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Research Article

THE THEORY OF COMPLEXITY AND THE FLYING ISLAND OF LAPUTA IN THE BOOK THE GULLIVER'S TRAVELS OF JOHNATAN SWIFT: A POSSIBLE CRITIC

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ABSTRACT

This article aims to present an analogy between the Jonathan Swift's satiric approach on The Gulliver's Travels on the flying island of Laputa in relation with the academic practices and the complexity theory postulated by Edgard Morin (2008). It intends to evidence how the events happened in the story are concerned with the holistic and integral vision of the pedagogical making. It starts portraying the systems and complexity theory and draws a glimpse of the historic trajectory of paradigms and their influence in the ways of thinking on a period. From there on, it discusses about how a paradigm can establish ways of thinking in individuals. After that, the dominant, residual and emergent aspects in the context of behavior and action of individuals are discussed. On these steps, it introduces the author Jonathan Swift and his book as an anticipation of the Morin's points of view on the complexity theory. To finish it analyses the parallels between the problem of the university portrayed by Swift (2004) and by Morin (2008) about the inconsistency of the knowledge compartmentalization and the need of an approach according to an interdisciplinary, complex and emergent paradigm in order to make possible the knowledge humanization and modernization. With the theory of complexity, it is increasingly discovered that there are no vain or real boundaries between epistemologies. Theorizing without practice results in a world of disinterested and alienated because knowledge becomes an end in itself. In the work of Jonathan Swift discussed here, there are, in fact, criticisms that show similar problems to those experienced today by the university, which suggests little or almost no evolution since then. There are clear similarities in the points of view between Swift (2004) and Morin (2008), of course, but not in how to approach the subject.

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INTRODUCTION

Studies of human brain physiology investigate the complex relationship between neural communication networks, processed by synapses, and higher mental functions. For the sake of simplicity, the appearance of a neuron, seen in an electron microscope, can be likened to a fried egg seen from above, and which has, along all its edges, crusty branches, from which erupt hundreds of fine roots as bean sprouts. However, from one of the banks, a tail similar to a mooring or strip of sausages is followed by a further hundreds of strains as shaggy filaments.

By means of the above metaphorical description, we intend to make visible a nerve cell, which is composed essentially of three regions responsible for specific functions: the pericary or body, the dendrites (from the Greek *δένδρον*/ *déndron* = tree), that are short, branched out profusely, and were designed to receive electrical stimuli that excite the membrane; and axons

(from the Greek *ἄξον* *áxon* = axis): a single but larger filament than the dendrites, and they serve as transmitters. In them, there is a coupling cone, a conducting tubule and a terminal rod where the axon contacts the other neighboring neurons to share information. The nervous system is composed of a complex set of neurons that interact to share information by connecting to each other through the process called the synapse and forming a neural network. It follows that this intricate network of information sharing forms a system that is capable of inferring and producing cognition. Christakis (2011) says that "you could know everything about isolated neurons and not be able to tell how memory works or where it originates." These findings about the complex mode on which the brain works brings a reverential admission of agreement to the Aristotle's postulate (385-322 BC) on systems when he says that "the whole is greater than the sum of its parts." To exemplify the idea that underlies this holism, Christakis (2011) thus expresses:

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You can join a handful of tiny crystals of silica accumulated for thousands of years by the waves, use your hands, and mold a sandcastle. Physical forces govern how each particle must interact with its neighbors, keeping the castle together until, at least, the force of one foot appears. (...) There is an astounding kind of synergy between the parties" (CHRISTAKIS, 2011).

In essence, it is understood that the propositions of Morin (2008), regarding the theory of complexity, are based on the bases of the theory of the systems. At first glance, a tissue (complexus: what is woven together) of heterogeneous constituents inseparably associated: it places the paradox of the one and the multiple. In the second approach, complexity is effectively the fabric of events, actions, interactions, feedbacks, determinations, accidents, which constitute our world. (Morin, 2008, p.20 – My translation).

The example of Christakis (2011) helps to understand that "There are emergencies and qualities that do not exist at the level of the parts when they are isolated." (Morin, 1994, p. 28). The complexity or "association of heterogeneous associates" is evident in the natural world as in the cycle of water, in the exchanges of photosynthesis and respiration, in the interdependence between the respiratory and circulatory systems. This is called by Behe (1997), of irreducible complexity, and exemplifies with the system of a mousetrap with respect to the way in which, in the isolation or absence of one of its parts, the whole system collapses. Hence, the importance of the ecology of knowledge. Although the theory of complexity seems obvious at the beginning of the 21st century, the history of science shows in the etiology of scientific method an enchantment with the method of detailing, subdividing, and isolating the parts. This fascination became fossilized because "the constellation of beliefs and values of the scientific community" - concept enveloped in the term paradigm by Khun (1962) - ab ovo shaped scientific social thought.

Theoretical assumptions

The worldview that the secrets of all phenomena would be focused on the details, coined the lenses by which everything was analyzed, except the lenses themselves.

