The evolution of intelligent design: between religion and science

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La evolución del diseńo inteligente: entre religión y ciencia

A evolução do design inteligente: entre religião e ciência

L'évolution du design intelligent: entre religion et science

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Abstract. This work evaluates intelligent design (ID) as a pseudoscience. Science has many attached formal definitions, as does pseudoscience. They have both been contested in various fields. In the political sphere, they are both characterized by a plurality of conflicting views. There is no single philosophy of science, thus, no unique methodology. Demarcation is not a clear-cut. This issue becomes problematic in evaluating Intelligent Design as its proponents claim that scientists have dismissed ID on the grounds of it lacking scientificity. Here, we select a set of pseudoscience definitions to evaluate whether ID meets the demarcation criteria. Given that our unit of analysis is Intelligent Design, the question we set out to answer is whether intelligent design is a pseudoscience or can intelligent design be characterized as one or more forms of pseudoscience.

Keywords: demarcation criteria; intelligent design; naturalism; pseudoscience; scientific method.

Resumen. Este trabajo evalúa el diseño inteligente (DI) como una pseudociencia. La ciencia ha incorporado muchas definiciones; asimismo la pseudociencia. Ambas han sido discutidas en diversos ámbitos. En la esfera política, están caracterizadas por una pluralidad de conflictos de visiones en discusión. No existe una sola filosofía de la ciencia, consecuencia, tampoco una sola metodología. Los criterios de demarcación no son claros. Esto se torna problemático al evaluar el diseño inteligente. Los científicos no conciben incluir el diseño en el campo científico en su pretensión de que carece de cientificidad. Aquí, seleccionamos un conjunto de definiciones de pseudociencia para evaluar si el DI satisface los criterios de demarcación. Dado que nuestra unidad de análisis es el DI, se plantea la pregunta si el diseño inteligente es una pseudociencia, o si se puede caracterizar el diseño inteligente como una o varias formas de pseudociencia.

Palabras clave: criterios de demarcación; diseño inteligente; método científico; naturalismo; pseudociencia.

Resumo. Este trabalho avalia o design inteligente (DI) como uma pseudociência. A ciência incorporou muitas definições; também a pseudociência. Ambas foram discutidas em vários campos. Na esfera política, ambas são caracterizadas por uma pluralidade de visões conflituantes. Não existe uma única filosofia da ciência, portanto, nenhuma metodologia única. Os critérios para demarcação não são claros. Isso se torna problemático na avaliação do design inteligente, uma vez que seus proponentes afirmam que os cientistas não pretendem incluir o design no campo científico em sua alegação de que falta cientificidade. Aqui, selecionamos um conjunto de definições de pseudociência para determinar se o DI atende aos critérios de demarcação. Dado que nossa unidade de análise é o DI, a questão que nos propomos a responder é se o design inteligente é uma pseudociência ou se o design inteligente é caracterizado como uma ou várias formas de pseudociência.

Palavras-chave: critérios de demarcação; design inteligente; método científico; naturalismo; pseudociência.

Résumé. Ce travail évalue le dessein intelligent (DI) en tant que pseudoscience. La science a incorporé plusieurs définitions; aussi la pseudoscience. Les deux ont été discutés dans divers domaines. Dans le domaine politique, ils sont caractérisés par une pluralité de points de vue contradictoires. Il n'y a pas de philosophie unique de la science, donc pas de méthodologie unique. Les critères de démarcation ne sont pas clairs. Cela devient problématique lors de l'évaluation de la conception intelligente. Les scientifiques n'ont pas l'intention d'inclure le design dans le domaine scientifique dans leur affirmation selon laquelle il manque de scientificité. Ici, nous sélectionnons un ensemble de définitions de pseudosciences pour évaluer si la DI répond aux critères de démarcation. Puisque notre unité d'analyse est la DI, la question se pose de savoir si le design intelligent est une pseudoscience, ou si le design intelligent peut être caractérisé comme une ou plusieurs formes de pseudoscience.

Mots-clés : critères de démarcation ; dessein intelligent ; méthode scientifique ; naturalisme ; pseudoscience.

Introduction

This work is an evaluation of whether Intelligent Design (ID) should be considered a pseudoscience, based on a few viewpoints. Science has many attached formal definitions, as does pseudoscience. They are both inevitably contested by those with stakes in their use in political contentions and, thus, both are characterized by a plurality of conflicting criteria across the discussans. There is no *single* philosophy of science, and therefore no *single* methodology of science. Demarcation is not a clear-cut issue; it is subjected to the judgments and values of those who exercise it (Peterson, 2002). One cannot avoid evaluating pseudoscience in light of science. These issues become problematic in an evaluation of intelligent design in particular, as its proponents claim that science (lowercase s) has been captured by scientists (Darwinists) who dismiss ID on the grounds of it not being Science, but instead, science. What we can do is to merely select a set of definitions of pseudoscience - drawing from different philosophies and methodologies of what constitutes science - and see whether ID meets these demarcation criteria. Our unit of analysis is intelligent design as presented in a series of works by Dembski and Behe. The question we set out to answer is: "Is intelligent design a pseudoscience?" or "Can intelligent design be characterized as one or more forms of pseudoscience?"

