

WALLACE, MATHEMATICS AND REINCARNATION¹

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In 1904, in the article **Have We Lived on Earth Before? Shall We Live on Earth Again?**³, published by *The London Magazine*, Alfred Wallace (1823-1913) harshly contested the subject of reincarnation, making it clear that his spiritualism was not built around spiritism⁴:

“The whole conception of reincarnation appears to me as a grotesque nightmare, such as ***could only have originated in ages of mystery and superstition***. Fortunately, the light of science shows it to be ***wholly unfounded***”⁵.

The famous scientist spent part of his youth in Brazil (1848-1852, in the Amazon) and Oceania (1854-1862, in the Malay Archipelago) devoting himself to biology, to which he made remarkable contributions⁶, and after his return to England, Wallace familiarized himself with the *Modern Spiritualism*, in which he has never lost interest. The panorama he encountered in this movement did not differ significantly from today’s Brazilian spiritism’s scenario, considering its thaumaturges of varied effects⁷, and, then, the intention of the English sage quickly became to apply the scientific method to this object.

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³ Paper translated into Portuguese and published on the site of Cpdoc Spiritist. See Horta 2011.

⁴ In 1857, in France, Allan Kardec published *The Spirit’s Book*, with reincarnation being the main subject that distinguished his doctrine from the *modern spiritualism* that already existed; by adopting it, Kardec deviated significantly from the course so far followed by the spiritualist movement, creating a *sui generis* Christianity and formulating a Neoplatonic theology & theodicy. Cf. Kardec 1857 & 1972.

⁵ Bold italics mine.

⁶ Among other of Wallace’s collaborations, nothing less than the co-authorship of the most influential theory of evolution, presented in a joint communication with Charles Darwin in 1858 at The Linnean Society of London. Cf. Horta 2003 & 2003a.

⁷ See Horta 1996 & 2007; Bissetto 2011 & 2011a. *Articles originally written in Portuguese.

In the text from 1904, Wallace's wide-ranging argument consisted of the following: if reincarnation were real, it would eventually produce the evolution of human form, intellect & morality, implying that some aspect of these changes should be noticeable in humans and by humans. However, according to the eminent sage, since "man began to exist at some period, not very remote geologically", it is known due to the laws of heredity⁸ that his form, intellect & morality remain virtually the same, which shows that reincarnation, with great probability, must be false:

*"If the theory that reincarnation is a means of human progress... is true, there should be indications of continuous and very exceptional progress in the higher forms of human character... But there are no indications whatever of such a difference. We have certainly not advanced morally so much as we have intellectually, and even in intellect, taking an average, it is doubtful whether we have really advanced from the time of Socrates and Plato, or from that of the authors of the Maha-Bharata. Not only has no proof been given of any exceptional advance in man, such as ought to have occurred if he had really been influenced beneficially by successive reincarnation, but there is, as I have shown, direct and very cogent evidence that no such advance has really been made"*⁹.

Thus, the English scientist presented his strategy: to disqualify reincarnation as being a purely metaphysical theme, considering the absence of even one single point of contact with reality; therefore, an opinion founded not upon facts, but merely based on the imagination of ancient people. Such stratagem allowed the writer to conclude that the subject is nothing more than:

*"a pure speculation, and can appeal to no direct evidence in its support. But there is, on the other hand, a considerable body of evidence which renders it in the highest degree improbable, if it does not absolutely demonstrate its fallacy"*¹⁰.

⁸ Wallace noted that "the part of biology most directly related to the theory of reincarnation... consists of the laws of heredity... The two great laws of heredity presented here cover the whole organic world: plants, animals, and man; they can be applied to the mind as much as to the body, to the most elevated moral feelings as well as to the pure intellect" (bold-italics mine). He used Francis Galton's theory of biological inheritance: the laws of regression to mediocrity and hereditary proportion.

⁹ Bold italics mine.

¹⁰ Bold italics mine.