Thus, Bacon's idea (1561-1626) was that "*the simple ordering of data would make the hypothesis obvious. Four rules are thus established: evidence, analysis, (which implies a breakdown of parts), synthesis and enumeration*" (HEGENBERG, 1976, p.117) Descartes (1596-1650) succeeds Bacon postulating that "*everything must be approached on the basis of the parts that make up the whole*" - atomic detail, i.e, to understand the whole, it is enough to understand the parts of that whole. Comte (1798 - 1857) thought that nature is composed of classes of phenomena and divided the knowledge into six different sciences: Astronomy, Chemistry, Physics, Philosophy, Social Physics and Mathematics. The latter, he hierarchized it by adjectivizing it of Higher Science, because of its patronage for abstraction, and in this view, supposedly all other sciences would depend on it. It is true that, by the use of scientific principles, man disowned ignorance and improved the quality of life of mankind. Nevertheless, the historical legacy bestowed by the divisive paradigma has proliferated epistemological ramifications that isolate the knowledge, and sometimes even the synchronous operations indissociable and indispensable to

the complexity of systems, in hermetized compartments, which can counteract the advance, eclipsing the integral knowledge, in the way that it is impossible to see the forest because of the trees. It is possible to understand the force that the paradigm exerts in the ways of seeing the world when it is considered, according to Durkheim (1978), that "*Society is an outer organism and greater than the individuals*". Thus, "*the relationship between individuals and the community*" is also supposed to be scientific, "*it is the establishment of harmonious consensus*" in a "*collective consciousness*" that is a general normalization of individuals' behavior and way of thinking, since, "*the thinking of people is shaped by what is taught to them.*" It may be said that, the paradigm of an age is a "*trainer of individuals.*"

The man that education must accomplish in each of us is not the man that nature did, but the man that society wants him to be; and she wants it as she claims her internal economy, her balance. (DURKHEIM, 1978, 115).

In this same line of thought, Morin (2006, p.10) warns that paradigms are "hidden principles that govern our view of things and the world without our being aware of it." Marcuschi (2007, 83) argues that "culture, society and cognition are at the basis of our ability to think and tell the world," Bourdieu (2005) speaks of "implicit internalizations" using expressions such as "unconscious thinking schemes", "unexplained internalizations" and "underground affinities" to characterize what can be understood as the paradigm of an Era.

Thus, in each age of each society, there is a hierarchy of objects of legitimate study that can be imposed in a more total way because there is no need to be explicit once it appears as if it had been deposited in the instruments of thought that individuals receive in the course of their intellectual learning [...] underground affinities which unite human works, find their principle in the school institution invested with the function of consciously (and also to some extent, unconsciously) transmitting the unconscious, or rather producing individuals endowed with this system of unconscious (or deeply internalized) schemes that constitute their culture". (BOURDIEU, 2005, pp. 211- 213)

In this perspective, Bakhtin (2006, p. 47) says that "*consciousness is a socio-ideological fact*" and that "*the processes that determine the content of the psyche do not develop in the organism, but outside it*", thus "*social factors determine the concrete life of a given individual, under the conditions of the social environment.*" This is also how William Williams (1979) states: "*Society is not just the dead shell that limits social and individual achievement. It is always a constitutive process with very powerful pressures that are internalized and become individual wills.*" (WILLIAMS, 1979, p.91). Besides understanding the force that the paradigm exerts in the ways of seeing the world, it is also urgent to realize that each paradigm has inexorable consequences. Souza (2009) exposes some entanglements derived from paradigms in contrasting medieval and anthropocentric societies.

For the medieval man, everything was actually sacred because it had been created by God and it was up to man to contemplate and understand the harmony existing in the Universe. This was also a time of much repression, of blind respect for religious

authorities, and as a consequence, there were almost no scientific innovations. (SOUZA, 2009, p.3).

Although mistakenly, some statements of the ecclesiocentrist period could well be attributed to people like Caligula (12-41 AD), Nero (37-68 AD), Hitler (1889-1945), or Virgulino (1898-1938) such as:

1. "Anyone who tries to have a personal vision of God that conflicts with the dogmas of the church should be burned mercilessly." (MUNOZ, 2012).
2. "Never ask ... but bury your sword in the man's belly as far as she can go." (LEA, 2012).
3. "There should be no delay, but at the slightest suspicion, rigorous measures must be taken swiftly." Secondly, no consideration should be shown to any prince or prelate, even though his position is high. Against those who seek to shelter themselves under the protection of any power, and fourth, no man should diminish himself by showing tolerance." (AMOIA, 2012).
4. "With regard to heretics, two points must be observed: one from his own side, the other from the side of the church, from his side there is sin, and deserve not only to be separated from the church by excommunication, but For it is a far more serious matter to corrupt faith than to falsify money, which sustains temporal life. If money forgers and other malefactors are condemned to death by secular authority, much more is there for heretics, as soon as they are convinced of heresy, are not only excommunicated but also put to death." (AQUINO, 2006).

However, they are from (1) Pope Innocent III, (2) the inquirer Bernardus Guidonis, who is the author of the book *Practica Inquisitionis*, (3) Cardinal Giovanni Caraffa and (4) Thomas Aquinas.'

One of the consequences and repression of which Souza (2009) speaks was the court of the Catholic Church responsible for the investigation and punishment of alleged heresies called the Tribunal of the Inquisition. It was characterized by the severity in questioning and punishment, as well as by the absence of rights to the accused. During the Middle Ages, the inquisition shed a lot of blood, like John Brown's who had his feet baked before being tied to the stake, Helen Stark who was sentenced to be tied with her baby in a sack, and then both drowned, or eight-year-old Billy Fetty, who was slain to death because he had shown sympathy for his father, while for two weeks he had been suspended by one leg and one arm. (FOX, 1847).

