

Design Inteligente em uma Revista Científica Brasileira: pseudociência acadêmica

Heslley Machado SILVA¹

Resumo

O movimento do Projeto Inteligente (ID) supõe que a evolução tendo sido projetada por alguma força sobrenatural inteligente, espalhou-se pelo mundo, apesar de seu não reconhecimento pela ciência. O ponto de partida para a discussão é a publicação de uma carta convite em uma revista científica brasileira. É demonstrada a incoerência desta carta e como ela revela que os principais expoentes brasileiros e americanos deste pensamento elaboram uma mistura deformada de ciência e religião. Conclui-se que este tipo de publicação em uma revista acadêmica é prejudicial à educação científica, mas pode revelar a fragilidade desse discurso pseudocientífico do ID.

Palavras-chave: pseudociência; criacionismo; evolução; comunidade científica; ciência; educação

¹ Postdoctoral Researcher in Science and Education at the University of Minho, Portugal. PhD in Education from the Federal University of Minas Gerais (UFMG). Biologist from the University Center of Formiga/MG (UNIFORMG). Professor and Researcher at the State University of Minas Gerais (UEMG) and the University Center of Formiga (UNIFORMG). ORCID: <https://orcid.org/0000-0001-8126-8962>
E-mail: heslley@uniformg.edu.br e heslley.silva@uemg.br

Intelligent Design in a Brazilian Scientific Journal: academic pseudoscience

Heslley Machado SILVA

Abstract

The Intelligent Design (ID) movement assumes that evolution, having been designed by some intelligent supernatural force, has spread throughout the world, despite its non-recognition by science. The starting point for the discussion is the publication of an invitation letter in a Brazilian scientific journal. The incoherence of this letter is demonstrated and how it reveals that the main Brazilian and American exponents of this thought elaborate a distorted mix of science and religion. It is concluded that this type of publication in an academic journal is harmful to scientific education, but can reveal the fragility of this pseudoscientific ID discourse.

Keywords: pseudoscience; creationism; evolution; scientific community; science; education

El Diseño Inteligente en una Revista Científica Brasileña: pseudociencia académica

Heslley Machado SILVA

Resumen

El movimiento del Diseño Inteligente (DI) supone que la evolución, al haber sido diseñada por alguna fuerza inteligente sobrenatural, se ha extendido por todo el mundo, a pesar de no ser reconocida por la ciencia. El punto de partida del debate es la publicación de una carta de invitación en una revista científica brasileña. Se demuestra la incoherencia de esta carta y cómo revela que los principales exponentes brasileños y americanos de este pensamiento elaboran una mezcla deformada de ciencia y religión. Se concluye que este tipo de publicación en una revista académica es perjudicial para la educación científica, pero puede revelar la fragilidad de este discurso pseudocientífico del DI.

Palabras clave: pseudociencia; creacionismo; evolución; comunidad científica; ciencia; educación

Introduction

The credibility and editorial review process of the prestigious American Journal, *PLoS One* (*Public Library of Science*), is in question since it published an article (CRESSEY, 2016) that claims that the human hand could be the work of a Creator (LIU et al., 2016). Soon after, the journal and the authors retracted the paper (STAFF, 2016) even if the authors were not apparently connected to the intelligent design movement, because of the negative reaction of the American academic community, showing low tolerance with this type of insertion.

Subsequently, the Brazilian scientific journal *Clinical Biomedical Research*, which is published by a highly respected public university, invited Everton Alves, a member of the Brazilian Society of Intelligent Design, researcher from another public university, to publish a letter in its editorial section (ALVES, 2015). It was titled “Theory of Intelligent Design” and it highlights the importance of this scientific “theory” to describe the origin and evolution of living beings. In addition, the letter encourages more scientists to join the Intelligent Design (ID) community (SKELL, 2016).

What is odd about this is that this respected Brazilian public university, along with the journal and the editor who invited the ID proponent to contribute, are part of a rather extensive list of Brazilian institutions and associations that have publicly come out against ID as a legitimate scientific theory. It is difficult to understand the reasons for the publisher's intentions, but the propaganda he has made for the intelligent design movement is evident, and the consequences for Brazil's scientific credibility can also be put forward².

It is important to consider the implications of this type of publication in a journal, the risks related to scientific education, in addition to the valuation and space for forms of pseudoscience. This concern should be highlighted, especially in times of conspiracy theories via the internet and social networks, in which “fake news” (SCHEUFELE e KRAUSE, 2019) finds more space than sustained news and the subjects that originate in some research.

2

[https://pt.wikipedia.org/wiki/Lista_de_%C3%B3rg%C3%A3os_cient%C3%ADficos_que_rejeitam_o_design_inteligente#Universidade_Federal_do_Rio_Grande_do_Sul_\(UFRGS\)](https://pt.wikipedia.org/wiki/Lista_de_%C3%B3rg%C3%A3os_cient%C3%ADficos_que_rejeitam_o_design_inteligente#Universidade_Federal_do_Rio_Grande_do_Sul_(UFRGS))

Development

Based on the text that I use as reference for the discussion of how denialism in Brazil seems to have an academic support, we seek to deconstruct this premise, and demonstrate the risks that are implicit in this type of approach.