In this essay, we begin with an introduction, which is followed by the history and main characteristics of ID. We then introduce the politics of ID, which play an important role to understand the debate around its legitimacy. From there, we will challenge the scientific nature of Intelligent Design from the perspective of its metaphysical assumptions and from a formal logic perspective, based on the two perspectives. Then, we discuss whether ID would qualify as a pseudoscience, or not. We conclude the essay with some remarks on possible futures of the academic discussion. Throughout the text, we persistently compare and contrast ID to evolutionism on similar grounds to ascertain whether established criteria to label a theory "science" would fit either, both or none.

Intelligent design: origins and characteristics

In this section, we provide basic notions of ID through a presentation of its historical background and of its main characteristics.

Historical background

The idea of a design hypothesis to explain how life and the World came to be dates back many centuries. Xenophon, Greek philosopher (430-354 BC), attributed to Socrates the idea of the evidence of the existence of Gods, considering the design of the physical world (Woodruff, 2006). Other philosophers supported this argument such as Galen of Pergamum, a Greek physician, who argued that the complexity of a living organism is possible only through intelligent design (Sedley, 2008). In the 13th century, in his book

Summa theological, St. Thomas Aquino mentioned that for every arrow shot there is an archer (Aquinas, 2010). Rejected and accepted as a possible design argument (George, 2013), Aquino refers to an intelligent being that decides the direction and end of natural things (McPherson, 1972). The world debate on the seventeenth and the eighteenth-century had a "clever divine watchmaker" as the creator of everything; it was the intertwining of theology and natural philosophy (Dunér, 2016). Hume (2003) (originally published in 1779, posthumously, McPherson, 1972) claimed evidence of a "deity," an "author of nature," capable of understanding what is beyond human understanding (Hume, 2003). In 1859, William Paley published his work, Natural Theology, wherein he presented his "argument by design," considered "the best argument for the existence of God" (Dawkins, 1986). Paley used an analogy known as "the watchmaker" where he states "(…) is inevitable, that the watch must have had a maker: that there must have existed (…), an artificer (…): who comprehended (…), and designed its use" (Paley, 1833). Bernard le Bovier de Fontanelle had used this analogy previously in 1686. In a way, its opponents considered the same design hypothesis. In 1986, Richard Dawkins, an ultra-Darwinist (Dembski, 1998), wrote the following in the second paragraph of his seminal work, "Biology is the study of complicated things that give the appearance of having designed for a purpose" (Dawkins, 1986). Dawkins wrote a counterpart for Paley's analogy, The Blind Watchmaker.

Over the years, supporters of the design hypothesis have resonated. William Dembski and Michael Behe are two of the main ID proponents, who have described it using very debated examples, such as radio signals and "the mousetrap" (George, 2013). Through a mathematical approach to design in nature (George, 2013), Dembski (1998) argued that design does not suffocate science. There is no need to be afraid of it because when evolution dissuades research, design stimulates it, and there is nothing wrong with thinking about an intelligent agent as a designer; the design is not a science stopper. For him, the presence of specified complexity made manifest the existence of an intelligent designer (George, 2013), or an intelligent agent that, according to Behe (1996), intentionally designed every part of life. Both studies, Dembski and Behe are connected (Dembski, 1998). The discussion about science and religion, evolutionism, and creationism, which runs through their claims, has political scopes. In 1989, a biology textbook published in the U.S., pit the ID concept, in the forefront, against running criticism. "Of Pandas and People: The Central Question of Biological Origins" is a book that explains to students the ups and downs of both the biological-evolution theory and the concept of intelligent design (Davis, Kenyon, & Thaxton, 1993). According to Wexler (1997), the textbook is written to explain natural phenomena better using the ID theory instead of the evolution theory. The textbook drew from the theological discussions of the design argument the term "Intelligence Design" and used it as a new variant of creationism. The book was still a draft in 1987 when a Supreme Court decision annulled an Arkansas statute requiring public schools to strike a balance in their teaching of creationism and evolution (Wexler,

1997). This statute violated the first line of the first amendment (Beckwith, 2003), which reads, "Congress shall pass no law respecting an establishment of religion," and is found in the US Bill of Rights. Officially, the debate began in 1925 with the trial of Epperson v. Arkansas (Beckwith, 2003). The book has no biblical stories, mentions no particular conception of a creator, and it does not refuse evolution directly' stating in the introduction, "By now you are aware that you have a mind of your own. Here is a good opportunity to use it" (Wexler, 1997).

In 1997, the publisher of the book, Of Pandas and People reported sales in 48 states. However, some states such as Idaho continued rejecting it (Wexler, 1997). In 1992, a school board member in Vermont demanded creationism be taught again; this was granted in 1993. In 1995, the board meeting of the Plano Independent School District, pressed by a mob, banned its trustees from purchasing the textbook, except if it was requested by a staff member to use it in a biology classroom. Finally, in 1996, in Alabama, it was required that all biology textbooks include the statement "Evolution is a controversial theory accepted by some scientists." New Hampshire decided not to teach evolution without parental consent. It must be noted that Christian conservatives controlled over 2000 local school boards in the Country (Wexler, 1997). Today, in a rural school in Pennsylvania, the school director enters the classroom during biology class and reads the following: "Because Darwin's theory is a theory, it is still being tested as new evidence is discovered. The theory is not a fact. Gaps in the theory exist for which there is no evidence (…). Intelligent design is an explanation of the origin of life that differs from Darwin's view. The reference book, Of Pandas and People, is available for students to see if they would like to explore this view (…). As is true with any theory, students are encouraged to keep an open mind" (Wallis, 2005).