For the time, there were sophisticated devices to cause pain and had the inscription: "Glory Alone to God". In the torture chambers, they could be very persuasive. For example, the Inquisitional Chair was covered by sharp spikes in the backrest, arms, and seat. This chair, exhibited in the museum of San Gimignano, has 1300 skewers. Another instrument was the Fork of Heresies and consisted of two small forks forged one against the other, having four points to prick the meat under the chin and above the chest. A small collar held the instrument so the victim was forced to keep his head erect and motionless. This fork did not penetrate vital points, so the suffering was prolonged and death avoided. Another instrument was the *Pear of Anguish*, a composite pear-shaped instrument and four leaves that slowly opened as a sort of inner bolt was unscrewed. It was used to torture women, supposed liars,

blasphemers and homosexuals. The pear was inserted into one of the victim's orifices - vagina, anus or mouth - in order to dislocate bones, distend muscles, and tear the flesh of those who did not follow the medieval paradigm. Many dictators in history seem to have followed the argument paradigm of Aquino (2006) as Idris Naim Sahin, Turkey's interior minister in 2011:

Freedom ... what freedom are you talking about? So do not complain when you're arrested. If there is no freedom outside, there is no difference inside. The fact that you complain means that there is freedom from the outside ... In destroying you, as well as that or whoever you speak, we are trying to liberate you, as well as your structures, the separatists and their ramifications. That's why we're doing it, a very deep, very sophisticated work." (ZIZEK, 2012)

Zizek (2012) comments on this discourse as follows

He said that the Turkish police were arresting thousands of members of the Peace and Democrat Party, without evidence and without trial, "to convince them that they were actually free before they were arrested." Its first premise is simple: if we affirm that there is no freedom in our society, then we do not protest when we are deprived of it, since we cannot be deprived of what we do not have. So when the police arrest us and destroy us, it is freeing us from our self-imposed slavery. Thus arresting suspected rebels and torturing them becomes a very deep, very sophisticated work". (ZIZEK, 2012, Chapter 6). Another example that can be mentioned in the story about the consequences of a misunderstanding of times was Hitler's action (1889-1945) during World War II (1939-1945) leading the holocaust of more than six million Jews in camps of concentration, gas chambers and collective tombs.

The emerging anthropocentric paradigm after the publication of *The Origin of Species* (1859) by Charles Darwin (1809-1882) presented observations that in nature there is the law of the fittest, ie, the fittest survives and the species are evolving. Hitler might then have postulated that the Aryan people were in more advanced stages in evolution and that ethnic groups such as Jews, Blacks, or non-Germans should be extirpated in order to aid nature in its task of selecting the fittest. Note that in this conception, if it is natural for the strongest to survive and devour the weakest, then, rather than genocidal, would Hitler not only be a victim of the paradigm? Would not selfishness, lack of solidarity, individualism, and environmental devastation be natural too? Of course not.

Apparently it becomes quite comfortable the idea that if individuals are the fruit of social formulation and that their views, way of thinking, value judgments and arbitrations are coined in a gauge also made by the social, then there would be no responsibilities to the individual in the face of their choices and actions. It could easily be said that the spirit of the age is that it is the supreme responsible for errors or successes, crimes or improvements, wars or peace agreements. That would make everyone innocent, and make of humanity a whole bunch of dolls programmed to function within the fictional deterministic saga of matrix. Perhaps this was the sentiment perceived by Fyodor Dostoevsky in his fellow prisoners in Siberia, where he had been imprisoned in the 1840s for subversion by stating, "*In the course of several years, I have never seen any sign of repentance among these people, and no trace of sad thought*

about their crimes, and most of them in their hearts considered themselves absolutely right." (FRANK, 1999). It cannot be ignored that there is immanently in the structure of human thought a questioning primordial awareness or consciousness of the spirit of the time. As in the studies of Freud (1856-1939) and Lacan (1901-1981), one asserts that there is an Id, Ego and Superego to counterbalance the decisions of the individual, it is therefore assumed that this also occurs in social perceptions of customs and social status quo at the time differing from the ideal, otherwise society would be doomed to stagnation by producing a cyclical history that would repeat its past mistakes in other contexts, but without any progress at all.

There are, however, other points of view regarding the organic structure of history: the rectilinear and the spiral. As opposed to cyclical, the straightforward conception of history advocates a constant development without the repetition of the errors of the past although under similar circumstances, however, the rescindivas lay against this vision. The spiral understands that the history of societies is a spiral. For this school, society repeats its mistakes but learns from them and advances in the reconfiguration of its paradigms. Regarding this process, Luckesi (2003) lists the basic elements that make up a new paradigm: feeling, movement and thinking.... movement, feeling and thought take place together and integrated in the body of the human being. As he moves, he feels and thinks; while feeling, moving and thinking; and, while thinking, feeling and acting "(LUCKESI, 2003, p.7).

Thompson and William (1979) deal with this movement in the study of the arts, and how the feeling of an age shifts from its dominant aspect to the residual and emergent being constructed, resignified, and conveyed in the sense of escaping from the cell of thought, and conclude that the artist usually glimpses more easily the emergent and opts for it.

One of these artists who glimpses the emergent was Jonathan Swift who, in publishing Gulliver's book *The Travels* in 1776, anticipates a glimpse of complexity theory by criticizing, through satire, the paradigm of academia that exists on the flying island of Laputa, where everything is theory and nothing practical; where a true example of what Capra (1997) calls "*the reductionist, fragmented and simplified view of the academic world that does not express the unity and diversity existing in the whole.*" (CAPRA, 1997, p.1). This was a reference to the Royal Society founded in 1660.

Although *The Gulliver's Trips* is currently regarded as children's literature because of its fabled or fantastic adventure, Swift actually reveals to his friend Alexander Pope that he could not stand children and that he wrote with a pretense of assaulting the world, it.

METHODOLOGY

The methodological plan of this article was anchored on the assumption that the theory of complexity and interdisciplinarity were tacitly defended by Johnatan Swift in his work "*The Guliver's Travels*", in this way, a bibliographical search was made that would discuss these theories by then their ideas are contained in *The Gulliver's Travels* book.