Alves claims that the “theory” has no religious motivation and is not related to creationism. He is a founding member of a creationist society and author of a book on ID Theory and an active member of this movement. The journal, which focuses on Health and is a scientific publication of the university, supports the author’s claims about the ID Theory. Supporters of this hypothesis boast that they have published the book “We were planned: the greatest scientific discovery of all time.”, totally contrary to evolutionary theory, and that no department or faculty members within the university have challenged their conclusions, even though they include researchers/professors of evolution at this great university within a discipline which is founded on this basic and indispensable theme of modern biology (DOBZHANSKY, 1973). No one from the Biology department has argued in the journal against the claims of the letter which contradict the presuppositions so useful to the understanding of biology and applicable to health, agriculture, physiology, and many other areas (GREAVES, 2007; MCELREATH, 2018; SIMON NEUBAUER, JEAN-JACQUES HUBLIN, 2018).

Let us examine this. If a future teacher who studies at this university believes misinformation published in a scientific journal of his/her institution by a guest author (so presumed to represent expertise), it will have a negative impact on his/her overall understanding of biology. Imagine biology classes without the guiding thread of evolutionary theory to unite content through logic and coherence. Such a course would not provide an accurate or adequate understanding of biology. This misunderstanding would be further promulgated if this teacher, in fact, incorporates the ideas presented in this letter and other publications of this author. Such a teacher would have a mistaken understanding of Biology as a whole, which would demolish the academic credibility in the classroom. This will exacerbate the already weakened education in Brazil (BRUNS et al, 2010).

It should be noted that an answer to the letter was published in the following issue of this journal but was shorter and not by invitation of the editor of the scientific journal. The author of the answer letter is also from the health sciences, and the letter clearly shows convincing arguments. The most important question remains, however: which of the letters was given the most publicity by the publication? Which letter has garnered the widespread attention within “scientific” societies, or the widest reach on the Internet? Despite the honesty of the journal in publishing the response letter and

the rigor of its argument, the damage is done and amplified. The numerous ardent and often angry advocates from both ID and Creationism camps encompass a very effective dissemination network. The Brazilian ID Society includes more than 1,500 members, including many professors and biologists occupying prestigious positions with large social outreach³.

Many inconsistencies

Returning specifically to the content of this letter supporting the Intelligent Design hypothesis, the second paragraph shows the total inconsistency of what is defended there. The author claims in the second line: “It is important to point out that the TID does not have as its main focus answers to questions about the origin of life and the universe or about the age of the Earth”. But in that same paragraph the author returns to the theme of the origin of life: “In this sense, intelligent design proposes a reinterpretation of the data on the events that gave rise to life, since it is put as an alternative to naturalistic mechanisms.” Thus, this “scientific hypothesis” purports no focus on the explanation of the origin of life, but sometimes proposes a reinterpretation of how life originated, attempting to do so without any religious language.

To demonstrate the incoherence and amplitude of this movement, and its inappropriate mixture of science and religion, one can cite the lecture of the president of the Brazilian Society of Intelligent Design, Marcos Nogueira Eberlin⁴, a respected academic chemist, Full Professor, and researcher of a large and prestigious Brazilian public university. For this member of the Brazilian Academy of Sciences asserts, and believes, that all animals, all species would fit quietly into Noah’s Ark (with claims of scientific “proof” in the lecture), including dinosaurs, which would fit in a corner of the Ark, since they were few and small, and herbivorous. After this pseudo-intellectual exercise he also claims that the dinosaurs killed themselves later after the flood, since there was inadequate food for those few herbivores, which were then eliminated by natural selection (applying a Darwinian discourse when it suits him). He speaks of speciation, though in rather confused terms, which may be forgiven since his training is in chemistry. He is also convinced that dinosaurs have not been extinct tens of millions of years (which he also claims is “proven”), and that some species remain “hidden out there.” (SILVA, 2020). This would suggest that the Executive president of the Brazilian Society of Mass Spectrometry claims to know more about dinosaurs than all the paleontologists in the world and understand more of evolution than all the biologists on the planet. All this without commentary

³ <https://www.tdibrasil.com/membros/galeria-de-membros/>

⁴ <https://www.youtube.com/watch?v=TZL2pKANYa0&t=+145s>

from any Brazilian Scientific Society or of its university, or of the biology department of the same. Another relevant detail is that this lecture was accessed thousands of times through the internet, with many supports from young students, who probably were convinced that they were deceived by the scientific field, by their biology teacher, and by the school in which they studied, because the teachers must have taught something that does not explain Noah's ark scientifically. This would be the inevitable conclusion from this curriculum since the president of the Brazilian Society of Intelligent Design claimed to have made “the greatest scientific discovery of all time” (EBERLIN, 2018) (part of the title of his book), which was also mentioned in the letter that is the object of criticism of this article. But let us leave the question of this talk to a future analysis and return to the letter, the result of an invitation to publication in a Brazilian scientific journal. It is not possible to say that the movement is linked to the creationism of Young Earth, but it is certain that its leader aligns with this belief.

