages of the magazine “Darwin no Brasil,” we have the narration of Darwin’s repulsion towards slavery. However, the limited perspective of the scene reinforces the mistaken idea of the subservience of the enslaved people to the detriment of their history of resistance, according to the illustrations 7 and 8:

Figure 7: Darwin and slavery.



Source: Darwin no Brasil, Editora Viera & Ient, 2012.

On the first panel of Figure 7, the author contributes to a recurring representation that tends to stigmatize black people. The representation freezes the captive in a place of subalternity and does not present reading possibilities to subvert the hegemonic narrative. In the comic panel, we can observe the white man in an arrogant attitude, threatening a black man who is vigorous in his physical form but also submissive in the looking and the words. The large proportion in the figure of the captive man that endures everything translates the common sense of the black man as “stronger.”

It is important to highlight that in the diary of Darwin, the document in which the author took inspiration to produce the comics, we have the following record:

The town is in all parts disgusting, the streets being narrow, ill-paved, and filthy, the houses tall and gloom. The number of white people, which during the morning may be met with in the streets, bears about the proportion of foreigners in any other nation; all the rest are black or of a dusky color. The latter, as well as the Brazilians, are far from prepossessing in their appearance.

The poor negroes, wherever they may be, are cheerful, talkative, and boisterous. There was nothing in the sight, smell, or sounds within this large town, which conveyed to my mind any pleasing impressions (DARWIN, 2008, p. 491)

Therefore, we observe that Darwin's diary is marked by his enchantment by Brazilian fauna and flora, and by the way how he dedicated himself to record observations on the population of the country with eyes of contempt, incomprehension, and superficiality towards the society. Despite the criticism to slavery and despite the comprehension of the feelings of the captive people, he does not recognize humanity in them. It is worth mentioning that the adherence to abolitionism in the 19th century was not necessarily associated to an antiracist perspective. Actually, several critics of the colonial slavery (which is the case of Count of Gobineau, one of the founders of the scientific racism) considered that non-white people (especially Blacks and Amerindians) were biologically inferior to White people, and they defended segregation and exclusion measures. Gobineau, specifically, rejected slavery solely and exclusively because in his understanding, the continuous presence of Afro-descendants working under coercion beside white families would mean a "corrupting" element (SCHWARCZ, 1993). Darwin's repeatedly praised abolitionism (his criticisms to Black slavery in Brazil, as per his diaries) does not reflect, necessarily, an overcoming of racism. It is worth stressing that there is a vast literature discussing to which extent Darwin, per se, held prejudices regarding color and ethnicity – beyond any consideration that could exist about the appropriation of the Darwinism by the scientific racism and Spencerism. In this sense, the interlocution between Darwin and Spencer can provide important elements to help us to have a better understanding about the position of the author. The colonizing voice that suggests superiority hangs over Darwin's perspective.

The representation in the comics of enslaved individuals refer to a caricatural form of portraying Black people, which dates back to the time of colonial slavery. The head out of proportion, the angular face, lips that are excessively thick are all elements that reflect the racist form with which sometimes Black people were painted and drawn, which is an strategy to *animalize them* (that is, to dehumanize them and deprive them of dignity). This kind of image encourages the establishment of the parallel that is common even nowadays between African descendants and monkeys, a persistent theme in racial insults (HARRIS, 2000). It is not uncommon to find parallels between the representation of the Black person in the comics and the figure of Jim Crow, who became famous in the United States of the 18th century as the hegemonic way through which white people used to represent black bodies. This process that objectifies the Black population by portraying them in a "depersonalized" and "bestial" manner, is defined by George Yance as "*white gaze*" (2008). The same dehumanizing representation of Black people can be found on other pages of the magazine, as showed in Figure 8.

While the white characters are, in general, represented with faces that are distinguishable from each other with specific traits that qualify them (as beings gifted with *individuality*), black characters are all alarmingly similar to one another, they all have the same caricature of "blackness." It is about a set of stereotyped images that does not recognize Blacks as *individuals*, but just as "typical" expressions of a "race." In this sense, ironically, the illustration ends up by reverberating the racist positions that the text intends to denounce.