RESULTS

Jonathan Swift was born in the city of Dublin, Ireland, in 1667. His mother funded his studies with the help of his brothers-in-

law until he graduated in Arts at Trinity College in 1686. At age 21, he moved to London where he was the secretary of diplomat Sir William Temple, a relative. In 1694 he obtained a doctorate in Theology from the University of Oxford. Two years later, he wrote *The Tale of Tanel* criticizing the religious life. His conception that human stupidity is responsible for social weeds has characterized his satirical works or essays. In 1736, he fell ill with deafness, and perhaps suffered from Alzheimer's or Ménière's Syndrome, and died in 1745.

Jonathan Swift's satire criticizes and ridicules the vices and defects of society. This did not leave out the paradigm followed by science at the time. It can be seen that Swift escapes from the paradigmatic thinking cell of the time when he considers what Orwell (2005) says about him: "*He is a conservative anarchist, who disdains authority at the same time as he does not believe in freedom, which preserves point aristocratic view while at the same time realizing clearly that the existing aristocracy is degenerate and despicable.*" (ORWELL, 2005, p.210). The protagonist and narrator of *Gulliver's Travels* is Dr. Lemuel Gulliver. He always emphasized the veracity of the plot of his ship voyages to exotic lands.

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Gulliver in Lilliput

The story begins with the arrival as shipwrecked in the lands of Lilliput, country of little ones, men of few inches, submissive to a monarchical regime. At first it had been treated as a weapon of war sent by the enemy nation. Having been bound and pinned by harmless arrows, he had been taken to the palace to meet the king.

I lay down on the grass, which was very short and soft, where I slept sounder than ever I remembered to have done in my life, and, as I reckoned, about nine hours; for when I awaked, it was just day-light. I found my arms and legs were strongly fastened on each side to the ground; and my hair, which was long and thick, tied down in the same manner. I likewise felt several slender ligatures across my body, from my arm-pits to my thighs. I could only look upwards; the sun began to grow hot, and the light offended my eyes. I heard a confused noise about me; I perceived it to be a human creature not six inches high, with a bow and arrow in his hands, and a quiver at his back. In the mean time, I felt at least forty more of the same kind (as I conjectured) following the first. (SWIFT, 2011, p.3)

If Gulliver would be representing the common people as opposed to the Aristocracy, his colossal size could be interpreted as a threat. The cogitations of the army and the ministers while they were feeding him with thousands of loaves and animals, even being for Gulliver as little bits, was about when the physiological needs of the "giant" would excrete

them. The Aristocracy sees the basic sanitation for the population as a troublesome government job. I observed there was the flesh of several animals, but could not distinguish them by the taste. There were shoulders, legs, and loins, shaped like those of mutton, and very well dressed, but smaller than the wings of a lark. I ate them by two or three at a mouthful, and took three loaves at a time, about the bigness of musket bullets." I then made another sign, that I wanted drink. I drank it off at a draught, which I might well do, for it did not hold half a pint, and tasted like a small wine of Burgundy, but much more delicious. Soon after I heard a general shout, with frequent repetitions of the words Peplom selan; and I felt great numbers of people on my left side relaxing the cords to such a degree, that I was able to turn upon my right, and to ease myself with making water; which I very plentifully did, to the great astonishment of the people; who, conjecturing by my motion what I was going to do, immediately opened to the right and left on that side, to avoid the torrent, which fell with such noise and violence from me." (SWIFT, 2015, p.15).

When he was introduced to the king, he called him Majesty, which pleased him to show his respect and consideration despite the clear difference in size. Gulliver's second voyage was to the land of Brobdingnag, where now, unlike Lillipt, they were all giants as institutions, and he became a court jester. From there, he goes to Laputaa, the flying island, where this article will focus on highlighting the analogy between Swift and Edgard Morin's critiques of the compartmentalist paradigms of science, and the prior idealization of Complexity Theory in the chapter three of the work *The Gulliver's Travels*. The ship Good Hope, where Gulliver was, slowly sails under the weight of the cargo, and had been taken by pirates. One of them looked Dutch and said he would throw them overboard. Taking into account that Gulliver spoke Dutch well, he appealed to the fact that they were English, retired Christians, and allies, and asked him to intercede with the captain. This made the pirate even more aggressive.

The captain of one of the pirate ships was Japanese and, in sparse Dutch, he said he would guarantee their lives. Gulliver marveled at the greater humanity of the supposed pagan than the Christian...he said, 'we should not die.' I made the captain a very low bow, and then, turning to the Dutchman, said, 'I was sorry to find more mercy in a heathen, than in a brother christian.' But I had soon reason to repent those foolish words: for that malicious reprobate, having often endeavoured in vain to persuade both the captains that I might be thrown into the sea (which they would not yield to, after the promise made me that I should not die), however, prevailed so far, as to have a punishment inflicted on me, worse, in all human appearance, than death itself. (SWIFT, 2015 p. 193).

Aversion to differences, xenophobia, prejudice, discrimination are names that show behaviors of people who were not educated to understand that the differences of nationalities, ethnicities, customs, beliefs contribute to the growth of the whole. Castilho (2013), when talking about inclusion in schools, affirms that equality and tolerance come from living together and dialogue in pluri environments: "...if different attendances are ensured, it increases the school's potential for the construction of a society, prejudice, discrimination or other forms of intolerance." (CASTILLO, 2013, p.7).

They were then taken to the sea in small boats, Gulliver alone on one of the boats, saved his food even though he had received from the Japanese captain a portion of his own quota, he had reached a group of islands. It can be seen that islands are very present in Gulliver's reports, which leads him to believe that his criticisms throughout the work are analogies to England, but will also be used as to the problems of the University in Brazil. The next day I sailed to another island, and thence to a third and fourth, sometimes using my sail, and sometimes my paddles. But, not to trouble the reader with a particular account of my distresses, let it suffice, that on the fifth day I arrived at the last island in my sight, which lay south-southeast to the former. This island was at a greater distance than I expected, and I did not reach it in less than five hours. (SWIFT, 2015, p.194). The next morning after my arrival, he took me in his chariot to see the town, which is about half the bigness of **London**; but the houses very strangely built, and most of them out of repair. (SWIFT, 2015, p.218).He desired 'I would give him as exact an account of the government of England as I possibly could. (SWIFT, 2015, p.157).