It is important to point out that Eberlin led the creation of the Intelligent Design "Research" Institute in Brazil, whatever that may mean, as a place for academic research. This nucleus, created at Mackenzie University, for the dissemination and research of the pseudoscience of the Intelligent Design hypothesis, with the support of the notorious creationist Discovery Institute of the USA (PENNOCK, 2010). One must wonder how a University that has a Biological Sciences course, which should defend the evolutionary assumptions, can house a nucleus that denies the veracity of exactly these assumptions. Another aspect must be highlighted to identify the line of thought of this group that defends ID, and that demonstrates its alignment with scientific denialism, the support for drugs without efficacy and without scientific proof for the treatment of COVID-19.

During the Bolsonaro government (2019-2022) denialism was practically the official discourse, the Ministry of Health, many doctors, and some journalists (SILVA, 2021), endorsed the fallacy of useless and dangerous drugs for the treatment, unbelievably even preventive of COVID-19 (SILVA, 2022). Without much surprise and aligned with the ID denialism and its denialist line, Eberlin, an award-winning chemist, professor and researcher, member of the Brazilian Academy of Sciences and President of the Brazilian Society of Intelligent Design, led the signing of a document endorsing the use of these ineffective drugs, even after they had all been tested and refuted, using the scientific methodology he was supposed to defend. It is frightening to realize that this document was signed by dozens of Brazilian scientists, demonstrating the reach of the denialist movement in the country, even in academia.

In this document there was a criticism of the Brazilian Ministry of Health's caution in releasing drugs against the SARS-CoV-2 virus, because the tests could take months, and this group already knew beforehand (without tests) that these drugs would work, almost a matter of faith. The same document said that Portugal would have succeeded by using these drugs, a fallacy, because at the time, this country had one of the strictest isolations, the reason for its reduced mortality in that period (CAMPOS e LINS, 2020). But it is useless to bring logic into the debate with this group, and especially with its leader, just to highlight the pseudoscience that marks his speech, he propagates to the world through a lecture that the legendary Loch Ness monster is a lone surviving dinosaur, impossible to be further outside the academic framework than this conclusion.

And to clearly characterize the movement, this document against science and good practices to contain a pandemic was originally published on the website of an astrologer (who considered himself a philosopher), who was the "intellectual" leader of Bolsonarism. This mentor of the Brazilian extreme right even claimed that the pandemic did not exist (he tragically and ironically ended up dying because the disease he was spreading did not exist), that it was an invention, or creation, of the Chinese, he also philosophized that the earth is flat, that cigarettes are not harmful to health, etc., demonstrating the "scientific" line of this entire group.

A long time later, with the decline of those killed by the pandemic by vaccination and not by the innocuous drugs that many Brazilians used, and got intoxicated, probably worsening their prognosis and increasing morbidity and mortality from the disease, there was no retraction from this group. But the laboratories that manufactured chloroquine and all the other useless drugs used, such as antibiotics (SILVA, 2021a), vermifuge, and neoplastics, made fabulous profits, with an increase of up to 500% in sales, under the auspices of part of the Brazilian medical community (SILVA, 2023) and some scientists with no commitment to science.

Poor Science and Poor Religion

To illustrate once again the line of reasoning of the author of the letter, I can mention one more similar publication in which the author brags about the merits of the publication of his letter in a scientific journal (one can evaluate the damage of the invitation of the publisher). In this document it is possible to find a sample of the typical incoherence of those who follow this international movement. Fundamentally here he gives us an example of the aberration of the scientific-religious logic of one of the founders and greatest authors of this hypothesis, mistakenly called "theory"⁵.

⁵ <http://tdibrasil.org/index.php/2016/01/14/carta-ao-editor-uma-ferramenta-cientifica-util-ao-design-inteligente/>

The example cited provides a good argument for a religious person, who believes in a kind and merciful God and who wants the best for his children and all creatures to give up this absurd hypothesis. ID advocates will say that I am distorting the ideas of Behe or his followers, so I will use the words of the author of the letter in question within this article that expose those same ideas: “By the way, I consider one of the greatest scientific publications in intelligent design exactly a Letter to the Editor written by Michael Behe”. In 2009, Behe wrote this letter to exercise the right of reply to an original article published in the year 2008, whose purpose was to expose Behe’s alleged failures about the mathematical limits to Darwinian evolution, published in the year 2007 in his book *The Edge of Evolution*. To understand the situation better, it is necessary to analyze what Behe’s book said. In the book, drawing on public health studies on malaria, Behe noted that a new onset of resistance to chloroquine in malaria parasites was a probability event of 1 in 10^{20} (for the calculation, by the way, he used a statistic empirical literature). Thus, the probability of occurring in humans (???) a double simultaneous mutation by chance would be 1 to 10 billion. This would require more organisms and generations than were available throughout Earth’s history. Therefore, when multiple mutations must be present simultaneously to gain functional advantage, Darwinian evolution is limited.