Main characteristics of ID

The framework of ID has been defined mainly by the works of William Dembski and Michael Behe (Peterson, 2002). Dembski is a mathematician and a philosopher that has contributed to the development of theoretical and mathematical grounds for detecting design (Peterson, 2002). Behe is a biochemist that has provided examples from molecular biology that cannot be explained by the standard evolutionary theory (Peterson, 2002).

In this work, we primarily study Dembski's "Intelligent Design – The Bridge Between Science & Theology" (the Bridge hereinafter). The book addresses the detection of design, rather than the argument itself; thus, we evaluate the methodological aspect of the field. According to the Bridge, Intelligent Design can be considered using three different items:

- A scientific research program that investigates intelligent causes;
- An intellectual movement that challenges Darwinism and its naturalistic legacy;
- A way of understanding divine action (Dembski, 1999).

Dembski (2006) subsequently defined ID as "a field of study that investigates signs of intelligence." (p. 2). Design, as the name suggests, stems from intelligence. Design, then, is the product of "effect-to-cause-reasoning" (Dembski, 2006, p.3). The field is thus concerned with the detection of signs of design. This design presupposes some intelligence that precedes life, as we know it; but as Dembski argues, ID does not concern itself with the nature of this designer, as to detach the work from comparisons with creationism. Instead, what is studied (detected) is the work of this designer. The hypothesis tested in ID work is then, whether an item exhibits signs of design. The official description by the Discovery Institute is:

"The theory of intelligent design holds that certain features of the universe and living things are best explained by an *intelligent cause*, not an undirected process such as natural selection." (http://www.intelligentdesign.org/whatisid.php)

An intelligent source is always inferred with three considerations in mind, contingency, complexity, and specification (Dembski, 1999). Each criterion serves to exclude alternative explanations for an item's contrivance. Descriptions follow: "*Contingency* ensures that the object in question is (…) irreducible to any underlying physical necessity". "*Complexity* ensures that the object is not so simple that it can be readily explained by chance."

In ID, a system displays *irreducible* complexity when its parts are all vital in maintaining its functioning. In counter to the evolutionists' argument that biological entities are the products of gradual change of existing systems, the irreducibility argument is that such a process would necessarily be undirected, and cannot explain organisms that function toward a particular purpose. The existence of an "irreducibly complex" is the foundation for the belief that a designer must have set this process in motion toward a certain goal, or function, from the start – via design. Specified complexity is another supposedly observable characteristic held by that, which is designed. "*Specification* ensures that the object exhibits the type of pattern characteristic of intelligence" (Dembski, 1999, p. 129).

These characteristics help identify whether the character of an event or object is attributable to some law, to chance, or to design (see Figure 1 for a visualization of the explanatory filter). An advocate of ID (ID'ist) first excludes the possibility of a natural law explaining the contrivance - if this is not the case; the item is checked for complexity and specificity. If it is complex and specific, the ID'ist proceeds to 'reverse engineer' the item. According to Dembski (1999), this reverse engineering is "ID's positive contribution to science" (p. 108). He continues, "Having determined that certain natural objects are designed, the design theorist next investigates how they were produced. Yet because evidence of how they were produced is typically incomplete (at least for natural objects), the design theorist is left instead of investigating how these objects could have been produced". No further instructions follow, however. Apart from this lack of description, there is an issue to which we will return when evaluating the criteria; ID seemingly takes the stance that it knows how an intelligent designer would or could act. Hidden behind this

'investigative' veil is a normative position on intelligence, that is centered entirely around a fundamentally *human* understanding of it. With this human understanding also comes the notion of privileging human preconceptions of purpose and meaning, which we comment on in our analysis.
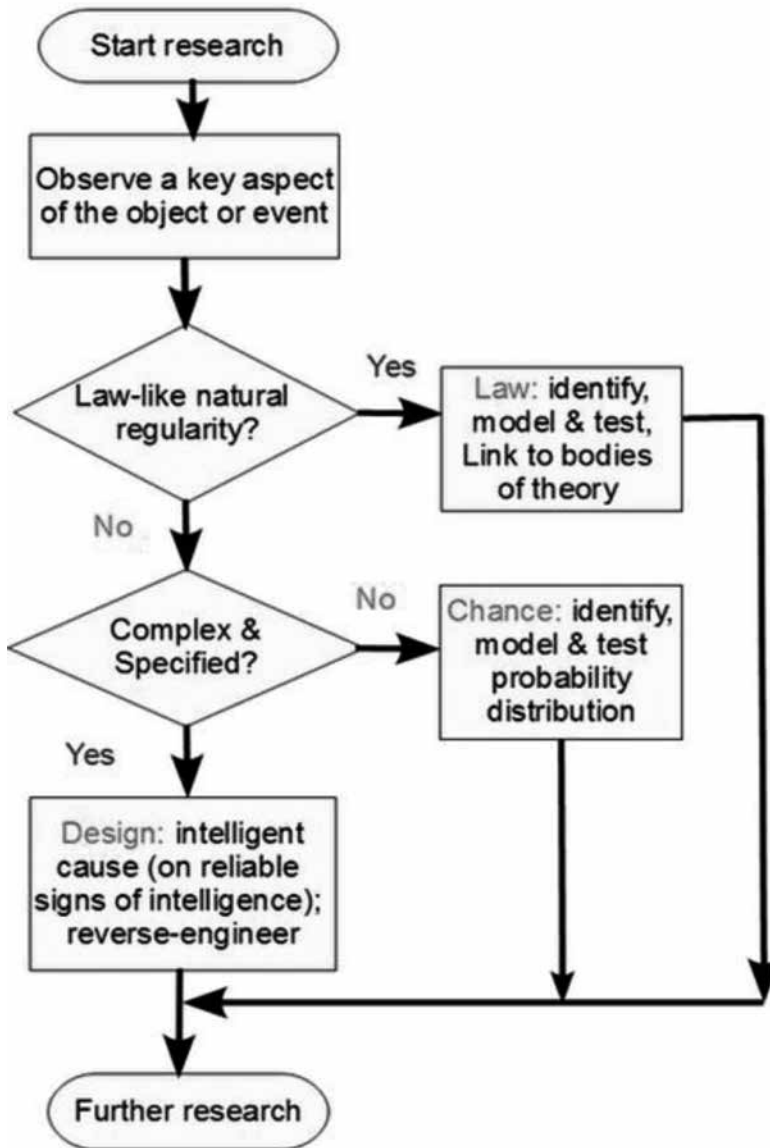