Gulliver in Laputa

In that place, Gulliver claims to be in a place the day was sunny and that suddenly, a shadow covers the sun as if passing a huge cloud. But it was a flying island, and that, of course, made him queer. It was the flying island of Laputa. When all on a sudden it became obscure, as I thought, in a manner very different from what happens by the interposition of a cloud. I turned back, and perceived a vast opaque body between me and the sun moving forwards towards **the island**: it seemed to be about two miles high, and hid the sun six or seven minutes; but I did not observe the air to be much colder, or the sky more darkened, than if I had stood under the shade of a mountain. As it approached nearer over the place where I was, it appeared to be a firm...I was in. But at the same time the reader can hardly conceive my astonishment, to behold an island in the air, inhabited by men, who were able (as it should seem) to raise or sink, or put it into progressive motion, as they pleased. (SWIFT, 2015, p.195-196).

It is a fact noted by Gulliver that Art and knowledge are a kind of power capable of moving, erecting and / or lowering a country or society, but it can also obscure the clearest sun of knowledge. This is when knowledge becomes against itself, or it stands in the light. Some methods and methodologies seemed ridiculous, such as " *In the lowest gallery, I beheld some people fishing with long angling rods, and others looking on*" (SWIFT, 2015, p. 196). It becomes clear from the outset that two classes of people are present on this island, a group of practitioners who lived in the lowest part of the island, "... lowest ... fished," and others who were contemplatives, "and others looking on". The passage " *But I could see four or five men running in great haste, up the stairs, to the top of the island, who then disappeared. I happened rightly to conjecture, that these were sent for orders to some person in authority upon this occasion,* (Swift, 2015, p. 197) makes to infer that the higher on the island, the greater authority. However, the state of alienation and inert contemplation were all the greater. In this flying island, there were servants carrying a mast with bladders on the end, and beating their masters from time to time in their eyes or mouth to harmlessly awaken them from

their introspection and enlightenment. The lords of this island were always absorbed in themselves and in their thoughts. Their intelligence was so distracted it was not a social intelligence. They were always daydreaming, thinking of hypotheses that their servants often had to target them with the bladder instrument so they would not be in danger of falling or being hurt by inattention. On the summit of the island was the king. The most theoretical that deserved distinction: "as they conducted me up the stairs to the top of the island, and from thence to the royal palace. While we were ascending, they forgot several times what they were about, and left me to myself, till their memories were again roused by their flappers; for they appeared altogether unmoved by the sight of my foreign habit and countenance, and by the shouts of the vulgar, whose thoughts and minds were more disengaged. At last we entered the palace, and proceeded into the chamber of presence, where I saw the king seated on his throne, attended on each side by persons of prime quality. (SWIFT, 2015, p.199-200).

It is striking that the clothes of the illustrious Laputa were stamped with figures of celestial bodies, (for their admiration to the astronomical sciences) and musical instruments. The dinner was composed of geometrically cut foods, and even their gallantry was trigonometric. From this perspective, it appears to be a mathematical world. It has already been mentioned that Comte (1798 - 1857) divided knowledge into six different sciences: Astronomy, Chemistry, Physics, Philosophy, Social Physics and Mathematics. For him, this last science was superior given his patronage for abstraction. Very valuable feature in Laputa.

" Their heads were all reclined, either to the right, or the left; one of their eyes turned inward, and the other directly up to the zenith. Their outward garments were adorned with the figures of suns, moons, and stars; interwoven with those of fiddles, flutes, harps, trumpets, guitars, harpsichords, and many other instruments of music, unknown to us in Europe. (SWIFT, 2015, p.198).

"My dinner was brought, there was a shoulder of mutton cut into an **equilateral triangle**, a piece of beef into a **rhomboides**, and a pudding into a **cycloid**. The servants cut our bread into **cones, cylinders, parallelograms, and several other mathematical figures**. (SWIFT, 2015, p.200-201).

"The knowledge **I had in mathematics**, gave me great assistance in acquiring their phraseology, which depended much upon that science, and music; and in the latter I was not unskilled. **Their ideas are perpetually conversant in lines and figures**. If they would, for example, praise the beauty of a woman, or any other animal, they describe it by rhombs, circles, parallelograms, ellipses, and other geometrical terms, or by words of art drawn from music, needless here to repeat. I observed in the king's kitchen **all sorts of mathematical and musical instruments**, after the figures of which they cut up the joints that were served to his majesty's table. (SWIFT, 2015, p.204).

Isidoro de Servilha, in the 6th Century wrote a dictionary divided into twenty volumes, one for each semantic field, and included music and astronomy within mathematics. Taking this fact into account, Swift's satirical criticism creates this representation to characterize the only theoretical personality of

the Laputians. In spite of the instruments they possessed and their fascination with calculations, everything was only theoretical and did not work in practice.

"Their houses are very ill built, the walls bevil, without one right angle in any apartment; and this defect arises from the contempt they bear to practical geometry, which they despise as vulgar and mechanic...(SWIFT, 2015, p.204).

As seen above, dissociated theorizing from practice was model in Laputa, and all who were skilled in practical or real sciences, as well as those whose intellectual abilities were not of the macrofield of mathematics, so valued in that context, were regarded as ignorant or stupid, denying the dignity of speaking or being heard.