To extend this example included in the text published by Behe to a more general conclusion, it is necessary to make a great exercise of creativity, even though it was published (BEHE, 2009). One must imagine the Designer (or Creator / God), in his engineering work, producing through mutation (in this case two mutations) a resistance of a protozoan to a drug. Would this idea seem to have more logic than a random mutation? Does God have nothing to do and loves to do little inconsequential experiments to pass the time? Or, God detests humans, especially the poorest people and children, malaria victims in the millions (MAXMEN, 2017) and potential direct beneficiaries of the drug (PISONB et al., 1998)? What kindness or mercy would this demonstrate? Another curious consequence of this thinking is that this same Designer, when he was in another moment of idleness in the past, decided to create a mutation that made these same humans resistant to malaria, but which later generated the terrible disease of sickle cell anemia in homozygotes (SHRINER e ROTIMI, 2018). This Designer must change his mind and mood very easily. It is difficult to understand the purpose of this gentle Engineer. It would be laughable if it were not pernicious to the reasoning of a thinking religious’ person, and even more so to a scientific education. Imagine that the author of the letter in Brazil is a researcher in epidemiology and molecular biology. Here we may have clear evidence of the lack of logic of ID, or rather we have proof that there can be no benevolent God, or

Creator, or Designer behind ID to explain the history of life's evolution. What religion, whether Christian or not, that preaches of a kind and merciful God, would support such an ID movement?

Let me focus on this question pointed out by Behe that a mutation that leads to resistance to one of the few malaria drugs is the work of this Designer. Is it possible that all followers of the ID movement agree with this? Even those biologists and those connected to the health field? I wonder what theologian, or religious leader, can stand for that? Michael Behe considers that what is statistically difficult, must be the work of such a Creator Designer, even if it is something so harmful to humanity, and that no reason for this action by the Designer is evident. If it is to produce something as complex as this double mutation, just to save the poor protozoan from the medicine and kill so many disadvantaged, would it not be more rational for this kindly engineer to produce a mutation, or two or three, and rid us of cancer, AIDS, Ebola, or myocardial infarction? But it seems that this simple Plasmodium has priority for this intelligent Designer. This seems to pose unfathomable mysteries for the scientific and theological fields.

It is hard to disagree with Dr. Francis Collins, not only because he is one of the world's important scientists, a leader of the human genome project, but also due to his emphatic refutation of ID even in his quest for a conciliatory stance between science and religion. Collins claims that it is a mistake to put God in the gaps, he regrets that the ID movement has fallen into this trap, as well as than saying that evolution does not explain the complexity of structures such as the human eye and cells (though evolution does explain all of this). Collins insists that scientists, including religious ones, must stick to rational explanations for the mysteries of nature (COLLINS, 2003). I agree with him and find it most offensive to attribute to this God a mutation (worse still, there were two) that led to the death of hundreds of thousands of people. This would not be incompetence; it would be evil. What is so "intelligent" about that? I insist on that question. They will say that it is a mystery, that we cannot understand the mind of God. This type of conception is not only bad science; it is also bad religion. They should have instead taken advantage of the inauguration of the Discovery-Mackenzie Institute in Brazil to study ID to ask Behe to explain at last what is the intelligence of producing something so harmful to humanity. But logic is not the strong point of the movement. Francisco Ayala, a religious researcher and evolutionist, finds a possible solution to this impasse, when he asserted that Darwin provides a gift for religion (AYALA, 2007), as it provides an explanation for the existence of suffering, defects, affliction in nature, through natural selection and other mechanisms within evolutionary theory.

Freedom of Speech

Obviously, the adherents of this movement will contend that I am curtailing the freedom of expression of the ID movement, the fundamental question is that there is no merit in a scientific journal. That this movement has no religious intentions - which I have already shown is not true - and that they have the support of a scientific Society with thousands of members which includes an academic research institute at a Brazilian university with the support of an American institute (non-academic). It is unnecessary to state the legal, educational, and “scientific” fate of the attempt to insert ID into the educational system in the USA (SHANKS, 2004), where this movement has systematically lost its legal battles and has suffered from strong academic rejection, as demonstrated in the *PLoS One* article. We can discuss this freedom of expression, especially in scientific publications from another perspective, however. Imagine all those who consider ideas contrary to scientific evidence having the same amount of exposure. First it would lack credibility and make it difficult to distinguish what is the result of scientific methodology or the fruit of the imagination of some non-scientific group.

A good example would be the revisionists of the Holocaust, this type of movement exists in several countries, with several advocates (LIPSTADT, 2016), many reasonably organized, especially on the internet. Should we give space in academic publications to these groups and their texts under the guise of freedom of expression? Historians would similarly exclaim the greatest discovery in history is that the concentration camps never existed. Is not this absurd? I totally agree that it is absurd. Despite all the suffering that the Jewish people suffered in this sad historical moment, and all the evidence that exists, the arguments of those who deny this evidence does not justify publication in vehicles of academic credibility. But ID adherents will argue that I am comparing completely different things. After all, the ID movement “just” denies a whole field of science based on several proofs, and that this is not related to human suffering, historical facts, etc.

I will then provide another example, so as not to stay on a dark page of history. Let us go to another, which I would call comic, with more concrete analogies in relation to the ID movement, because it has the same premise, attaches to descriptions of the past, and does not accept any new scientific evidence. Is it possible to believe that a Flat earth movement exists in Brazil (and internationally)⁶. A movement that believes we have been deceived by physicists, astronomers or any other field of science that claims the “absurdity” of the earth to be a globe. Any similarity to the ID

⁶ <https://terraplanista.com/quem-somos/>

movement is mere coincidence. Flat earthers claim a global plot of scientists against a myriad of obvious evidence that prove that the Earth is flat. Flat earthers at least do not find space to attack those who disagree with their “flat” view of the world, although both are harmful to fact-based science. On this point they are ahead of the ID movement. Though flat earth adherents similarly claim supposed proof of their theory, through supposed credible scientific publications, they may prefer to continue their saga of encounters, videos, and books. Though flat earthers have not yet been invited to write in scientific journals, but everything is possible in Brazil. Flat earthers do not yet have a research institute in a large Brazilian university with international funding, at least not yet.