Figure 1. The explanatory filter.
Source: http://iose-gen.blogspot.se/2010/06/significance-of-origins-science-ideas.html

The politics of ID – a holistic analysis

As understandable from the discussion about the place of ID in the education system, presented in the historical section of this paper, intelligent design is more than just the hypotheses it generates. It is an active political body, with an agenda, proponents, and opponents (Pullen, 2005). Therefore, before venturing into a more detailed analysis of the grounds that would qualify or disqualify ID as pseudoscience, we briefly discuss the political debate in which the theory is an active participant.

The main bodies of work in ID have much to say about religion. Dembski (1999), even goes as far as claiming that the work is "(…) a way of understanding divine action" (p. 13). That "all disciplines find their completion in Christ and cannot be properly understood apart from Christ" (p. 206), and that "Christ is indispensable to any scientific theory, even if practitioners have no clue about him" (p. 210). These statements have led to a concern that ID is, in fact, creationism in disguise, cloaked in science, and is an attempt to bring the idea of God into 'pure science' (Peterson, 2002). ID has faced some unfavorable winds in this matter. For instance, in an evaluation of ID, Koperski (2008) notes that an anonymous source at the Discovery Institute made public a document (The Wedge Strategy), which lays out the Institute's intentions of establishing a Christian science, through a scientific revolution. However, in light of such political conflict, Koperski goes on to state, that this associated political background does not concern the evaluation of ID's, or any science's scientific status; this is essential for the paper at hand. In simple logic, "One's motivations for presenting an argument have no bearing whatsoever on the validity of that argument" (p. 436). Ideally, we would detach from discussing the politics of ID to any greater extent. However, to the extent that the politics of the field affect the way in which it presents its arguments, they are of interest to us, allowing us to ask, "Is ID a pseudoscience in the sense that it pretends to be science?" Our analysis in this section is concerned not with the content of the claims, but with their form. If ID is indeed a masked political or religious agenda, we would expect it to conform to the format of that which it mimics. It would use its terminology and its visuals. Does this seem to hold for ID?

If we look to Bunge's (1984) account of pseudoscience as a cognitive field, "(…) a sector of human activity aiming at gaining diffusing, or utilizing knowledge of some kind (…)." (p. 36), we obtain a tool to evaluate ID as a whole. Rather than looking solely at the science of the work, his method covers areas beyond the formal matters of logical detail in tests. He proposes the use of a table that describes attitudes and practices of scientists and pseudo-scientists (Table 1) and draws a clear line of demarcation between the two positions. The criteria are provided in the table below.

Table 1. Comparison of attitudes and activities of scientists and pseudoscientists

	Scientist			Pseudo-Scientist		
Typical attitudes and activities	**Yes**	**No**	**Optional**	**Yes**	**No**	**Optional**
Admits own ignorance, hence need for more research	x				x	
Finds own field difficult and full of holes	x				x	
Advances by posing and solving new problems	x				x	
Welcomes new hypotheses and methods	x				x	
Proposes and tries out new hypotheses	x					x
Attempts to find or apply laws	x				x	
Cherishes the unity of science	x				x	
Relies on logic	x					x
Uses mathematics	x					x
Gathers or uses data, particularly quantitative	x					x
Looks for counterexamples	x				x	
Invents or applies objective checking procedures	x				x	
Settles disputes by experiment or computation	x				x	
Falls back consistently on authority		x		x		
Suppresses or distorts unfavorable data		x		x		
Updates own information	x				x	
Seeks critical comments from others	x				x	
Writes papers that can be understood by everyone		x		x		
Is likely to achieve instant celebrity		x		x		

Source: Bunge (1984).