"There was a great lord at court, nearly related to the king, and for that reason alone used with respect. He was universally reckoned the most ignorant and stupid person among them. He had performed many eminent services for the crown, had great natural and acquired parts, adorned with integrity and honour; but so ill an ear for music, that his detractors reported, 'he had been often known to beat time in the wrong place;' neither could his tutors, without extreme difficulty, teach him to demonstrate the most easy proposition in the mathematics. He listened to me with great attention, and made very wise observations on all I spoke. He had two flappers attending him for state, but never made use of them, except at court and in visits of ceremony, and would always command them to withdraw, when we were alone together. (SWIFT, 2015, p.217).

When Swift talks about the grand lord who was not a mathematician, he immediately states that he made magnificent remarks about what Gulliver told him, that there is still a concept that some sciences are more prestigious than others, such as health, legal and engineering sciences. It is perceived that even in the university, the mentality that greater honor should be dedicated to these sciences to the detriment of others that, although less socially prestigious, are not less important. Morin states that "the reform of thought requires the reform of the University." (MORIN, 2010, 83).

In this context, there is talk about the criticisms that are directed to the University and the Science compartmentalist by Swift and that find echo in Morin (2006), Souza (2004) and Fazenda (1992).

Swift's Criticisms of Academia and the Complexity Theory

The protagonist of the work Gulliver's Travels has a desire to know the Academy, that is, the University, because until that moment, can only perceive the impractical results of the product of this institution:

"In a few days we came back to town; and his excellency, considering the bad character he had in the academy, would not go with me himself, but recommended me to a friend of his, to bear me company thither. My lord was pleased to represent me as a great admirer of projects, and a person of much curiosity and easy belief; which, indeed, was not without truth; for I had myself been a sort of projector in my younger days." (SWIFT, 2015, p.223).

In this way, Gulliver's guide goes on to describe the Academy leaving room for inferring that it was not a single building, an integral or holistic system. But that Education was segmented into hundreds of departments, areas, and isolated epistemologies.

This academy is not an entire single building, but a continuation of several houses on both sides of a street, which growing waste, was purchased and applied to that use. I was received very kindly by the warden, and went for many days to the academy. Every room has in it one or more projectors; and I believe I could not be in fewer than five hundred rooms. (SWIFT, 2015, p.224).

At first sight, it is noted that, for example, the academy or the university cannot isolate its disciplines or epistemologies, because complexity requires that there is interaction and associative participation in this synergetic system of exchanges of knowledge, to which it is now Morin, (2005, p, 53) aptly says that "it is a mistake to see only one aspect" of science, and it is made even more emphatic when he says that "Scientific knowledge can not deal with problems alone epistemological, philosophical and ethical." (MORIN, 2007, p. 21). According to Japiassu (1991), the key words of interdisciplinarity are integration and interaction of knowledge:

Interdisciplinarity is a method of research and teaching that can enable two or more disciplines to interact with one another, from simple communication of ideas to the mutual integration of concepts, epistemology, terminology of methodology, procedures, data and research organization "(JAPIASSU, 1991, p. 136). However, Fazenda (2008) adds that "It is impossible to build a single, absolute and general theory of interdisciplinarity" but that there must be a constant search to unravel this method. (FAZENDA, 2008, P.13). The time spent in research, teaching and extension isolated from other areas of knowledge is very large and does not often meet the reach of the community at large. In one of the compartments of the academy visited by Gulliver, he found a scientist who tried to accomplish a mirabolante, a totally action, that is to store rays of sun. The criticism affects the aspect of the university to carry out research projects whose usefulness is zero.

The first man I saw was of a meagre aspect, with sooty hands and face, his hair and beard long, ragged, and singed in several places. His clothes, shirt, and skin, were all of the same colour. He has been eight years upon a project for extracting sunbeams out of cucumbers, which were to be put in phials hermetically sealed, and let out to warm the air in raw inclement summers. He told me, he did not doubt, that, in eight years more, he should be able to supply the governor's gardens with sunshine, at a reasonable ratep. (SWIFT, 2015, p.224).

In addition to this waste of time with daring projects, this satire presents the glimpse of another compartment or situation that is criticized about the University. It is the obligation of deference or veneration for those who reach a position of authority in the academy as if they were deities of knowledge. Some do not understand the need to have humility in the face of the extension of what they do not know about the little that they acquired. It is not uncommon to find at university disgusting personalities obsessed with either academic authority or pride. I went into another chamber, but was ready to hasten back, being almost overcome with a horrible stink. My conductor

pressed me forward, conjuring me in a whisper 'to give no offence, which would be highly resented;' and therefore I durst not so much as stop my nose. The projector of this cell was the most ancient student of the academy; his face and beard were of a pale yellow; his hands and clothes daubed over with filth. When I was presented to him, he gave me a close embrace, a compliment I could well have excused. His employment, from his first coming into the academy, was an operation to reduce human excrement to its original food, by separating the several parts, removing the tincture which it receives from the gall, making the odour exhale, and scumming off the saliva. He had a weekly allowance, from the society, of a vessel filled with human ordure, about the bigness of a Bristol barrel. (SWIFT, 2015, p.225).

The famous quotation: "power corrupts, and absolute power corrupts absolutely so that great men are almost always evil men" gave prominence to John Emerich Edward Dalberg Acton, known as Lord Acton. There are many kinds of powers, including economic, political, social, and intellectual power. In its historical trajectory, especially in the last two hundred years, humanity has revealed such diversity and depth of scientific knowledge that it has become unfeasible for each individual to deal with the growing range of information available.