In the mentioned text, Wallace stated the autonomy of the material world relative to the spiritual world: life evolves by laws of *this world*, a change that results from a long period of relative gradualist stability interrupted by a short period of more rapid modifications. Furthermore, the human species should not be virtually stagnant, if the alleged spiritual law were indeed an efficient cause, that is, if it were incessantly acting as the reincarnationists maintain¹¹. After all, considering Galton's first law of inheritance, human history merely presents mediocrities as well as some families that periodically produce eventual geniuses¹²; who, in turn, do not place human form, intellect & morality on a new level, since their descendents tend to return to the average¹³.

It should be observed that, from the logical point of view, Wallace *did not refute* the subject of reincarnation *directly*; however, he basically attacked the association between reincarnation and the evolution of human form, intellect & morality – reincarnationists's auxiliary hypothesis. Decades after writing on the subject, the English scientist himself was thus attacked: the biochemist Michael Behe

¹¹ Namely, gradual progress produced by successive lives, an irresistible enhancement of human beings in their form, intellect & morality. Initially, for Wallace & Darwin, the evolution involved small *random* changes that gradually accumulate in a given sense, requiring *great sums of time* to complete a new structure. In the reincarnationist scheme, the changes would go directly to a given sense, greatly increasing the speed of the transformation (as in Lamarck, see Horta 2011).

¹² Galton studied “the occurrence of great intellectual capacity in certain families”, which allowed him to “assume that the mental characteristics of an individual were hereditary” (Asimov 1976, II, 365).

¹³ Galton was one of the first ones to apply statistical mathematics to heredity. However, his assumption is false, since he considered that when individuals who have different characteristics reproduce, the features get mixed (cf. Asimov 1976 p. 364) – in the classic example, black and white would generate a mulatto just as well as the coffee when mixed with milk. This belief made his second law false, which extended this principle to the whole genealogical tree of the individual, the result of a blend of his entire ancestry. According to Ernst Mayr, Galton gave the particles “a treatment in the sense that they were blended... which eventually contributed to his unambiguous refutation... Mendelism could not expect to be universally accepted until all adherence to Galton's law was abandoned” (Mayr 1998 p. 876). Like Darwin, Wallace made extensive mistakes concerning the heredity subject and, having never known Mendel's work, he carried the burden of defending a theory that hampered his evolutionary theoretical discoveries. Mendel, who would become the basis of contemporary genetics, argued in a radically atomistic way, and the particle that determines a feature does not come apart - dissolving itself in the whole -, however it retains its individuality, which means that if it receives any variation it is capable to transmit it to the progeny, overcoming the most reluctant scientific difficulty to the acceptance of evolution.

believed that he had refuted Wallace & Darwin's theory of evolution by natural selection, contesting their auxiliary hypothesis – the thesis that evolution occurs through small changes that gradually and randomly accumulate in a given sense¹⁴. However, even if the initial auxiliary hypothesis is false, it is not to be inferred that evolution is also false, since it may occur in another way, probably as Wallace himself argued in the text from 1904 – in a punctuated manner (long periods of relative gradualist stability with comparatively rapid changes). To the same extent, if reincarnation *is not* the engine of the evolution of human form, intellect & morality, it does not necessarily signify its non-existence; the objection simply demonstrates that if reincarnation is true, its defenders have overstated its potential.

The evolutionist line founded by Wallace & Darwin was very successful in demonstrating that the form, instinct, intellectual capacity & many contents of the intellect & something of the human morality were not developed by “spiritual” or metaphysical laws; the theory of evolution by natural selection explains such events in an extraordinarily satisfying way – yet the thesis that the human being has virtually not evolved since his emergence on Earth, as argued by the Victorian thinker, does not seem indisputable. Better positioned in historical time, a contemporary evolutionist like Richard Leakey, for example, admits that the genus *Homo* underwent several physical improvements, which focused on the intellectual and moral capacity of *homo sapiens*, the current human species. The North American scientist observes that some of his anthropologist colleagues, like Wallace, prefer not to use the term “hominid” for all ancestral human species:

“The word ‘human’, they argue, should be used to refer only to people like us. In other words, *the only hominids* to be designated ‘human’ are those that display our own *level of intelligence, moral sense*, and depth of introspective consciousness”¹⁵.

From this perspective, only the final result of the long line of hominids would be truly human – our species (which, as we have seen, for the English sage

¹⁴ Cf. Behe 1997.