Perhaps we should provide a pluralistic scientific education in Brazil, in which those who do not believe in the holocaust, or who do not believe the Earth is spherical, have the same space in scientific publications and in the textbooks? Perhaps we should put in the Brazilian textbooks (perhaps in the whole world), to suggest to teachers that they give plural lessons with their personal views on each subject, the so-called plural visions of science? Even if they are absurd, for historians, for physicists, for scientific education. Perhaps the time has come when it is not necessary to use the scientific method to prove anything, but rather it is enough to have a legion of believing supporters, internet defenders’ pages, and an apparent scientific society, to be realized as something real, proven, and which should be published in scientific journals (SILVA, 2023a)?

Real Risks

It may seem that I am exaggerating to compare a letter advocating Intelligent Design and its supposed credibility to denial of the holocaust and belief in a flat earth. But we must think about the consequences for scientific education, as there is a global mobilization contrary to the teaching of evolution, with events that extend through the United States, South Korea, Turkey, Brazil, among other countries (SILVA, 2017). I will not use world examples to argue the effects of this type of approach. I will stick to a local Brazilian example, which though small are symbolic of the possible negative effects on education. According to a report from the State of Minas Gerais, Brazil, newspaper “O Tempo”, preparatory material for the training of teachers of basic education includes comparisons of the theory of evolution with religious arguments⁷.

In this educational and preparatory material for teacher’s contest, it is mentioned: “in the name of science, the followers of the Theory of Evolution are imposing their answers and censoring any explanation that does not respect Darwin”. The same language is common within the Intelligent

⁷ <https://www.otempo.com.br/cidades/apostila-de-cursinho-cita-biblia-ao-falar-de-teoria-da-evolucao-1.1592468>

Design movement, which also include further anti-science discourse: “True science does not contradict the Bible.... What exists are scientists who do not accept God and use their knowledge to deny the existence and creative power of that God.” Thus, this language suggests that scientists across the planet are united in a great conspiracy against God and his role in the creation of species through the theory of the evolution. This inclusion of a textbook for teachers through their basic education, provides a victory to the adherents of ID. Again, we are going to expand on the possible consequences of this kind of material, and indoctrination of teachers of children against science and evolutionary theory. Teaching with its foundations based on this type of material, that is, taking this type of approach for students who should have classes in the sciences, creates a critical problem in Brazil for the education of science teachers going forward. Which is, completely counterproductive.

The example highlighted is already bad and contrary to science and education, but the response of the company that produced the educational material to the criticisms put to it are even worse. The representative of the company affirms that the content that they presented is correct, based on the studies of renowned investigators of researchers all over the world. This is the same language used by ID supporters, complete with the idea that “theory” is defined as any explanation for the topics under study. This is an incredible definition of a scientific theory. The representative compares the theory of evolution with the penal theory, because as legal theory, it can have several possible interpretations. And many of those who comment on the report argue that it should be so, showing all points of view including scientific and religious approaches. This provides a mix of bad science and bad religion, when dealing with the theory of evolution in a preparatory handbook for teacher’s contest of basic education. It can be said, at this point, that the goals of the ID movement are being achieved in Brazil, even having their status as a field of academic research unduly recognized during the Bolsonaro government (SILVA, 2023).

When we talk about risks related to this mixture of science and religion in Brazil, it is necessary to reflect and pay attention to the years of the Bolsonaro government, in which the governmental areas related to science, research, and education were headed by people with religious commitment, and not scientific and educational (BORBA e SILVA, 2023). To illustrate how this concern is real and has pervaded the Bolsonaro era, in 2019, at the very beginning of this government, the president of CAPES (the main official research promotion agency in Brazil) emphatically discoursed on interference in education through creationism and intelligent design by proposing: “We want to add an alternative to the theory of evolution and spread the idea of the existence of an intelligent designer

starting from basic education...”⁸ Thus the Bolsonaro government, through its CAPES president, endorses something that the North American Discovery Institute has already proposed and lost in the US courts (PENNOCK, 2003), as is portrayed in a direct quote from your supposedly scientific and ironically named Evolution (?) News website: “Discovery Institute emphatically recommends against teaching intelligent design in public schools.”⁹

But maybe this issue is being exaggerated here and is just a rhetoric of a government with dogmatic religious commitment, and that the head of Brazilian research would just be cheering the audience, because there has been a deep cut in research funding in the country (BOGGIO, 2019). Unfortunately this was not the reality and part of the fears came true, even with this scarcity of resources, there was a research group with public funding approved by the other major governmental funding agency in Brazil, the CNPq. The pseudoscientific project entitled "Philosophy of Design", what is the meaning of this, inserted in the humanities area, connecting art and technology, to justify the hypothesis of intelligent design, involving researchers from the renowned UNICAMP, Federal University of Rio Grande do Norte (UFRN) and, the always present in this kind of proposal, Mackenzie University (SILVA, 2023). It is worrying and revealing that this kind of research project has been approved and funded by a supposedly secular country.

