

A replicator in movement: similarities between Borges' poetic narrative and the memes research agenda

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Jorge Luis Borges' extensive fantasy writings have been read as a critique of traditional science and logic and as a repudiation of the individual's importance, of the presumption of reality itself, and, consequently, of the forms of knowledge accessible to us. The article presents a new way of understanding Borges' poetic narrative, evincing this narrative's ability to grasp cultural phenomenon from a scientific perspective. An analogy is drawn between Borges' poetic narrative and memetics, the latter being an attempt to interpret human nature in terms not only of genes but also of memes – that is, ideas understood as cultural patterns. Although any literary work is a vehicle for ideas, Borges, who writes in an extraordinarily critical fashion, seems particularly aware of the independence of ideas and therefore, the article asserts, his characters can be seen as prisoners inside labyrinths of memes.

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Jorge Luis Borges (1899-1986), one of the main exponents of the Hispano-American literary revolution, wrote short stories, poems, essays, prose, film scripts and tango lyrics. Borges is best known as an author of fantastic tales, many of them having been read as a critique of traditional science and logic. Borges is usually interpreted as having repudiated the importance of the individual, the presupposition of reality itself and, consequently, the forms of knowledge that are accessible to us (Foucault, 1970; Barrenechea, 1984; Blanchot, 1984; Antelo, 1994). The article presents a new way of understanding Borges' narrative, i.e. the capacity of this narrative to perceive cultural phenomena from a scientific viewpoint. We will present an analogy between Borges' poetic narrative and memetics, the latter being an attempt to interpret human nature in terms of both genes and memes, in other words, ideas understood as cultural patterns.

In the opinion of Ana María Barrenechea, Borges reinforces "the uncertain nature of the universe and the problematics of human knowledge" (Barrenechea, 1984, p.107). In this sense, Borges' short stories are not intended to represent reality, but to frustrate the human desire to understand it. Borges deals with the corruption of causal linearity and the emergence of a fantastic causality that is teleological, contrary to the efficient causality found in realistic novels (Borges, 1974, p. 231-232). For this and other reasons, Borges is considered a critic of Cartesian reasoning and efficient cause, pillars of Western rationality. In our opinion, in so doing, Borges created something special in both the linguistic as well as the hermeneutic sense. He enters the literary tradition adverting to a focal problem of narration: final causes.

López Beltran (1998), Robert Richards (1998), David Hull (1998) and Ernst Mayr (1982), among others, have investigated the importance of teleological narrative for the historical sciences, such as Geology, Cosmology and Evolutionary Biology. Teleology is one of Aristotle's four causes: (1) material cause, (2) formal cause, (3) efficient cause and (4) final (or teleological) cause (Dennett, 1995). Since Descartes, the natural sciences have considered only efficient causes as causes. When a sculptor sets to work, the material cause is the marble, the formal or ideal cause is the idea (or form) in the artist's mind, the efficient cause is the artist's working at the marble, the force (physical) he transmits to his instrument. The final cause is ostensibly the glory of God. Although Mayr in *The development of biological thinking* (1982) discerns at least four meanings for the teleological concept, he excludes from the scientific debate cosmic teleology, precisely the one that affirms that God is the final cause of everything. On the other hand, everything in nature or culture that specifies or determines function or purpose is thought of in terms of ends. As a result the preposition 'to' occupies a fundamental place in this class of causes. Teleological narratives are written in terms of ends and purposes, which here should not be identified with any supernatural cause, the explanation perhaps deriving from distant or historical causes.

For example, what are eyes used for? To see, naturally. But how do the eyes perform this remarkable task? By means of a live cable of nerve cells, neurons, that transmits the electrons captured by the ocular structure to the brain. According to specialists, one does not see with the eyes, but with the brain, which deciphers the light signals received by the eyes. In any event, the eye is a very complex structure, capable of perceiving subtle differences of light, shade and color far better than any digital camera. As with any living thing, the eyes consist of various types of cells and many of them are connected to nerve cells that transmit the nerve impulse to the brain. But an explanation of the functioning of the eye and brain, however detailed it may be, would be

incapable of answering the question: how does the body know how to produce these eyes?. Even if there were a detailed explanation for the embryogenesis of the visual organ, we would not know the answer to the most fundamental question: why do we have eyes? This question can only be answered through the milestones of the synthetic theory of evolution, and even then we would have to refer to a 'history' of the genealogies of living creatures that have eyes. Eyes are known to have evolved independently more than a dozen times. In the genealogy sequence that concerns us, mammal, primate and human, the eye is a structure that we inherited from very ancient parents in very distinct branches on the tree of life. Octopi, locusts, centipedes, scorpions, sharks and lobsters, among innumerable others, have eyes, although only those of the shark may have an origin in common with ours. Meanwhile, all these different eyes are used to see, despite being the products of diverse life histories. If the world is hyaline, if we 'can' see through it, the selective pressure to perceive differences in the light signals emitted is tremendous, mainly in a changeable world where the struggle for survival is intense.