¹⁵ Leakey 1995 p. 12 (bold italics mine).

“began to exist at some period, not very remote geologically”). Nevertheless, if one thinks like Leakey, considering *the whole set of* hominids as humans, it is admitted that the emergence of man on Earth effectively dates back to seven million years, involving an enormous population and numerous variations of our ancestors who have strayed from the apes – such admission implies a long physical, intellectual and moral evolution:

“I believe that we are justified in calling *all* hominid species ‘human’ ... we know that the first human species *evolved about 7 million years ago*... between 3 million and 2 million years ago... [an human species] developed a significantly larger brain. The expansion in brain size marks... the origin of the genus *Homo*, the branch of the human bush that led through *Homo Erectus* and ultimately to *Homo Sapiens*... the modern humans – the evolution of people like ourselves, fully equipped with language, consciousness, artistic imagination, and technological innovation unseen elsewhere in nature”¹⁶.

Remarking that the subject of reincarnation does not necessarily involve the conviction that multiple lives are the engine of some kind of evolution or that they might produce karma as a kind of (divine) justice, etc., it is still necessary to inquire whether, in the new chronology presented by Leakey, there are conditions to *peremptorily guarantee* that in this long intellectual-moral evolution *nothing* could be attributed to multiple existences¹⁷. Wallace’s arguments do not seem conclusive on this point. Another less frontal possibility suggests that the theme of the evolution of *the spirit* subject to successive reincarnations might not have been mentioned in this discussion, since it is perfectly possible to conceive that *two distinct evolutionary processes* may have occurred: one of the human form, by the natural laws unveiled from Wallace & Darwin, and another one of the spirit, occasionally through successive lives, the latter only being noticeable to the extent that the former allowed it (just as there would be limits to the performance of a racing car driver who drove an old Volkswagen in the current races, no matter how skillful he was – on that note,

¹⁶ Leakey 1995 pp. 12-14 (bold italics mine).

¹⁷ Of course, in a spiritualist perspective that admits the survival of something from the human consciousness after death – a common point between Wallace and the reincarnationists.

incarnating would mean suffering a considerable restriction). At this point, it would be convenient for spiritualism to maintain the distinction between *intellectual capacity* and *intellect*, with something of the latter belonging to the spirit.

A legitimate question often asked by people consists of the following: if reincarnation exists, why don't we recall our previous lives? And the point is that maybe some people do recall them! However, they possibly may recall past lives not as they are used to recalling things in general. A basic memory effort usually allows people to recall some things they did on the day before over the next day: they recall the friends they saw, the movie they watched, etc. This is the standard of what is considered memorizing, and when we think about recalling past lives, we usually expect to get memories of this same kind and with the same level of clarity, which is unfortunately, perhaps very, very rare. However, sometimes the memories of past existences are perhaps connected to the decisions of some people, and the evolution consists in gradual life learning, in the capacity to decide better, generally possessing a fundamentally qualitative nature.

As an imaginary example¹⁸, let us consider that an inexperienced soul, in its "first" incarnation, suffers, like all the mortals, from the pain of love and, when separated from the loved one, ends up killing himself. Let's say that this is the standard solution to his disappointments in the love game, until, finally, he firmly decides to try something different, hoping to suffer less. So when a love mismatch happens again, being tired of the supposedly unsatisfactory effects of the first solution, the person now struggles to live, to survive, and perhaps even to love again. It seems perfectly possible to call it memory; furthermore, evolution. Therefore, considering this hypothesis, something from the past incarnations would remain preserved in certain intuitions, the ones that carry previous experiences, emotions, and reflections; if detailed memories may no longer be fully available, yet there

¹⁸ Remember that Galileo and Darwin used imaginary examples, so this procedure is not a scientific heresy.

would be an emotional and informative burden to assist in important decision-making processes. Initially, evolution would consist in carrying these burdens¹⁹.