In this way, it is advisable to use specialists from each area in the search for qualified guidance, given the assumption that an expert has more competence to judge and recommend solutions pertinent to the specific area of his / her performance. Relying on expert opinion is a cultural legacy. Bueno (1974) denotes the term authority as "the right or power to make oneself obey and to make decisions", when he declares that authority comes from the Latin word *auctoritatem*, etymologically assembled from *auctorem*, that means, author or person that makes, creates or promotes, a term synonym of *augere*, i.e., that which sustains or causes to grow.

At present, much of the concepts admitted as truth have their primordial base anchored in authority. One can exemplify this fact by focusing on the trust implicitly deposited in the person of the civil engineer by the tenant who lives in an apartment on the top floor of a building. In order to proceed, it is urgent to be fiduciary that the solidity of the architectural structure was correctly calculated to support the building. This guarantee arises from the expectation of competence of the one who has fulfilled the pursuit of academic studies and if specialized in this area. However, the favorable performance in any area of study also depends on the capacity developed primarily to sustain their ideas and knowledge. According to Rodrigues (2005), "arguments are linguistic means of persuasion," that is, ways of taking the interlocutor to action. Bueno (1974) decomposes the word argument until it explicit the primitive lexical *Argus* that comes from the Greek radical *Argos*. According to mythology, Argos was the name of the builder of a boat from Jason's expedition. Argos had a hundred eyes, and between them two slept while the other ninety-eight watched Ino. The term *Argos* is a semantically crystallized metaphor to connote smartness, vigilance and intellectual penetration and still permeates all derived from this radical present in the words *arguing*, which originated the word *argumentum*, whose meaning is proof, documentation and reasoning as well as the verb *argument are* that indicates the action of discussing,

reasoning, deducing and presenting evidence. Thus, insofar as a researcher, in the face of specialization and experience, gains recognized competence in a given area of knowledge, he makes statements that, if they are shown to be continuously true, generate a positive inference of the probability of future correctness. This fact credits him to a position of authority by making his concepts and claims taken on their own as sufficient arguments. This phenomenon is called the argument of authority.

Rodrigues (2005, p. 110) justifies the value of the authority's argument because of the impossibility of testing all areas of human knowledge: "*Because it seems unwise for a human being to restrain all the positions pronounced by those who establish themselves as endowed with in-depth knowledge.*"

What emerges from this dictatorship of authority, however, is the reversal of the cause-and-consequence process, for what once gave authority to the authority, i.e., argumentation, is henceforth supported by authority. In this way, several problems arise: experts isolate themselves and feel ownership of knowledge. As a consequence of this fact, what may be called a fallacy of authority arises. Ferreira (2005) defines *fallacy* as deception, fraud, illusion.

"Appeal to authority (argumentum ad verecundiam): to cite an authority that is incompetent or non-objective in an attempt to gain support for an argument, or to cite an authority when the subject is not technical." (FEARNSIDE & HOLILIER, 1959).

It is possible to see that the boundary between the argument of authority and the fallacy of authority has its shallow landmarks and coexists in a sort of penumbra. Rodrigues (2005) argues that "when the authority's argument distorts its function, the fallacy of authority occurs." In this context, Swift's work presents a type of teacher who cannot see and works with colors:

There was a man born blind, who had several apprentices in his own condition: their employment was to mix colours for painters, which their master taught them to distinguish by feeling and smelling. It was indeed my misfortune to find them at that time not very perfect in their lessons, and the professor himself happened to be generally mistaken. This artist is much encouraged and esteemed by the whole fraternity. (SWIFT, 2015, p.225-226).

Another problem that the segmentation of knowledge, parallel to the fallacy of academic authority, focuses on the training of teachers by other teachers, perhaps shaped by the isolationist and myopic concepts, as Japiassu (2006, p. 15) states: "*the way of thinking or fragmented knowledge ... and simply quantifier, ... is responsible for the prevalence of a rather myopic or blind intelligence,*" and this blindness is contagious as Luckesi (2003) says:

"Form defines the object or being as it exists ... Thus, in the phrase 'formation of the educator', the term formation indicates that the educator will constitute its form, its essence, what makes it. To educate the educator is to create and provide conditions for the educator to become an educator. (LUCKESI, 2003, p. 2). Moraes (2011) explains that this process of reproduction of forms and myopia happens when "*squared spaces and questions of multiple choices*" continue "*requiring memorization, repetition, copying, emphasis on content, result or product, rewarding conformism.*" (MORAES, 2011, p.50).

Still visiting the academy, Gulliver goes to another segment of the University in the capital of Lapucia. This is the Medicine Department Campus, where innovations and experimental practices occurred.

I was complaining of a small fit of the colic, upon which my conductor led me into a **room where a great physician** resided, who **was famous for curing that disease, by contrary operations from the same instrument.** He had a large pair of bellows, with a long slender muzzle of ivory: this he conveyed eight inches up the anus, and drawing in the wind, he affirmed he could make the guts as lank as a dried bladder. But when the disease was more stubborn and violent, he let in the muzzle while the bellows were full of wind, which he discharged into the body of the patient; then withdrew the instrument to replenish it, clapping his thumb strongly against the orifice of then fundament; and this being repeated three or four times, the adventitious wind would rush out, bringing the noxious along with it, (like water put into a pump), and the patient recovered. **I saw him try both experiments upon a dog,** but could not discern any effect from the former. After the latter the animal was ready to burst, and made so violent a discharge as was very offensive to me and my companion. The dog died on the spot, and we left the doctor endeavouring to recover him, by the same operation. (SWIFT, 2015, p. 227-228).