But it is never too much to remember that Mackenzie University also provided the Bolsonaro government with the minister of education, a pastor, who deeply marked his passage by his complete insensitivity to the most relevant issues for Brazilian education and his commitment to the ideological religious agenda. The presence of this individual has palpably demonstrated the risks for the education sector, and for the entire government, when someone is considered for a public position focusing not on professional merit but on religious belief.

Is it Possible to be a Creationist and Evolutionist?

It is possible to include the explanation of biological evolution within a creationist viewpoint, but this is impossible with someone related to ID, since they insist on denying the evidence of biological evolution. It is important to realize that there is no incompatibility between being religious and understanding evolution. In Darwin's own words provided in one of his last letters: “It seems to

⁸ <https://www1.folha.uol.com.br/educacao/2020/01/novo-presidente-da-capes-defende-criacionismo-em-contraponto-a-teoria-da-evolucao.shtml>

⁹ <https://evolutionnews.org/2017/09/in-science-a-factually-and-logically-challenged-letter-decries-intelligent-design-and-discovery-institute/>

me absurd to doubt that a man may be an ardent Theist and an evolutionist.”¹⁰ The problem is reasoning without any coherence, even in relation to religion, especially among science and biology teachers (SILVA, 2023b; SILVA e MORTIMER, 2020), who should treat the subject with the necessary academic rigor.

There are several moments in the evolutionary history of the universe, of the Earth, of life, and of Man in which the figure of God could be present and considered, but to deny something proved is counterproductive from the point of view of science and religion. So there are movements within the Catholic Church and Evangelicals, for example BioLogos (<https://biologos.org/>), that move to discuss and analyze this issue of reconciling religion and science, without neglecting the evolutionarily assumptions that have been proven (SILVA, 2022). I have written articles with Catholic and Evangelical creationists (SILVA et al., 2017), but none of them deny that evolution happened with random mutations and having the action of natural selection. Nor can I deny that there are universal questions not satisfactorily explained by science and that can be attributed to a Creator, which, in my opinion, should not be the subject of conflict, nor should it be considered in the classroom by teachers, especially in science and biology lessons (SILVA, 2024).

It should be mentioned that members of the ID movement are aggressive in their actions, especially on the internet. They often attack those who defend evolutionary and scientific teaching without any religious commitment, in a way not common for supposed scholars, especially if linked to educational institutions. In this aspect it is very important to avoid the increase of recognition of this kind of dogmatic perception and to defend the presentation of a scientific vision without any religious bias, because only then will there be freedom for each person to have his or her beliefs and to form his or her conclusions in the face of new discoveries. Public schools in a secular country should not defend any religious view, for thus everyone will be respected, especially religious diversity, including those who believe in a designer conceiving everything wonderful that exists in nature, but also elaborating all the suffering, imperfections and supposed evil in nature, today and always. I suggest to ID adherents to avoid personal attacks, such as saying that evolutionists are dishonest and other references disrespectful to those who think differently. It is better to attempt to answer the question asked about Behe’s hypothesis about the Designer and his harmful mutations to humanity.

¹⁰ <https://www.darwinproject.ac.uk/letter/DCP-LETT-12041.xml>

Final considerations

It is necessary to avoid the dissemination of the idea that the science is contrary to religion. Science studies, analyzes, and seeks evidence for hypotheses. Theories must not have the purpose of making people unbelieving or losing their faith. The conflict produced by the denial of religious beliefs in scientific education is problematic for the field of science and for religious people themselves. However, to deny scientific evidence, often offensively; attacking scientists and propagating the misconception that science lies to the population is also dangerous in today's world. An example is the fall in vaccination in Brazil, in USA, and in the world (SILVA, 2020). There are many other examples of distrust in science. It is necessary for the scientific community to emphasize the position of the American scientific community and of the journal PLoS One, in relation to the ideas contained in the article that I referred to. Better still, the scientific community should strongly discourage what happened in the Brazilian letter by invitation. To emphasize the extent of the damage that a bad scientific article can cause, I refer to the respected journal The Lancet which positioned itself in relation to the article against the triple vaccine (SABRA et al, 1998). To this day, decades later, uninformed parents (or worst, misinformed) and even health professionals' question whether they should vaccinate children or not, promoting the return of diseases almost eradicated, and the suffering of so many innocents.

While Brazil deals with scientific publications that invite and accept ID in their pages, and more recently, has several members in charge of the Ministry of Education of the Brazilian government, elected in 2018, openly in favor of the insertion of creationism and its supposedly modern version in science and biology teaching. This challenge to secular and scientific education has already been attempted in the U.S. in the famous federal trial of *Kitzmiller v. Dover Independent School District* in the State of Pennsylvania. In this trial, the goal of the advocates of creationism and ID would be to insert unnatural explanations for natural phenomena, such as the evolutionary process, into the Kansas curriculum (AYALA, 2008). Fortunately, the defense of Biology classes based on methodologically scientific precepts prevailed, which was considered a great victory, but which does not allow North American scientists and professors to fail to pay attention to the movements of conservative groups that still seek this type of insertion (BRANCH, 2007). We must always be demonstrating that intelligent design is not a good explanation for natural phenomena, the human genome project shows us that our design is anything but intelligent, on the contrary full of imperfections (AVISE, 2010).