This is a hypothetical & possible way of responding to Wallace's objection, who claims that, due to multiple incarnations, perceptible evolutionary effects do not emerge. They may emerge, but they might not be measurable, not being found in the human body structure, such as the changes in living creatures explained by the theory of evolution by natural selection; nor would they be present in the natural instincts of species, possibly being a personal and non-transferable patrimony. A teenager, not in line with his family tradition, inexplicably wishes to be a priest, until his wish passes in an equally unexplained way a few years later; a child, in every family conflict, clings to the Bible without knowing exactly why – and when asked about the reason for this predisposition, opens the book, doesn't understand anything from that difficult text, and ends up abandoning the gesture, etc. Evolution through reincarnation may manifest itself through subjective attitudes and decisions of part of the human population, in a much more difficult phenomenon to apprehend, describe and, especially, demonstrate.

II

In Wallace's 1904 text, applying the scientific method to spiritualist subjects meant using mathematical horizons to contest reincarnation. Since scientists have started to apply mathematics to nature, the successes of natural science have been increasing. Therefore, I would like to complement the critical effort of the famous English thinker on a mathematical topic he did not consider: today we know the human species reproduces *naturally* and *randomly* in the approximate ratio of 1:1; a girl, a boy²⁰. Our ancestors, in the previously mentioned *eras of mystery and*

¹⁹ Theologically presented & somewhat modified, cf. this idea in Kardec 1972 p. 193 and next.

²⁰ I exemplify a random sequence of human births: m; m; w; m; w; m; m; w; m; m; m; w; m; w; w; w etc. Current informations give us an account of twenty female conceptions in every twenty-one male ones, in a ratio very close to 1:1.

superstition, could not guarantee the ratio of the sexes in conceptions with certainty, since they lacked statistical surveys that were both reliable and sufficiently extensive in time and space. Thus, *reincarnationist cultures were constituted ignoring a golden rule on the subject* – at present, it is possible to use this natural regularity as *an objective criterion* to evaluate the plausibility of reincarnationist narratives and their cultural models.

Meanwhile, it follows some historical notes: the charm that the reincarnation subject exerted over Kardec was undoubtedly due to the possibility of formulating an acceptable theodicy, which theologically explained the inequalities and injustices of the world, preserving, in Plato's wake, the divinity innocent. Thus, underneath the subtitle *Justice of Reincarnation*, the following excerpt appears in *The Spirit's Book*:

“171. What foundation is there for *the doctrine* of reincarnation? *The justice of God*, and revelation; for, as we have already remarked, an affectionate father always leaves a door of repentance open for his erring children... (etc.)”²¹.

However, as Curt Ducasse (a French philosopher of science) observes from a scientific point of view, permitting the construction of a defensible theodicy does not prove at all the existence of successive lives:

“If, then, one asks what would constitute *genuine evidence* of reincarnation, the only answer in sight seems to be... that he now *remembers* having lived at that earlier time, in such and such a place and circumstances, and having done certain things then and had certain experiences. But does anybody now claim similarly to remember having lived on Earth a life earlier than his present one? Although reports of such a claim are rare, there are some. The person making them is almost always a *young child*, from whose mind these memories *fade* after some years”²².

²¹ Kardec 1972 p. 82 (bold italics mine). Particularly, I like the more naturalistic consideration that “if the soul descends to Earth once to live in a material body, in principle there is no reason why this should not happen again, or even several times” (Muller 1970 p.20).

²² *Apud* Stevenson 1970 pp. 8-9.

Effectively, Ian Stevenson notes that reincarnation is one of the tenets of ancient Hinduism, professed by the majority of Indians, and virtually organized in prehistoric times:

“Hinduism is *the oldest surviving religion of the world* since *its origins can be traced back to the fourth millennium B.C.... The viability* of Hinduism today may be *due to the rather frequent reporting* in India of *experiences which seem* to offer evidence of reincarnation. Cases of the kind I shall describe seem to have occurred for centuries in India. Their existence is assumed or hinted at throughout many of the Hindu scriptures and myths. Since we know that *many cases of the reincarnation type occur in India today, it seems at least possible, and is perhaps likely, that such cases have occurred as frequently for centuries...* their mere existence has provided a continuing stream of *apparent empirical* support for the religion of Hinduism, and for Buddhism also”²³.