The teleological function in the poetry of Borges

Although blind, Borges, foresaw narratives in the teleological language of ends (Andacht, 1999). In his fantastic tales, the ideas at many levels use the characters, narrator, author and especially the reader 'to' reproduce themselves. Naturally, any literary work is a vehicle for ideas. But Borges writes critically and seems to be especially aware of the independence of ideas. His characters can be seen as prisoners inside labyrinths of memes; literary ideas, rather than individuals, are ostensibly the final cause of such texts.

Borges made explicit use of teleology, or explanation by final causes (Andacht, 1999; Waizbord, 1998; Rodríguez Monegal, 1980). For example, in his essay "*Del culto de los libros*" ("On the cult of books"):

In the eighth book of the *Odyssey*, one reads that the gods contrive misfortunes so that future generations will have something to chant about; Mallarmé's declaration: "The world exists in order to end in a book" seems to repeat some centuries later, the same concept of an ethical justification for evils. Although the two teleologies do not wholly coincide, that of the Greek corresponds to the age of the spoken word and that of the Frenchman, to the age of the written word. (Borges, 1974, p.713)¹

In this quote, the final causes are the chant (the poetry) and the book. The world exists to serve the whims of poetry and literature. The teleology of Borges' words and episodes have literary ends. Borges starts from an idea that affirms itself and creates an ambiance of signs that apparently justify themselves, no longer taking external reality as their reference, but the rather the component signs of the literary universe themselves. Another emblematic example occurs in "*La trama*" ("The plot") from the book *El hacedor* (*Dreamtigers*):

To render his terror absolute, Caesar, having been pursued to the base of a statue by the impatient daggers of his friends, discovers among the faces and weapons that of Marcus Junius Brutus, his protégé, perhaps his son. Ceasing to defend himself, he exclaims: "You too, my son!". Shakespeare and Quevedo preserve the pathetic cry.

Destiny is pleased by repetitions, variants and symmetries; nineteen centuries later in southern Buenos Aires Province a gaucho (an Argentine cowboy) is attacked by other

gauchos. As he falls, he recognizes his godson and says to him with gentle recrimination and slow surprise (these words should be heard, not read): *Pero, ché!* They kill him and he is unaware that he has died in order to repeat the scene. (Borges, 1987, p.25)

Note especially the repetition of the preposition 'to' in the first and last line of the narrative. The gaucho dies to repeat a scene (the delicate horror of the piece is structured on this teleological cell); but he does not know, does not understand anything of the universal, atemporal and perfect plot that killed Caesar, inspired Shakespeare and Quevedo and has now ended his own life. That same eternal law governs the brief sentence: "Destiny is pleased by repetitions, variants and symmetries". Nevertheless, destiny here does not follow the logic or even the actions of the real world: it is a contra-factual world, one in which the rules are those of a "rigidly illogical" imagination (Eco, 1989, p.164), an ethic of assassins, a sophisticated indication via literature of what is right and what is wrong that imposes itself every time someone is stabbed in the back by a person regarded as a son. The fantastic thing is that literary themes touch the core of human nature, universals of behavior, such as the proscription on assassination in "*La trama*", among innumerable other constant characteristics shared by 'all' human populations, of all ages and places. Here are just a few examples: ability to classify (fauna, flora, parts of the body, etc.), symbolic discourse, rape proscribed, generosity admired, prevention of or abstention from incest, mourning, males more aggressive than females, narrative, ideas of the past/present/future, reparation of offenses, sexuality as a focus of interest, notions of taboo, private intimate life, foresight, making comparisons, likes and aversions, informal justice, mental maps, pride, proverbs and sayings and moral sentiments (Brown, 1991, quoted in Pinker, 2004).

Perhaps the most explicit and important manifestation of teleology in Borges is found in the essay "*El arte narrativo y la magia*" ("Narrative art and magic"; Borges, 1974, p.226-232), in which fantastic literature is characterized as that which represents precisely what could not have happened according to the laws that govern the so-called real world. Rodríguez Monegal (1980, p.174-176)² points out four types of literary devices that are typical of the fantastic genre for Borges: (a) a work of art within a work of art; (b) reality contaminated by dreams; (c) travel through time; (d) the double. Rodríguez Monegal affirms that Borges tries to explore what happens with the narrative format when, for example, the direction of time is inverted, when one travels to the future or when two characters are one and the same person; his intention is possibly "to examine how the narrative functions in reality, that is, what type of causality directs it." According to Rodríguez Monegal, Borges' analysis: "Coincides with that of Aristotle in the way it postulated a 'teleological narrative' by seeking in 'causality' the central mechanism that enables differentiating supposedly 'realistic' fiction from that he now considers 'magical' and that in future works he will label fantastic" (p.163).