Figure 8: The representation of Blacks and whites in the comics.



Source: Darwin no Brasil, Editora Viera & Ient, 2012.

The last panel of figure 8 presents the image of a woman who differs somewhat from the caricatured form of representation of the other black characters. The woman is depicted with long hair and a slender nose. According to the verbal text, the character is "the daughter of a large landowner." From this perspective, the analyzed comic strip materializes the idea of miscegenation as a positive solution for the society of the time. Thus, the comics in figure 8—which also describe the marriage between a white man and a black woman—still flirt with the "myth of racial democracy," with the notion that Brazilians are the result of a spontaneous and consensual process of "miscegenation" and that "another little Brazilian will be born from this mixture."

In the subsequent pages of the magazine, we see the representation of the return of the scientist to Rio de Janeiro and part of the challenge faced by Darwin to categorize the species (fig.9). On the same page, the author indicates the naturalist's discomfort with the country. On the first panel we can read another quote from Darwin's diary: "On April 23, 1832, we finally returned to the *civilization*." By analyzing these comics, we can infer a difficulty of the author in dealing with the contradictions of

the scientist. While the author used a caption element for the complex citation, the intertextual reference resulted in a compact informative text without a convenient dialogue about the matter.

Also on this page, aspects concerning the work of the scientist are emphasized in two situations: By indicating the difficulties that affect Darwin's work, and by portraying the researcher with problems cataloging the large number of species found by him. Furthermore, the scientist's concern and insecurity regarding the work unveils the production struggling in the scientific activity. According to Figure 9, the scientist seems to be insecure about the output in his research.

Figure 9: The work of the scientist and his return to Rio de Janeiro.



Source: Darwin no Brasil, Editora Viera & lent, 2012.

In the sequence, the final pages depict an elderly Darwin (figure 10 and 11), as at the beginning of the narrative, mentioning his theory to his grandson after focusing on his travel to Brazil.

Figure 10: Darwin explaining his theory.



Source: Darwin no Brasil, Editora Viera & lent, 2012.

Since the purpose of the magazine is to present the trip of Darwin to Brazil, the explanation about his theory has little emphasis (figure 10 and 11). The character promptly states that the concept of evolution is not a synonym for development and improvement. This debate is not resumed at the development of the narrative given the importance attributed to the results in genres of scientific dissemination and the reader is not able, possibly, to understand the observation of the character. On the last page, as a strategy to better explain the concept to the readers, the author mentions the change in living beings, allowing a glimpse at the fact that any change may imply evolution. Anyhow, the explanation of the character only indicates how natural selection affects the evolution of the species and does not clarify the content in question.

Figure 11: Darwin explaining his theory.



Source: Darwin no Brasil, Editora Viera & lent, 2012.

However, in the comics of figure 11, although the contribution of Darwin's visit to Brazil to the construction of his theory is not explored, it is necessary to consider that the mention of competition for food among species and the importance of diversity and fauna is a movement to engage the child and youth audience in understanding the theory of evolution. From this perspective, we highlight the educational potential of this material and other comic books for science education, given that the imagetic and verbal language constitutes an aesthetic, creative, and humorous response that entices the reader towards knowledge that they might not have access to if it weren't for comic books. The analyzed material reaffirms the media importance of the work because it entices the reader to understand that Darwin was in Brazil, but it also indicates the didactic importance of making the representation of the scientist and his work, his observations about Brazilian society, and the importance of Darwin's trip to Brazil for the construction of his theory comprehensible.