During World War II, prisoners of war were subjected to scientific experiments, which were obviously prohibited after the Nuremberg Code. However, many experiments with animals, for the implementation of new surgical techniques and drug testing, as well as for the development of drugs for humans, have become common place. In Brazil, the Law No. 11,794, of October 8, 2008 disciplined this trade and created the CONCEA – (National Council for Control of Animal Experimentation) with the aim of monitoring, evaluating and establishing standards for the use of animals for research purposes.

However, animal protection agencies constantly protest about this feature. One of the claims of animal advocacy groups is that in many cases the reaction of animals is different from human reactions. Thus, the case of the drug Thalidomide, which, after being tested in animals, was considered safe, but in rodents the drug was metabolized differently and caused serious consequences for the women who took it. In the European Union, animal testing has been banned since 2013. Criticism and the need for standards for scientific experiments fortunately have created favorable conditions for the appointment of ethics committees in Brazilian Universities. It should be noted that the actions of questioning and access to information and research systems generate, as THIESEN (2008, P.545) says, changes in various sectors of society, not only in Education:

"The historical movement that has marked the presence of the interdisciplinary approach in education is one of the presuppositions directly related to a wider and also very complex context of changes that covers not only the area of education but also other sectors of social life as the economy, politics and technology. This is a great paradigm shift that is in full swing. " (THIESEN, 2008, P.545). Focusing a little bit more on the university context, now Gulliver visits the Linguistics Department - the school of Letters. In it, he finds

scientists who want to abolish speech given the exhausting conditions that surround this act.

We next went to the school of languages, where three professors sat in consultation upon improving that of their own country. The first project was, to shorten discourse, by cutting polysyllables into one, and leaving out verbs and participles, because, in reality, all things imaginable are but norms. The other project was, a scheme for entirely abolishing all words whatsoever; and this was urged as a great advantage in point of health, as well as brevity. For it is plain, that every word we speak is, in some degree, a diminution of our lunge by corrosion, and, consequently, contributes to the shortening of our lives. An expedient was therefore offered, 'that since words are only names for things, it would be more convenient for all men to carry about them such things as were necessary to express a particular business they are to discourse on. But for short conversations, a man may carry implements in his pockets, and under his arms, enough to supply him; and in his house, he cannot be at a loss. Therefore the room where company meet who practise this art, is full of all things, ready at hand, requisite to furnish matter for this kind of artificial converse. Another great advantage proposed by this invention was, that it would serve as a universal language, to be understood in all civilised nations, whose goods and utensils are generally of the same kind, or nearly resembling, so that their uses might easily be comprehended. And thus ambassadors would be qualified to treat with foreign princes, or ministers of state, to whose tongues they were utter strangers. (SWIFT, 2015, p. 231-232).

The various linguistic theories that have come to emphasize the importance of language as a social factor, element of identity of a people, or means by which one comes to know what one intends or even one does not intend to say, as well as a tool of good communicating ideas, thoughts and intentions have sometimes been misinterpreted as discoveries that overturned the norm. It is often understood that, since discourse bare the speaker's intentions, revealing from them his structures of thought and discursive maneuvers used to persuade, or to guard unrefined thoughts, silence becomes preferable. On the other hand, according to Poulet (1999), in England, the decision to teach or not to use the dictionaries is no longer taken by the teachers, because the national guidelines of that country have decreed the obligatoriness of this. However, many teachers are reluctant to obey the directive because they are against the use of dictionaries and claim that "*it discourages vocabulary acquisition because it reduces the ability to infer meanings in context.*" (POULET, 1999, P.78-82). Still in this perspective, debates about semantics or pragmatics, right or wrong, structuralism or sociolinguistics, grammar in the text or use of the text to understand grammar, definition or meaning, among others may end up motivating the desire for silence. It is as when it is said that it is better to be silent and to let one sow the doubt as to the ignorance of the speaker, than to speak and to end the suspicion. Encouraging communication can not hinder words by words or abolish them. It is up to the university to create favorable conditions for the lexical growth of its students, so that they may well interact with many areas in order to have more and more linguistic competence.

Final Considerations

With the theory of complexity, it is increasingly discovered that there are no vain or real boundaries between epistemologies. Today, many of the imaginary lines that have historically divided boundaries and designed supposed gaps between knowledge have progressively become faint and tense. Slowly, these spans narrow and languish because the ever-increasing peninsular incursions of interdisciplinary knowledge reveal a sub-lapsarian continuum that interconnects the sciences and suggests that its boundaries are versatile and ephemeral. Thus, it is assumed that there is no more space for an exclusive education and closed in hermetically closed compartments, distant from other epistemologies.

Theorizing without practice results in a world of disinterested and alienated because knowledge becomes an end in itself. In the work of Jonathan Swift discussed here, there are, in fact, criticisms that show similar problems to those experienced today by the university, which suggests little or almost no evolution since then. There are clear similarities in the points of view between Swift (2004) and Morin (2008), of course, but not in how to approach the subject. When one considers the loom of approaches discussed above, one arrives at the understanding that it is urgent to replace isolationist, individualist thought, and compartmentalized by a thought that distinguishes and unites. The theory of complexity is not what many inattentive readers may find. That is, an amalgam of all that exists, without distinction or categorization. This is not how Edgard Morin presents his theory of complexity. Binding does not mean to merge. The disasters of nuclear fission are as damaging as those of fusion. Therefore, it must be made clear that the destruction of differences in the desire to merge all knowledge, cultures, beliefs and individualities is not interdisciplinary or unified. Harmony does not mean unison.

The words of Morin (2001) visibly advocate the thought that unites, but also distinguishes. A lemonade cannot be modern if it is not composed of the interaction of lemon, sugar and water, but it will not be equally modern if the disagreement of Morin's (2001) proposals makes it a mixture of oil, pepper and all the ingredients found in the kitchen, or in any supermarket, as they could guess some in the name of union.

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