Thus, it seems to us that Borges has structured, consciously or not, one of the most extraordinary bridges between science and literature, bringing final narrative causes closer to efficient causes (expressed in terms of natural laws). Voyages to the distant past or future in fabulous machines, humans that are immortal, people turning into animals, disincarnate souls floating around the subjective world of the spirits. All these and other situations are constructed as if they were placed in a factual and empirical world, as if their objective was to investigate what would happen to the real world (of literary language) if 'only one' of its

efficient cause laws were destroyed by the impossible or by the highly unexpected. In the fantastic text, it is precisely what cannot happen that is developed in an additional possibility, law or rule to be rigidly followed. For Borges, the definition of fantastic literature occurs exactly where the fantastic laws are added to the physical laws:

All the laws of nature govern it [the fantastic text] in the same way as the imaginary ones do. For the superstitious, there is a necessary connection not only between a gunshot and a dead person, but also between a dead person and a mutilated wax effigy, the prophetic breaking of a mirror, salt spilled or the dreaded thirteen guests at the dinner table. This dangerous harmony, this precise and frenetic causality, equally governs the story. (Borges, 1974, p.231)

The natural laws of the physical world, the efficient causes, are placed side by side with the fantastic laws, the teleological causes, provoking a shock between the real and the unreal and interfering in the form of the narration. For Borges, the fantastic narrative should “consist of a precise scheme of attentions, echoes and affinities. Every episode in a careful narration is an ulterior projection” (Borges, 1974, p.232).

Fernando Andacht (1999) pointed out the similarities in the teleological conceptions of Borges and Charles Sanders Peirce. In his view, these authors see literary characters, as well as human beings as vehicles for ideas, that is, memes. Andacht shows us how ideas and signs in the texts of Borges and Peirce supply motives and molds for human minds and lives. Andacht notes that both authors explore the connection between ideas and values, reinforcing the moral and cultural importance of valuing ‘some ideas and not others’.

Thoughts involving final causes seem to be necessary for the human mind. Andacht (1999) argued that for Peirce and Borges there is no thought without teleology, and without thought, there is no action, thus making it impossible to think without making projections for the future. Ideas guide our behavior, giving shape to a mental object that, nevertheless, may always be reshaped. Peirce, cited by Andacht (1999, p.105), said: “ideas are not all mere creations of this or that mind; on the contrary, they have the power of finding or creating vehicles and, having found them, of giving them the ability to transform the face of the planet”.

Memetics and the fantastic literature of Borges

In *The Meme Machine*, Susan Blackmore (1999) argues that human evolution is guided by units of cultural imitation, called memes. Basically, memes are ideas, “instructions to achieve a determined behavior, stored in brains (or other objects) and passed on through imitation” (p.43). In reality, according to the author, human beings and their brains are machines for reproducing ideas, a process that occurs through the mechanisms of imitation and learning.

Let’s quickly look at the history of the conception of memes. In 1995, Daniel Dennett, a philosopher of the mind, affirmed that the biological evolution of all species of living beings should be interpreted as the result of an algorithmic process, having as fundamental elements heredity (genes), variation (mutation) and natural selection (Dennett, 1995, p.357). For Dennett, genes are biological replicators that have existed for billions of years and living beings, made up basically of proteins, are survival machines, entities through which the genes maintain their immortality. Nevertheless, in the particular case of *Homo sapiens sapiens*, a second type of

replicator, memes, is said to be jointly responsible for the growth of the brain and the manufacture of tools, as well as mainly for what we call culture and society. Examples of memes are the arch, the wheel, wearing clothes, the vendetta, the right triangle, the alphabet, the calendar, the *Odyssey*, the calculus, chess, perspective drawing, evolution by natural selection, impressionism, *Greensleeves* and deconstruction (Dennett, 1995, p.344). Although it was Dawkins who really coined the word meme in 1976 in the conclusion to *The selfish gene*, the idea of a unit of cultural replication precedes that book (Hull, 1998).

The understanding of memes, like genes, should embrace: (1) the process of inheritance, by which cultural information reproduces itself in the populations of human brains (vertically from parents to children, and horizontally in diverse other forms); (2) the process that enables cultural information to undergo variation; and (3) the process of cultural information selection, due to the limited number of brains and the virtual infinity of ideas and their fragments and complexes.