Bunge's table can be used as a barometer to assess whether any self-proclaimed science can be considered such from a formal standpoint. Therefore, we applied it to ID to verify if it would qualify or disqualify as science from the perspective of the tarditional understanding of scientific form. Table 2 (at the end of this section) shows Bunge's list of criteria, with two added columns. The first column added provides an evaluation of ID concerning each criterion, whereas the last column gives examples or comments to justify the evaluation. From the table, it is apparent that ID would not qualify based on a "scientificity test" if we were to choose Bunge's method to perform one. In fact, it only fulfills

6 out of 19 criteria to be called scientific; other than those, it presents all the characteristics of a pseudoscience. Where ID qualifies is in its reliance in the categories of logic; use of mathematics; gathering or use of data, particularly quantitative data; avoidance of suppression or distortion of unfavorable data; and, the update of its information. This adequacy is not surprising given Dembski's background as a mathematician, which explains why logic and mathematics have played a major role in grounding the foundational claims of the ID movement. Rejection by the main established scientific outlets brought about the need to detach the field of ID from the mainstream officially. Initially, Dembski and Behe sought to present their thesis in the running scientific debate of top biology journals. These efforts resulted in a series of standoffish rebuffs during the peer-review process, which deemed the ID field as unworthy of further discussion. The apologetic nature of ID is far from being an "in-built" feature, but more of an emergent property resulting from the lack of counterparts willing to yield to challenge the mainstream explanation of creationism.

With a closer look at the criteria that characterize ID as a pseudo-science, we find that many of them are biased towards the assumption behind the scientific method. ID does not advance by posing new problems, nor does it welcome new hypotheses and methods or propose and try out new hypotheses, or further attempts to find or apply laws. The latter would go against its core assumptions that are discursive by nature. ID seeks to provide convincing grounding arguments to explain many different phenomena without necessarily varying the underpinning logic. The main selling point of ID is the scope of its applications, which make it a universally valid claim, according to its main proponents. Based on the latter, we might need to rethink whether a tool that is so intensely biased in the scientific method, such as Bunge's (1984), is the most appropriate to drive unbiased conclusions. Besides the propaganda efforts and the strong political character acquired by ID claims, we can negate the idea that, shifting the assumptions about what science is and the form it should have could generate a different conclusion about ID. This conclusion would perhaps bring implications to the broader scientific arena prompting it to reconsider the unchallenged paradigms that now follow any science recognized as such.

Instead of embracing its arguably legitimate position as an alternative to evolutionism, ID has opted to familiarize itself toward the *scientific* audience by adopting the scientific mode of discourse and methods. Relatedly, Gardner (1957) and Baigrie (1988) nurtured the notion that pseudoscience is that which pretends to be science but is not. To avoid a demarcation that a priori favors these aspects of science, some attempts at demarcation have explored a more primitive conception of what makes research activity legitimate. According to Fuller (1985), what is at stake is not whether a field is *scientific*, the core issue is demarcating fields based on whether the information they produce is epistemically warranted or not. To play at this angle, we draw from Hansson's (2009) criteria of pseudoscience. He states that a field is pseudoscientific if it a) pertains to an issue

within the domains of science, b) is not epistemically warranted, and c) tries to create an impression of having the following:

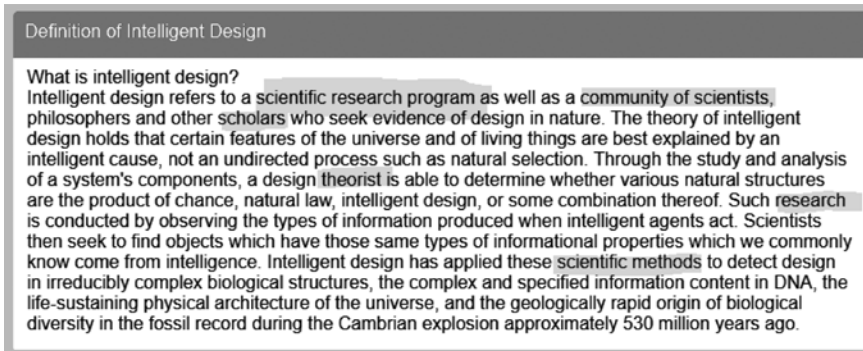1. Epistemic warrant, or 2. Being scientific (Figure 2).

Definition of Intelligent Design

What is intelligent design?
Intelligent design refers to a scientific research program as well as a community of scientists, philosophers and other scholars who seek evidence of design in nature. The theory of intelligent design holds that certain features of the universe and of living things are best explained by an intelligent cause, not an undirected process such as natural selection. Through the study and analysis of a system's components, a design theorist is able to determine whether various natural structures are the product of chance, natural law, intelligent design, or some combination thereof. Such research is conducted by observing the types of information produced when intelligent agents act. Scientists then seek to find objects which have those same types of informational properties which we commonly know come from intelligence. Intelligent design has applied these scientific methods to detect design in irreducibly complex biological structures, the complex and specified information content in DNA, the life-sustaining physical architecture of the universe, and the geologically rapid origin of biological diversity in the fossil record during the Cambrian explosion approximately 530 million years ago.

Figure 2. Definition of ID. Discovery Institute Website.
Source: http://www.intelligentdesign.org/whatisid.php.

ID unmistakably fulfills letter A; it pertains to the contrivance of the world, something that all sciences discuss. However, ID has traditionally dealt with issues within biology specifically, such as the complexity of DNA (The Discovery Institute, 2017). B and C are uncertain criteria, due to the vagueness of epistemic warranty, which Hansson claims refers to the "reliability" of information. Taking some liberty and classifying information as not epistemic warranted when it is derived from a, in some sense, fundamentally lack-luster methodology such as one based on unfalsifiable hypotheses or dubious constructs (as is shown below to be the case for ID); we can consider criteria B fulfilled. Given B, for criteria C-2, there is a strong tendency within ID towards the claim of being *scientific*.