I emphasize my respect for the academic disciplines here cited, and I think each one has value in his or her specialty, whether in chemistry, biochemistry, or in the broader field of health. Their work must be recognized and respected, but these professionals must also respect their peers, who devote careers to arduous studies of paleontology, for example, and the whole science of evolution. It is important to note that none of these scientists mentioned have as their focus the study of evolution; therefore, it does not make sense for their work to discredit it and undermine scientific teaching. When they mix religion and science in a completely misguided way, ID followers do great disservice to both, as they discredit the work of thousands of academics worldwide and treat religion as a logic-challenging reasoning effort. The position of the new atheists who attack the religion and of the ID supporters who disqualify science have the same impact, they create conflict by saying that it is necessary to stand in favor of one side against the other. Both provide a disservice to education, religion, and science.

The question of the mixture in Brazil of science, education, and religion seems far from over, at the end of the year 2022 the country experienced an electoral process radicalized in religious dogmatism, ruling out the possibility of a truly secular state. Issues that should be marginal about religion linked to Brazilian politics were at the center of the debate, and important issues of health and education could not be placed, so as not to lose the support of religious leaders, even involving Fake News about the candidates in their personal beliefs and views. It is hoped that this level of interference from the religious field can decrease with the election of President Lula, and that the teaching of biological evolution can occur without any noise coming from those who advocate for creationism and intelligent design in education and science.

Acknowledgements: The author would like to thank UNIFORMG and the Research Productivity Scholarship Program (PQ) of the State University of Minas Gerais (UEMG) for the scholarship and the incentive to research.

References

ALVES, Fernando Everton. **Theory of intelligent design**. Clinical & Biomedical Research, v. 35, n. 4, p. 250–1, 2015.

AVISE, John C. **Inside the human genome: A case for non-intelligent design**. [S.l.]: Oxford

University Press on Demand, 2010.

AYALA, Francisco J. **Science, evolution, and creationism**. Proceedings of the National Academy of Sciences of the United States of America. [S.l.]: National Academy of Sciences. Disponível em: <<http://www.ncbi.nlm.nih.gov/pubmed/18178613>>. Acesso em: 16 jan 2019. , 8 Jan 2008

AYALA, Francisco José. **Darwin's Gift to Science and Religion**. Washington, DC: Joseph Henry Press, 2007.

BEHE, Michael J. **Waiting longer for two mutations**. Genetics, v. 181, n. 2, p. 819–820, 2009.

BOGGIO, Paulo Sérgio. **Science and education are essential to Brazil's well-being**. Nature human behaviour, v. 3, n. 7, p. 648–649, 2019.

BORBA, Rodrigo Cerqueira do Nascimento e SILVA, Hesley Machado. EL LAICISMO EN LA EDUCACIÓN Y LA ENSEÑANZA DE LAS CIENCIAS Y LA BIOLOGÍA: CUESTIONES INQUIETANTES ANTE RETOS INELUDIBLES. MENDONÇA, A.; SEPULVEDA, D.; SEPULVEDA, J. A. (Org.). . Laicismo en la educación: políticas, conceptos y prácticas. London: Scienza Scripts, 2023. .

BRANCH, Glenn. **Understanding creationism after Kitzmiller**. BioScience, v. 57, n. 3, p. 278–284, 2007.

BRUNS, Barbara e EVANS, David e LUQUE, Javier. **Achieving World Class Education in Brazil: The Next Agenda**. [S.l.: s.n.], 2010.

CAMPOS, Lucas Pacheco e LINS, Tuíla. **Pandemia à Portuguesa: um relato sobre o Covid-19 em Portugal**. Espaço e Economia. Revista brasileira de geografia econômica, 2020.

COLLINS, Francis S. **Faith and the Human Genome**. Perspectives on Science and Christian Faith, v. 55, n. 3, p. 142–153, 2003. Disponível em: <<http://www.asa3.org/ASA/PSCF/2003/PSCF9-03Collins.pdf>>.

CRESSEY, Daniel. **“Creator” paper sparks concern**. Nature, v. 531, n. 7593, p. 143, 2016. Disponível em: <<http://www.nature.com/news/paper-that-says-human-hand-was-designed-by-creator-sparks-concern-1.19499>>.

DOBZHANSKY, Theodosius. **“Nothing in biology makes sense except in the light of evolution”**. The American Biology Teacher, v. 35, n. 125–129, 1973.

EBERLIN, Marcos N. **Fomos planejados: a maior descoberta científica de todos os tempos**. 5. ed. [S.l.]: Editora Mackenzie, 2018.

GREAVES, Mel. **Darwinian medicine: a case for cancer**. Nature Reviews Cancer, v. 7, n. 3, p. 213–221, 2007.

LIPSTADT, Deborah. **Denying the Holocaust: The Growing Assault on Truth and Memory**. [S.l.]: Penguin; UK ed. edition, 2016.

LIU, Ming Jin e colab. **Biomechanical characteristics of hand coordination in grasping activities of daily living**. PLoS ONE, v. 11, n. 1, p. 1–16, 2016.

MACHADO SILVA, Hesley. **Liberdade médica questionável**. Revista Saúde. com, v. 19, n. 4, 2023.

MAXMEN, Amy. **Rise in malaria cases sparks fears of a resurgence**. Nature, 2017.