The memes research agenda seeks to study dynamic cultural systems, considering that memes carry information (Heylighen, 2002; Gatherer, 1997; Blackmore, 1999; Dennett, 1995; Dawkins, 1976). Memes, like genes, are replicators, entities capable of, given specific conditions, mediating the production of copies of the information that they contain and transmitting them to other vehicles or interactors. Memetics deals with explanations of virtually infinite aspects of cultural life. But, despite daring to try to explain innumerable aspects of human life, memetics does not explain everything. Our own genes and bodies, our complex emotions and sensory perceptions, the acts of eating, having sex, breathing, our cognitive maps, the associations we make between sounds and smells, are not memes, despite our undeniably employing languages and ideas so that we can communicate regarding these phenomena (eating, breathing, etc.). We should, therefore, seek to know how the ideas that we receive from the family, traditions, books and other means of transmission interact with those biological structures, sensory and motor, that we have inherited from our ancestors.

Studies on memes can be found in specialized publications, such as the *Journal of Research in Memetics*. Unfortunately, these works are almost unknown outside their limited circles. There are, nevertheless, excellent critiques, such as those of Wimsatt, in *Biology and philosophy* (1999) and especially in the collection assembled by anthropologist Robert Aunger, *Darwinizing culture: the state of memetics as a science* (2001). In another book, authored on his own, *The electric meme*, Aunger (2002) distinguishes two alternative ways for understanding memes: by analogy with genes; by analogy with viruses and other infectious agents. Our study is centered on the second analogy.

We sustain here that Borges, certainly with no knowledge of memetics, creates a world in which ideas play replicator roles, jumping from one human being to another using human brains, books and texts as vehicles. For that reason, Borges' fantastic stories do not merely satisfy our sublimation needs, but also our cognitive yearnings (Scholes, 1975).³ Such Borgean tales can be seen as living creatures. But how do these specific forms, the designs of these literary beings, emerge?

Dreams and being possessed by fantastic objects are, undeniably, Borgean obsessions. Several of his short stories, essays and poems have been seen and interpreted through a post-structuralist lens, understanding his texts as the confirmation of a central irrational theme: the idea that

our entire knowledge of the world is a mere text, the equivocal reflex of our language itself, a limited cerebral and mental structure that restricts us to circular labyrinths (Antelo, 1994; Barrenechea, 1984; Blanchot, 1984). On the contrary, we will try to demonstrate that Borges' texts can be better understood through the lens of evolutionary theory (Carroll 1995) and memetics.

There are innumerable examples in the fantastic literature of Borges for which it can be said that the ideas or memes govern the characters' lives. In an essay entitled "*La muralla y los libros*" ("The wall and the books"), Borges wrote about the Emperor Shi Huang Ti, who ordered the Great Wall of China to be built. He also ordered the destruction of all books written before his reign (deleting three thousand years of history). After listing and commenting concisely but profoundly on the possible reasons for this absurd incongruity, Borges writes:

it is probable that the idea itself touches us, beyond the conjectures that it allows (Its merit may lie in the opposition of constructing and destroying on an enormous scale). Generalizing the previous case, we could infer that *all* forms have merit in themselves, rather than in a conjectural 'content'. This would agree with Benedetto Croce's proposition; meanwhile, Pater, in 1877, affirmed that all of the arts aspire to the condition of music, which is nothing but form. (Borges, 1986, p.177).

We wish to direct the reader's attention to Borges' reference to the concepts of 'idea' and 'form', as opposed to the concept of 'content', which here seems to refer to the conjectural pattern of any subjective operation. The text proposes a hypothetical induction: beginning with 'one' case in which an idea, or form, by its own merit, jumps inductively to 'all' forms and ideas. For Plato, the idea or form has its own existence. For Borges, meanwhile, the idea does not live in a transcendental or celestial world – it lives in human brains and, in a more perennial form, in books as well. Like a virus, it uses humans to express itself. What is really important is that the idea or form in his text acquires a type of autonomous or independent life.

In another essay, "*La flor de Coleridge*" ("The flower of Coleridge"; Borges, 1974, p.639) Borges, mentioning Paul Valéry, asserts:

Around 1938, Paul Valéry wrote: "The History of Literature should not be a history of the authors and the events of their careers or the career of their works, but the History of the Spirit as a producer or consumer of literature. This history could be written without mentioning a single writer". This was not the first time that the Spirit had formulated that observation; in 1884, in the town of Concord, another of its amanuenses had noted: "it could be said that only one person has written all of the books in the world; there is in them such a central unity that it is plainly the work of one omniscient gentleman" (Emerson: *Essays*, 2, viii). Twenty years later, Shelley opined that all poems of the past, present and future are episodes or fragments of a single infinite poem constructed by all of the poets of the earth.