For instance, Figure 3 shows a rhetorical question posed on the Discovery Institute's informational website and its response.
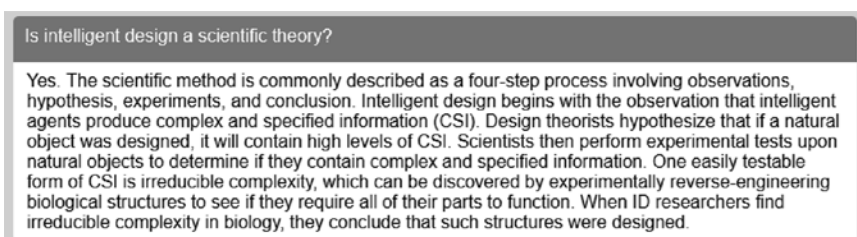

Is intelligent design a scientific theory?

Yes. The scientific method is commonly described as a four-step process involving observations, hypothesis, experiments, and conclusion. Intelligent design begins with the observation that intelligent agents produce complex and specified information (CSI). Design theorists hypothesize that if a natural object was designed, it will contain high levels of CSI. Scientists then perform experimental tests upon natural objects to determine if they contain complex and specified information. One easily testable form of CSI is irreducible complexity, which can be discovered by experimentally reverse-engineering biological structures to see if they require all of their parts to function. When ID researchers find irreducible complexity in biology, they conclude that such structures were designed.

Figure 3. Is intelligence design a scientific theory? Discovery Institute Website
Source: http://www.intelligentdesign.org/whatisid.php.

As shown in Figure 3, ID presents itself as a scientific theory that is compatible with the scientific method. Regarding testability, the response states, "One easily testable form of CSI is irreducible complexity." However, as we will see later, this straightforwardness of testability is superficial. Moreover, this definitional section is riddled with claims of scientificity.

Clearly, ID'ists wish to portray themselves as scientists, fulfilling criteria C-2. The field also fulfills the extended criterion of C-1; epistemic warranty is the single subject of Chapter 4 (Naturalism and its Cure) in *the Bridge*. This chapter is an attempt to dethrone naturalistic arguments as warranted by default, by indicating that there is only politics blocking ID from legitimacy; however, there is more than politics standing in the way.

Table 2. Evaluation of ID's *scientificity* based on Bunge (1984)

Typical attitudes and activities	Scientist			Pseudo-Scientist			ID			
	Yes	No	Optional	Yes	No	Optional	Yes	No	Optional	
Admits own ignorance, hence, requires more research	x				x			x		ID feels they have an explanation, which does not require further inquiry.
Finds own field difficult and full of holes	x				x			x		No.
Advances by posing and solving new problems	x				x			x		No.
Welcomes new hypotheses and methods	x				x			x		Method is the same across ID contributions.
Proposes and tries out new hypotheses	x					x			x	It reformulates the same hypothesis in the few empirical testing that has been done.
Attempts to find or apply laws	x				x			x		No, it is more than an understanding of an explanation of an argument about creationism.
Cherishes the unity of science	x				x			x		No, ID is contending with the established sciences.
Relies on logic	x					x	x			Yes.
Uses mathematics	x					x	x			Yes.
Gathers or uses data, particularly quantitative	x					x	x			Yes.
Looks for counterexamples	x				x			x		No.

Table continues...

Typical attitudes and activities	Scientist			Pseudo-Scientist			ID			
	Yes	No	Optional	Yes	No	Optional	Yes	No	Optional	
Invents or applies objective checking procedures	x				x		x			Yes. They tried to participate in academic debate by submitting articles to the established journals, but got rejected during the peer review evaluations.
Settles disputes by experiment or computation	x				x			x		No.
Falls back consistently on authority		x		x			x			Yes. The work of Demski and Behe is referenced in all ID works.
Suppresses or distorts unfavorable data		x		x				x		If data does not fit, they provide explanation why.
Updates own information	x				x		x			Yes.
Seeks critical comments from others	x				x			x		They tried, but since established sciences rejected them, they set up their own publishing actions.
Writes papers that can be understood by everyone		x		x			x			Yes. They also do propaganda to include teaching of ID in schools to kids.
Is likely to achieve instant celebrity		x		x			x			Media attention is part of their agenda.

Challenging intelligent design from a metaphysical and a logical position

In Dembski (1999), ID is portrayed as an outcast science, which has been alienated from the scientific discourse by the dominating politics of Darwinists. An intuitive way of dismissing ID is to claim that it is unscientific, in that it does not conform to the hypotheses of evolutionists. However, Dembski (1999) argues that one cannot legitimately neglect ID on such grounds. In the same way, claiming that ID is a pseudo-science solely because it does not produce a testable hypothesis, as the established scientific method would require, could be misleading. With this, we will briefly discuss first, the negative classification of ID as pseudo-science based on its metaphysical assumptions, then, its positive classification as a pseudo-science based on its fulfillment of the characteristics representing what we commonly refer to as the scientific method.