MCELREATH, Richard. **Sizing up human brain evolution**. Nature, v. 557, p. 496–497, 2018.

PENNOCK, Robert T. **Creationism and Intelligent Design**. Annual Review of Genomics and Human Genetics, v. 4, n. 1, p. 143–163, 2003.

PENNOCK, Robert T. **The postmodern sin of intelligent design creationism**. Science & Education, v. 19, p. 757–778, 2010.

PISONB, Gilles e colab. **Impact of chloroquine resistance on malaria mortality Impact de la Résistance à la chloroquine SUR LA MORTALITÉ PALUSTRE**. Comptes Rendus de l'Académie des Sciences - Series III - Sciences de la Vie, v. 321, n. 8, p. 689–697, 1998. Disponível em: <http://horizon.documentation.ird.fr/exl-doc/pleins_textes/pleins_textes_7/b_fdi_51-52/010015735.pdf>.

SABRA, A. e BELLANTI, J. A. e COLON, A. R. **Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children [3]**. Lancet, v. 352, n. 9123, p. 234–235, 1998.

SCHEUFELE, Dietram A e KRAUSE, Nicole M. **Science audiences, misinformation, and fake news**. Proceedings of the National Academy of Sciences, v. 116, n. 16, p. 7662–7669, 2019.

SHANKS, Niall. **God, the devil, and Darwin: A critique of intelligent design theory**. [S.l.]: Oxford University Press, 2004.

SHRINER, Daniel e ROTIMI, Charles N. **Whole-Genome-Sequence-Based Haplotypes Reveal Single Origin of the Sickle Allele during the Holocene Wet Phase**. American Journal of Human Genetics, v. 102, n. 4, p. 547–556, 2018. Disponível em: <<https://doi.org/10.1016/j.ajhg.2018.02.003>>.

SILVA, Hesley M. **Tratamento profilático contra a Covid-19 no Brasil, um risco inútil**. Revista Saúde. com, v. 18, n. 1, 2022.

SILVA, Hesley Machado; **Ark of Absurdities**. Skeptic, v. 25, n. 2, p. 26–30, 2020.

SILVA, Hesley Machado. **Antibiotics against viruses: Brazilian doctors adrift**. Infection Control & Hospital Epidemiology, p. 1–5, 2021a.

SILVA, Hesley Machado e colab. **Biology Teachers' Conceptions About the Origin of Life in Brazil, Argentina, and Uruguay: a Comparative Study**. Zygon, v. 52, n. 4, p. 943–961, 2017.

SILVA, Hesley Machado. **Evolution and religion: the conflict: in teaching Darwinian theory**.

ASE International, v. 15, n. 5, p. 5, 2022.

SILVA, Hesley Machado. **Intelligent design endangers education**. Science, v. 357, n. 6354, p. 880.1-880, 1 Set 2017. Disponível em:
<<http://www.sciencemag.org/lookup/doi/10.1126/science.aao3245>>. Acesso em: 21 mar 2018.

SILVA, Hesley Machado. **Relevância de Deus para a evolução biológica: percepções de professores de Biologia em três países latino-americanos**. Ciência & Educação (Bauru), v. 30, p. e24009, 2024.

SILVA, Hesley Machado. **Risks of scientific misinformation through press and pre-print articles**. Irish Journal of Medical Science (1971-), p. 1–2, 2023a.

SILVA, Hesley Machado. **Secularism, biology teachers, and evolution teaching: a comparative analysis of the Brazilian phenomenon**. Journal of Biological Education, p. 1–16, 2023b.

SILVA, Hesley Machado. **The Brazilian Scientific Denialism Through The American Journal of Medicine**. The American Journal of Medicine, p. 2019–2020, 2021b. Disponível em:
<<https://doi.org/10.1016/j.amjmed.2021.01.003>>.

SILVA, Hesley Machado. **The historic success of vaccination and the global challenge posed by inaccurate knowledge in social networks**. Patient Education and Counseling, 2020. Disponível em: <<https://www.sciencedirect.com/science/article/pii/S073839912030481X?via%3Dihub>>.

SILVA, Hesley Machado. **Will Creationism Continue to Flourish in Brazil ?** Scientific American, 2023c.

SILVA, Hesley Machado e MORTIMER, Eduardo Fleury. **Teachers' Conceptions about the Origin of Humans in the Context of Three Latin American Countries with Different Forms and Degrees of Secularism**. Science and Education, v. 29, n. 3, p. 691–711, 1 Jun 2020.

SIMON NEUBAUER, JEAN-JACQUES HUBLIN, Philipp Gunz. **The evolution of modern human brain shape**. SCIENCE ADVANCES, v. 4, p. 1–8, 2018.

SKELL, Philip. **A Scientific Dissent from Darwinism**.
<http://www.discovery.org/scripts/viewDB/filesDB-download.php?command=download&id=660>, 2016.

STAFF, The PLOS ONE. **Retraction: Biomechanical Characteristics of Hand Coordination in Grasping Activities of Daily Living**. PLoS ONE, v. 11, n. 3, p. 1, 2016.



The licensing rights used by the journal Education in Focus is the license *Creative Commons Attribution-NonCommercial 4.0 International* (CC BY-NC-SA 4.0)

Recebido em: 30/10/2022
Aprovado em: 20/09/2023