The role of the writer is relegated and the Spirit (literary), this fantastic complex of memes, is raised to the position of subject. Writer, artist, human being, all become the object of Art, which exists in and for itself. In the same essay, Borges clearly says that he intends to accomplish the modest proposition of telling the story of the evolution of an idea: that the author is something used by books to reproduce themselves. This could be seen as an extension of the idea that the chicken is the means by which the egg produces another egg (Eco, 1989, p.159).

The difference between replicator and vehicle is fundamental to understanding memetics and its affinities with Borges. When Borges affirms that the history of literature could be narrated without mentioning a single author, we believe that he wishes to reinforce two points: that, at the time that he wrote this, there was still a great tendency to study the history of literature as a mere study of a collection of authors; the importance of focusing on ideas, instead of individual authors. We, as producers or consumers, artists or readers, of literature, are vehicles. The ideas, the memes, are the mental substances of which our minds are constructed.

In the introduction to his *Nova antologia pessoal* (*New personal anthology*), Borges proposes that an author should interfere as little as possible in the construction of his own work. In the essay “*O sonho de Coleridge*” (“The dream of Coleridge”) Borges (1986, p.542-645) argues how the same idea in a dormant state can cross vast geographies and centuries, using distinct individuals and minds to become objective, whether as a royal palace or a romantic poem.

In our opinion, some of the most profound ideas regarding human nature are present in the Borges story “*El inmortal*” (“The immortal”). One of the most important focal points in it is the City of the Immortals, a magnetic pole that attracts the protagonist and, naturally, the reader. A palace of light, a city of promise, a marvelous and safe haven for humans to dwell together – forever. We believe that Borges constructed in this adventure a figure who will be destroyed by his own narrative course. But this destruction is a very special type of construction, that of a literary machine, a machine in the sense of creating meanings and putting them in check. In a word, a machine, from the viewpoint taken by many biologists and philosophers who consider biological phenomena (Dawkins, 1976; Blackmore, 1999).

In a very peculiar sense, Borges’ stories are incursions into the unknown, as in a certain way are science and philosophy. In “*El inmortal*” the protagonist, a Roman tribune serving the emperor Diocletian, at war’s end receives news from a dying cavalryman of a fabulous city of immortals. The tribune recruits over 200 men and together they enter an infinite desert, seeking the fabulous city and its wealth. But the enterprise is a disaster. As time passes and no immortal city appears, the men refuse to continue, even planning to mutiny against the tribune/protagonist. Finally, following various incidents, the tribune, after drinking from a polluted river, is then able to find his way through a convoluted labyrinth and succeeds in reaching the presumed city of the immortals.

The City of the Immortals appears to the tribune/protagonist to be an enormous and uninhabited palace, without rhyme or reason. The sense conveyed by this structure is one of total disruption: the ceiling has doors that open to nowhere, with unreachable windows forming part of a construction in which no living soul is found. The short story contradicts the expectations of the reader, who has been led to believe in the perfection of the city of the immortals. This obligates the reader to reconsider information that had previously seemed unquestionable. In any event, the idea of a perfect city impels the protagonist’s story, his actions are ruled by a final cause, the city. Nevertheless, such expectations are frustrated by the course of the narration itself. An open teleology is in progress.

The tribune flees the city and stays for many years in an aphasic tribe of troglodytes near the high walls of the city. Then, one day, he discovers that the troglodytes are, in fact, the immortals, that the dirty river from which he drank was the river of immortality and that the

city itself was constructed to celebrate and justify a bizarre immortal conception of the world, based on a dogmatic system of precise compensations, under which all ideas and human artifacts exist to justify and offset each other:

Indoctrinated over a period of centuries, the republic of the immortal men had achieved perfection in tolerance and almost contempt. It knew that an infinite time occurs to all men and all things. His past or future virtues make every man a believer in complete goodness, but also in complete betrayal, given his past and future infamies. Just as in games of chance, equal and odd numbers tend to equilibrium, so do talent and stupidity nullify and correct each other The most fleeting thought obeys an invisible design and can crown or initiate a secret formula. I know of those who practice evil so that good may occur in future centuries or because it had occurred in centuries past. Considered in that light, all of our acts are just, but also indifferent. There are no moral or intellectual merits. (Borges, 1974, p.540-541)

The system of the immortals is a complex of memes which affirms that, if we consider an infinite time period, all events in the world must be compensated by their opposite. Nevertheless, in this context, memes of opposed value lose all of their 'value'. In our opinion, such a system could be understood as an ironic criticism of the idea that any theory must create its own proof. Instead, it has been interpreted, in post-structural terms, as the negation of the value of all knowledge (Antelo, 1994). The system of the immortals is teleological, it is the end to which they dedicate themselves to justify and prove. But such a system is also self-contradictory, because if there is a system of precise compensations, there must be in compensation, according to the doctrine of the immortals, a system of imprecise compensations, or a system of precise "discompensations", if you'll excuse a dissonant neologism. Perhaps as a result of this, the immortals are imprisoned in a labyrinthine mirror of pure thought, demonstrating no interest in physical or social reality. On one level, Borges criticizes teleological reasoning in his supposition of a perfect agreement between ideas and reality, but on another, he constructs the text teleologically, placing final causes side by side with efficient causes.