FINAL CONSIDERATIONS

In concluding this investigation, it is necessary to revisit and summarize the most significant issues presented in this work. The first is the question that mobilizes this article: how the verbal-visual text of the magazine directs and guides the reader's understanding of the representation of the scientist and his work, his observations about Brazilian society, as well as the importance of Darwin's trip to Brazil for the construction of his theory. Regarding the representation of the scientist, it is emphasized in the work that he is depicted at different stages of his life. Initially, as an elderly man, and as the story unfolds, as a younger man. The representation of young Darwin serves the purpose of bringing the reader closer to the story by conveying the idea that the scientist's journey begins in his youth. In these different stages of his trajectory, we see a common portrayal of a white, wealthy man, who is distinguished from most representations by his face, which conveys an affective chromatic sensation linked to kindness, joy, and spontaneity. The magazine does not reference the collective nature of scientific work and the use of fieldwork techniques. However, it does indicate the difficulty of scientific work in some panels. The naturalist is shown in some scenes with a magnifying glass and tweezers. In the forests, the scientist appears alone, enchanted by Brazil's fauna and flora.

Indeed, the intention to present scientific issues in comics fulfilled the purpose of conveying part of Darwin's story in Brazil. However, it downplayed issues that Darwin's diary highlights about various aspects and reproduced stereotypes, showing a lack of concern for critical reflection on the man behind the theories he propagated.

Scientific activity is always marked by historical, socio-economic, cultural, and other conditioning factors. The successes of science are anchored in experiences of trial and error, interwoven with the prejudices and preconceptions of researchers. A scientist is characterized not by infallibility, but by the ability to recognize their mistakes and the willingness to rectify distortions eventually produced by prejudices and preconceptions. In this sense, presenting a researcher's trajectory should highlight not only their discoveries but also their limitations, reflecting the period in which they lived. Narratives that present scientists as "saints" or "heroes" tend to hide these limitations, offering an ahistorical (and anachronistic) reading of knowledge production. The scientist ends up being seen not as a "man of his time" but as a "bulwark of truth," an approach that does little to instill a genuine understanding of researchers' daily lives in the non-specialist public.

However, the dialogical relationships established between the verbal and visual texts indicate many points of convergence between the texts regarding the structure and communicative function of the magazine as a scientific dissemination tool for children. The author's familiarity with intertextual references resulted in the combination of unconventional elements, showcasing creativity and experimentation in the standardization of the format, structure, and style of the work. As a strategy to communicate Darwin's journey to Brazil to readers, the author creates a narrative in which reality and fiction mix, with visual and linguistic nature that brings the reader closer to the text. The depiction of Darwin's grandson, the statements, and the representation of some of the scientist's experiences make the story more convincing and captivating, even if it is an extrapolation by the author. These fictional elements, chosen by the cartoonist to describe Darwin's trip to Brazil, are easily recognized and

understood by the presumed audience throughout most of the work. From this perspective, the genres of scientific dissemination and comics are not mutually exclusive or ambivalent in most panels. The playful dimension of the comics complements the serious dimension of the language in the analyzed work. Given that an important characteristic of the genre of scientific dissemination is the construction of discourse objects with objects presumably known by the reader, we find in this work that the enunciator seeks layers of meaning in the dialogue and experiences of the presumed audience for those familiar with these references.

Thus, the analysis of "Darwin in Brazil" shows that scientific dissemination in comics is a powerful tool to make science more accessible, attractive, and understandable in science classes. The educational potential of this material goes far beyond entertainment. The engaging narrative of the stories speaks directly to children and teenagers, incorporating elements of adventure, suspense, and humor that can make students interested in the scientific content and want to learn more about the topics addressed. By situating the characters in specific contexts, even mixing reality and fantasy, comics can teach readers about who researchers are, how they live, and even envision the possibility of becoming scientists themselves!

Ultimately, the reflections presented here should not be considered as a rejection of the work "Darwin no Brasil", but rather as a concern for those who provide materials for children and young people. By finding balance between humor in the comics, the criticism, and the scientific precision, it is possible to explore the educational potential of the magazines and get to a diversified public in an impressive manner.

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Author 2 – Data collection, data analysis and text writing.

Author 3 – Data analysis and text writing.

DECLARATION CONCERNING CONFLICT OF INTERESTS

The authors declare here that there are no conflicts of interest regarding the present article.