Metaphysics and ID

Presented as a prominent issue in Dembski (1999), Darwinism (or ontological naturalism [Koperski, 2008]) is based on the a priori metaphysical assumption that there is no creator, hence, no directed design; science must proceed on the premise that natural order is the governing mechanism. Evolution could only be viable from this assumption as an undirected process with the sole purpose of survival. Koperski concludes that following the ontological assumption comes methodological naturalism (the scientific method), which is merely the methods, should one assume that the ontological assumption holds true. Therefore, this methodology is based on an unverifiable assumption, and cannot have primacy over other alternatives (Koperski, 2008). Consistent with this argument, Dembski (1999) presents ID as an option that was -prior to the victory of methodological naturalism- also based on an a priori metaphysical assumption (conversely, it is the presence of a creator such as God) and the methodology that it follows should be no less legitimate than other alternatives. He states, in retrospect of the exclusion of BNT from scientific discourse, that "if the fundamental question had not been *what is the best empirical account of life that satisfies a naturalistic metaphysics?* But instead, *what is the best empirical account of life irrespective of metaphysical commitments?* Design could never have been dismissed as easily as it was." (p. 86). An argument which holds some merit – if one ignores that this was not the question asked. The evolutionary process is inferred, not prescribed in Dembski's preferred presentation. The metaphysical assumption of naturalism is not that there is a force, which governs existence as a whole, rather, one of agnosticism. The naturalist is agnostic (not scientifically atheistic) and readily admits unknowability, whereas the awkward ID'ist resorts to the prescription of a creator in the face of uncertainty. In this sense, the naturalist's a priori assumption is more conservative.

Evolutionism, in a Darwinian sense, is based on the premise that everything real is material. Therefore, the way it came to be requires it having been material. Now, think about the way software is programmed, clay is shaped into objects or food is prepared, these are all activities that involve transformation that produces a tangible output (physical or digital). We can look at them as purely physical arrangements and rearrangements. However, this would not lead us anywhere close to the trigger of these creations, which is, the conscious act of human intelligence that decided to use its knowledge and information about the world to create something new and material. So, why should the origin of anything else in the world be different? For a long time, chemical evolutionary theories have tried to explain the origin of our DNA without success. The same goes for biological evolutionary theories seeking to account for the origin of different forms of life. Both theories face the same problem, one of information; there is no way to know with absolute certainty.

Formal logic and ID

In this section, we refrain from addressing the politics of ID and focus instead on applying formal logic to evaluate the hypotheses the theory generates. We emphasize, however, that adopting a testability criterion to demarcate ID, would require the use of a *scientific* view, which would lead to committing the same error as the naysayers of ID that approach it from what Koperski (2008) calls the wrong angle. Claiming that ID is a pseudoscience because it does not meet the criteria of being scientific as defined by the scientific method is essentially rigging the game against ID. In Dembski's view, ID is shaped almost entirely around the empirical detectability of design and should be scrutinized analogously by another scientific effort (Koperski, 2008). One of the commonly cited critiques against ID holds that, in a Popperian fashion, it does not produce testable hypotheses. If we believe that this is the case, we obtain a positively deduced classification of its pseudoscientific nature, as there is a plethora of fields that do produce testable hypotheses. For instance, Lutz (2013) performs a formal analysis of ID's claims and concludes that the theory is underspecified, in that it does not provide any observational assertions incompatible with at least *one* observation statement. ID'ers such as Dembski distance from this issue by claiming that what is tested is not the origin of the existence, but the presence of design irrespective of this origin. However, the counterargument does not hold, as the critique is aimed toward this second endeavor, not the creationist argument. The criticism focuses on the broadness of the claim that any item (anything) is inferable as intelligently designed if it exhibits complex and specified *information*. Dembski does not specify on the question of what is the type of hypotheses tested by ID researchers. However, it can be inferred that ID is about detecting signs of design in contrivance. In light of this, we proceed to evaluate some of ID's claims from a logical premise. Internal consistency should be the baseline for any solid argument. Ensuing, we show how ID's main constructs –the Complex Specified Information (CSI) criteria- are based on assumptions on another level to that of the universe's origin (what Dembski calls the auxiliary assumptions), which fails to maintain an agnosticism toward its own premise in that it places clearly humane conceptions of the world on a pedestal. We look at each of the three constructs.

> *Contingency* ensures that the object in question is not the result of an automatic and therefore unintelligent process that had no choice in its production. In practice (…) it is compatible with the regularities involved in its production but that these regularities also permit any number of alternatives to it. By being compatible (…) an object, event, or structure becomes irreducible to any underlying physical necessity [*a natural law*]. (Dembski & McDowell, 2008)

The Bridge exemplifies this with the position of scrabble pieces on a board, which cannot be reduced to the laws of motion; hence, this particular position is contingent. Purportedly, contingent objects are guaranteed to be designed; they must be designed, as this particular outcome is only one of many alternatives, and would never result by

chance on the logical premise that chance cannot incorporate purpose in its operation. However, this argument is contrary to conventional order (the cart before the horse), any pattern or shape maybe deemed contingent, so long as one has a particular outcome in mind when evaluating this characteristic. For instance, the scrabble pieces on the board may be viewed as a consequence of deliberate ("directed," Dembski Intelligent Design as a Theory of Information) contingency, but only to the extent that one accepts that human agency has intervened in the natural process to play a game of scrabble and that a game of Scrabble is a supernatural phenomenon. If one lets go of this end, the position of the scrabble pieces, as well as human intervention may be viewed as consequences of the laws of motion if there is no presupposed capability of human action to imbue supernatural purpose into its environment. Essentially, this view is wholly anthropocentric. Intelligence, as humankind knows it, is based on its preconception that what it engages in are intelligent thought and deliberate intervention. Dembski's God or designer is shaped in the image of humankind and not vice versa, as he would have you believe. Intelligent design's conception of intelligence, which is never elaborated on in any of the writings we have read, is, therefore, drawn from the experience of its authors as humans. Ironically, they are seemingly unable to imagine that an unfamiliar force, such as nature, governs the universe. Instead, they resort to familiar territory along the lines of "I am a person. I am intelligent. I can design complex things, which I do not completely understand. These things are purposeful. I am also purposeful. I must have been designed for a purpose. That which designed me must also be intelligent, like me". Therefore, in the end, the ID argument is normative as it gives *intelligence* sovereignty over the unknown, which Naturalism embodies in the agnostic concept of nature.