"In my opinion, the conclusion is inadmissible"

In recent decades, some scientists and scientific philosophers have defended the thesis that the principle of rationality requires the exclusion of explanations in terms of ends, or final causes (Popper, 1972; Monod, 1971), since science deals with efficient, not teleological, causes. In spite of this, one of the most provocative debates in the philosophy of evolutionary biology is the one that discusses the complementarity between proximate (or efficient or immediate) and distant (or historical or ultimate) causes (Mayr, 1982; Martinzez, Bahona, 1998; Hull, 1975). It is important to emphasize that, for Mayr, there are four different types of meaning for teleology, or explanation by final causes. One of them is cosmological, or vitalistic. Mayr denies its validity for explanations related to biological sciences. In our opinion, Borges' literary devices and his teleological narrative are also in no way related to a directionality pre-determined by an omniscient mind. His texts seem to say that even in a very well defined structure of ideas or theories, there should be no inflexible guide for behavior, nullifying free

will. If memes are replicators like genes, then we human beings, although constituted of them, can struggle against them and even change them.

When Charles Darwin structured his book *The origin of the species*, he must have come across the following problem: how to construct a comprehensible text to explain the evolution of new species through the mechanism of natural selection? As many had already noted, Darwin began his abstract by showing the importance of artificial selection for the domestic production of animals and plants. By preparing the field for the appearance of natural selection through the use of artificial selection, Darwin reinforced the importance of analogy and metaphor in science, while, at the same time, introducing a teleological procedure. Darwin's initial intention was to prepare the reader for an outcome: the process of natural selection, which molded structures and behaviors that only apparently responded to biogeographical and ecological demands. But in his age, under the influence of Lamarckian thought, 'it seemed' that the biological species, individuals and their survival and reproductive structures had been planned by an intelligent designer to adapt perfectly to their specific purposes: wings to fly, stomachs to digest, eyes to see, kidneys to filter and leaves to capture light. The paradigm now accepted is the one which professes that living organisms are constructed in accordance with instructions present in their genes; there is no intentionality in the process, only blind variation being modeled and modulated by natural selection and other random phenomena. But today we know there are several types of natural selection. In so-called channeled selection, a mutation (always random) can open phenotypic or behavioral paths that favor making use of other mutations, amplifying the initial effects and conferring an aspect of perfection to evolutionary adaptations. Once again, selection is channeled, not intentional, there is nothing like a God or Planner operating behind the curtains of nature. Evolutionary biology interprets the apparent planning as a result of historic events expressed in a genealogical and narrative chain. Some literary aspects – such as teleology, metaphor and other narrative techniques – are clearly present in this scientific theory (Martinez & Bahona, 1998; López Beltran, 1998; Hull, 1998; Richards, 1998).

In "*El immortal*" one of the narrators says, following 17 centuries of misadventures and narrative art: "*A mi entender, la conclusión es inadmissible*" ("In my opinion, the conclusion is inadmissible"; Borges, 1974, p.544). Borges' world is not constructed to mimic reality, but to construct a fictitious reality. His teleological procedure deals with the self-consciousness of critical language that is created to doubt itself. If *The origin of the species* were read in light of Borges' ideas, it could be seen as a Borgean organism, since it uses teleological arguments, the evolution of life being an open process that has molded creatures that perform functions. Teleology here refers to an explanation by distant, but not necessarily definitive, causes. A case in point is "*La trama*", in which characters die so that literature can perpetuate itself. It is apparently concerned with a rigidly determined final cause. Meanwhile, in several texts, Borges is only satisfied when he requires the explanation by final causes to take its own poison. As a result, he relativizes any possibility of a sole sovereign entity, placing on the wheel of meanings, the apparently totalizer meaning itself. In the double sonnet "*Ajedrez*" ("Chess"), the last triplet reads: "God moves the player, who moves the pawn./Which God behind God begins the conspiracy/of dust and time and dreams and agony?".

Since any theory, even a scientific one, is the product of human language, it must be planned with instructions to protect itself against self-affirmation and self-illusion. The fictitious

arts can play a special role in this most arduous task. When Borges, in *"Avatares de la tortuga"* ("Avatars of the tortoise"), citing Novalis, writes of a sorcerer trapped in his own magic (Borges, 1974, p.258), he is, in our opinion, showing the limits of human imagination and, simultaneously, focusing on the teleological possibility of attributing understanding and meaning to a universe that may be lacking in meaning.

Science and literature are not things or substances, but processes. Borges' sharp critical sense is always alert to deny any scientific or philosophical theories, however elaborate they may be. In this elusive process, language becomes a quagmire, in which many pitfalls can imprison the reader. For example, the paradox of the liar is present in several of Borges' stories. In *"El immortal"* the poet-narrator says, on re-reading his own narration, that poetry contaminates everything with falseness. If we consider that Borges' poetic vein appears in his narrative, then the story is telling us that the story itself (or part of it) is false. This literary procedure could be studied within the work of Borges as the evolution and maturation of self-critical memes. The lack of closure in Borges' short stories rightfully tallies with the tendency of all language to become totalitarian, hegemonic, in affirming its own truth.

In our opinion, this is the point where Borges' language closely approaches the principle of rationality to which Newton-Smith refers in his criticism of Karl Popper (Newton-Smith, 1997): all theories and discourse that wish to be rational (and not only scientific, as Popper would like, according to Newton-Smith) must consider the possibility of being wrong. If fictional language can question itself, this can be considered an advance in thought, because even in the fictitious world a character can question his own knowledge. In other words, someone's doubt could be interpreted as a type of rationality, and the type of questioning that occurs in the writings of Borges can be seen as strengthening reason instead of deconstructing it, as most of the post-structuralists have interpreted it.

Borges once said that literature is a form of happiness. Unfortunately, more aggressive and virulent memes now dominate the hearts and minds of so many people around the world. But we nourish the hope that this is not a definitive situation. The memes of rationality, democracy, philosophy, science, culture and art remain unquestionably alive, although many of them are, without a doubt, enfeebled. Naturally, these ideas involve values and values engender conflicts. Conflicts between ideas, wars between partners who do not know exactly what the other is thinking. In *"Guayaquil"* (Borges, 1974, p.1062-1067), *El informe de Brodie* (*Dr. Brodie's Report*), *"El soborno"* ("The bribe"; Borges, 1989, p.57-61) and *"El libro de arena"* (*The book of sand*; Borges, 1989, p.13-21), Borges' characters are prisoners in a teleological structure. These stories are not exceptions. It is no coincidence that this ethical and moral problem is so important to evolutionary psychology. Memes, like genes and biological species, are, from the philosophical point of view, particular. Just as between ourselves and the very genes we carry there may be conflicts of interest, there are also conflicts of interest between us and the ideas we receive. This can seem strange in principle, but we believe that everyone everywhere has already experienced the force of fixed ideas. Borges perceived many of these conflicts between the interests of human beings and those of the ideas themselves, which can possess mechanisms for replicating themselves, contrary to our will.

The problem of Borges' narrative is not representing reality with its efficient causality, but rather postulating values as meanings, or meaning as value, taking truly and literally serious

our desire to discover order in chaos. The consequences for literature, as well as philosophy and science, are open to investigation, but we suspect that such consequences are principally moral and ethical. Now that war between different world views is becoming increasingly evident, it would not be absurd to investigate Borges' narrative procedure, not as a fixed object, but as an open process. The solution could provoke a more general reflection on the type of history we wish to write, consciously or otherwise. It deals with our very future (which is always subject to chance), not divinely determined, but limited and free at the same time by mental, ideational, social, cultural and biological instances.

NOTES

¹ This and other quotations of foreign language works cited in Portuguese were freely translated into English

² The author recognizes his indebtedness to the notes of Carlos Alberto Passos, in a conference on fantastic literature sponsored by Borges on December 2, 1949.

³ Robert Scholes (1975, p.4, 5) affirms that "fiction has been characterized by its ability to realize two functions" and that "we call these functions sublimation and cognition".