Complexity is the second construct. "Complexity ensures that the object is not so simple that it can be readily explained by chance" (Dembski, 1999, p. 129).

> An *irreducibly complex* system cannot be produced (…) by slight, successive modifications of a precursor system, because any precursor to an irreducibly complex system that is missing a part is by definition nonfunctional (…) since natural selection can only choose systems that are already working, then if a biological system cannot be produced gradually it would have to arise as an integrated unit, in one fell swoop, for natural selection to have anything to act on. (Dembski, 1999, p. 148, citing Behe's Black Box).

The complexity criterion also defies the cart before the horse concept. Irreducible complexity implies that some parts of the world are ordered into systems that are independent of human preconceptions. The watch analogy rests on the assumption that a watch is something which is used to tell time, and that the evolutionary process cannot understand this purposefulness. Once again, Dembski's preconception of what a watch is underlies the argument. The analogy only proves that evolution cannot account for purposive systems if one assumes that there is such a thing, and that watches are supposed to

tell time. That is, Dembski privileges the human conception of the telling of time as the purpose of a watch but fails to recognize that evolution fails to explain this preconception, not the appearance of the watch; it does not need to know what the watch's purpose. The former speaks of Dembski's view on chance and randomness. To him, the *randomness* of evolution is its driving force, and not a human construct acting as a remedy for unknowability. Because it fails to recognize the latter, the complexity argument can be faulted for inscribing itself onto contrivances simply because the author is fascinated by their contrived character –they could not be *due to chance*. Once again, contradicting the cart before the horse concept, Dembski ostensibly considers chance as an ex ante mechanism or a driving force fundamental to evolution, and not an ex post coping mechanism (if why things are as they are cannot be explained, resort to chance) or as inferred because we cannot *know* the origin of things.

The last construct is specification, which ensures that the object exhibits the type of pattern characteristic of intelligence. In *The Bridge*, this is a fickle concept. Dembski fails to define it properly, but the *elements* he presents are involved in detecting whether a pattern exhibits signs of intelligent interference, he lists them as follows: "1) A reference class of possible events; 2) A pattern that restricts the reference class of possible events; 3) The precise event that has occurred" (p. 131).

The archetypical case presented is an archer shooting arrows at a target that covers a space on a wall. A sequence of arrows hitting the mark is classified as specified, which implicates design by the skilled, and, therefore, intelligent archer. Once more, Dembski's preconception of intelligence as something as vague as *skill* is evident. The classification of the pattern as specified persists only if one believes that hitting the same mark is privileged over any other *random* pattern of hits. Its privilege stems from Dembski's fascination with this particular pattern. The result could be the Mona Lisa outlined in arrows, and he would be equally fascinated, but only because the Mona Lisa is known to him. A pattern that appears random to Dembski is simply a pattern resembling a painting that has yet to be painted. Ironically, *specificity* is an underspecified concept in that it does not specify what a pattern is to be *specific* about; what underlies it is a specificity concerning what the average person would deem to be so, a normative stance, in that it privileges the cart over the horse.

Conclusion

The previous sections have provided some instruments to better grasp the legitimacy issue surrounding ID. If we compare ID to governing evolutional theories, we find ample grounds for an apologetic view of ID.

According to Dembski and McDowell (2008), the issue with Darwinism is not that it is based on a purportedly false premise. In their view, the problem lies in that Darwinism is not merely a theory, but an ideology. They view it as comparable with Marxism and

Fascism, ideologies that are all-inclusive worldviews used to explain far-reaching phenomena (Dembski & McDowell, 2008). ID researchers have posed the question of demarcation. In Dembski's view, the design argument is as *scientific* as the evolution argument, but the political dominance of the latter illegitimately pushed ID out of the field in the initial clash, only with reference to its assumptions, becoming a false regent.

To the extent that both evolutionism and ID are based on unverifiable a priori metaphysical assumptions, on this level, ID remains comparably legitimate as the Darwinist argument. We cannot stake the assumptions of either paradigm against the other's and claim that one is superior, as they are not comparable. In this sense, both ID and Darwinism remain *sciences*, legitimate under the axiom of their own a priori assumptions of the world and its creation. The definition of ID as pseudoscientific does not lie in the unfavorable opinion by methodological naturalism, or the scientific method of it not being *science*. Intelligent design's a priori assumption is merely different than Naturalism's –or sciences at large. The ID assumption is normative in that from its utterance; it requires the inference that anything, which is *unexplainable by the naturalistic argument,* is designed. The *scientific* assumption is agnostic; it does not attribute all to evolution, it remains open-minded. In this sense, ID is pseudoscientific in that it fails to remain open-minded despite its lack of evidence and logical coherence.

Behe and Dembski would have you believe that Evolutionism and ID compete on comparable levels when it comes to their endeavors in the light of formal logic, but this is not the case. Where evolutionism remains logically consistent with such an agnosticism, ID is persistently influenced by a privileging of human preconceptions of the subjective –the purpose and meaning of things, as well as intelligence, which humans convey.

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