REFERENCES

- ANDACHT, Fernando T.
Semiosis y teleología en algunos relatos de J.L. Borges: un encuentro no fortuito entre Borges y Peirce, dos maestros de los siglos del final. In: Toro, Alfonso de; Toro, Fernando de (Org.). *El siglo de Borges*. v.1: Retrospectiva – presente – futuro. Madrid: Iberoamericana. p.103-128. 1999
- ANTELO, Raúl
A comparação elidida: a memória de Brodie. *Revista Brasileira de Literatura Comparada*, São Paulo, n.2, p.181-189. 1994
- AUNGER, Robert
The electric meme: a new theory of how we think. New York: The Free Press. 2002
- AUNGER, Robert (Org.)
Darwinizing culture: the state of memetics as a science. Oxford: Oxford University Press. 2001
- BARRENECHEA, Ana María
La expresión de la irrealidad en la obra de Borges. Buenos Aires: Centro Editor de America Latina. 1984
- BLACKMORE, Susan
The meme machine. Oxford: Oxford University Press. 1999
- BLANCHOT, Maurice
O livro por vir. Lisboa: Relógio d'Água. 1984
- BORGES, Jorge Luis
Obras completas: 1975-1985. Buenos Aires: Emecé. 1989
- BORGES, Jorge Luis
O fazedor. Rio de Janeiro: Bertrand. 1987
- BORGES, Jorge Luis
Nova antologia pessoal. São Paulo: Difel. 1986
- BORGES, Jorge Luis
Obras completas: 1923-1972. Buenos Aires: Emecé. 1974
- BROWN, Donald
Human universals. Boston: Mac Graw Hill. 1991
- CARROLL, Joseph
Evolution and literary theory. Missouri: University of Missouri Press. 1995
- DARWIN, Charles
The origin of species. New York: Penguin Books. 1968
- DAWKINS, Richard
The selfish gene. Oxford: Oxford University Press. 1976
- DENNETT, Daniel C.
Darwin's dangerous idea. New York: Penguin. 1995

- ECO, Umberto
Sobre os espelhos e outros ensaios. Rio de Janeiro: Nova Fronteira. 1989
- FOUCAULT, Michel
The order of things: an archaeology of the human sciences. New York: Pantheon Books. 1970
- GATHERER, Derek
Macromemetics: towards a framework for the re-unification of philosophy. *Journal of Memetics – Evolutionary Models of Information Transmission*, n.1. Available at: http://www.cpm.mmu.ac.uk/jom-emit/1997/vol1/gatherer_dg.html. Access on: 13 mar. 2001. s.d.
- HEYLIGHEN, Francis
What makes a meme successful? Selection criteria for cultural evolution. Available at: <http://www.pespmc1.vub.ac.be/Papers/MemeticsNamur.html>. Access on: 22 set. 2002. 2002
- HULL, David
Sujetos centrales e narraciones historicas. In: Martínez, Sergio; Barahona, Ana (Org.). *Historia y explicación en biología*. México: Fondo de Cultura Económica. p.247-272. 1998
- HULL, David
A filosofia das ciências biológicas. Rio de Janeiro: Zahar. 1975
- LÓPEZ BELTRAN, C.
Narrativa y explicación en las ciencias naturales. In: Martínez, Sergio; Barahona, Ana (Org.). *Historia y explicación en biología*. México: Fondo de Cultura Económica. p.197-211. 1998
- MARTÍNEZ, Sergio; BARAHONA, Ana (Org.)
Historia y explicación en biología. México: Fondo de Cultura Económica. 1998
- MAYR, Ernest
The growth of biological thought: diversity, evolution and inheritance. Cambridge (Mass.): Harvard University Press. 1982
- MONOD, Jacob
Chance and necessity. New York: Knopf. 1971
- NEWTON-SMITH, W.H.
Popper, ciência e racionalidade. In: O’Hear, A. (Org.). *Karl Popper: filosofia e problemas*. São Paulo: Ed. Unesp. p.21-40. 1997
- PINKER, Steven
Tabula rasa: a negação contemporânea da natureza humana. São Paulo: Companhia das Letras. 2004
- POPPER, Karl R.
Conhecimento objetivo. Belo Horizonte: Itatiaia. 1972
- RICHARDS, Robert J.
La estructura de la explicación narrativa en historia y biología. In: Martínez, Sergio; Barahona, Ana (Org.). *Historia y explicación en biología*. México: Fondo de Cultura Económica. p.212-246. 1998
- RICOEUR, Paul
Interpretação e ideologias. Rio de Janeiro: Francisco Alves. 1990
- RODRÍGUEZ MONEGAL, Emir Borges
Uma poética da leitura. São Paulo: Perspectiva. 1980
- SCHOLES, Robert
Structural fabulation: an essay on fiction of the future. Notre Dame: University of Notre Dame Press. 1975
- WAIZBORT, Ricardo F.
A representação da irrealidade: aproximações preliminares entre as poéticas de Cortázar e Borges e o Mundo 3 de Popper. Thesis (Doctorate) – Universidade Federal do Rio de Janeiro, Rio de Janeiro. 1998
- WIMSATT, William C.
Genes, memes and cultural heredity. *Biology and philosophy*, n.14, p.279-310. 1999