Finally, we have here the origin and foundations of an entire building that later conquered the world and became more diversified: a religion organized in ancient times and mainly sustained by children’s reports. In this way, the famous Canadian scientist continues, and states that until present:

“*The history of cases suggestive of reincarnation* in India (and elsewhere) *follows an almost conventional pattern.* The case usually starts when *a small child of two to four years of age* begins talking to his parents or siblings of a life he led in another time and place. ... The case usually attracts much attention in the communities involved and accounts reach the newspapers”²⁴.

Stevenson himself reiterates in several moments of his work that, from the epistemological point of view, that is, regardless of the personal convictions of those people who are involved, the subject of reincarnation consists of a hypothesis, not being a demonstrated, proven wisdom. He also observes that while there is presently a certain enthusiasm among researchers that investigate the subject, due the rediscovery of children’s reincarnationist accounts, such line of research is as obscure as the one regarding hypnosis-induced accounts, previously experienced and better known by the occidental public:

²³ Stevenson 1970 pp. 37-38 (bold italics mine).

²⁴ Stevenson 1970 p. 40 (bold italics mine).

“The ‘personalities’ usually evoked during hypnotically-induced regressions to a “previous life” *seem to comprise a mixture of several ingredients*. These may include the subject’s current personality, his expectations of what he thinks the hypnotist wants, his fantasies of what he thinks his previous life ought to have been, and also perhaps elements derived paranormally. ... In the meantime, the most promising evidence bearing on reincarnation seems to come from the spontaneous cases, especially among children. However, the *study and evaluation of such cases is as difficult as with other kinds of spontaneous cases* in psychical research and *is naturally exposed to the same kinds of criticisms*”²⁵.

In Stevenson’s famous classic book, *Twenty Cases Suggestive of Reincarnation*, first published in 1966, *in only two cases* there was a sex change between the previous life and the present life of the studied character. However, *at first*, being the sex change *random* and close to the ratio of 1:1 in nature, the statistics *should* have pointed out ten cases of change to each ten cases of conservation, or at least something close to that number – observe that the ratio obtained by Stevenson was 1.8:0.2, which is extravagant in the light of the presented principle, since nature has never produced such a relation throughout human history. Nevertheless, as the Canadian scientist considers this a fundamentally cultural subject, his comment on the theme was quite placid:

“*In the entire series of cases* now under survey *in the international census of cases* suggestive of reincarnation, instances of differences in the sexes of the subjects and related previous personalities *occur rarely*. In a total of *some 600* such cases, differences of sex between the two personalities have occurred in only *about ten per cent*”²⁶.

James Matlock informs that Stevenson has conducted a survey on the sex ratio in which some of the studied reincarnationist cultures claim that sex change between incarnations indeed occurs, obtaining distinct results – most of the cultural matrices admit that in a series of incarnations *there is little or none* sex change between the successive lives:

²⁵ Stevenson 1970 pp. 22-23 (bold italics mine).

²⁶ Stevenson 1970 p. 200 (bold italics mine).

“The number of subjects who claim to remember previous lives as members of the opposite sex *varies widely by culture*. Stevenson (1986a) includes a table comparing the incidence of sex change cases in 10 cultures. In four of these – Haida (indigenous group of British Columbia - author’s note) ($N = 24$), Tlingit ($N = 65$), Druze (Arabian group from Syria, Libya and Israel - author’s note) ($N = 77$), Alevi (Turkish Tribe) ($N = 133$) – *no such cases* have been reported at all. The proportion of sex change cases is **3%** in India ($N = 261$), **12%** in Sri Lanka ($N = 114$), **13%** in Thailand ($N = 32$), and **15%** ($N = 60$) in nontribal American society. In Burma the rate is **33%** ($N = 154$), *the highest rate in any of the cultures studied* by Stevenson”²⁷.

It should be noted that, at first, random sex change should occur in approximately 50% of the cases *in all narratives of successive lives and their respective cultures*. In statistical mathematics, the proportion of human births averages out at a similar case to the – already known – example of the throw of a dice & the proportion of the obtained results. If the dice has equal sides, in a set of throws, the numbers from 1 to 6 tend to come up in an approximate ratio. The equality of the sides and the laws of physics guarantee it. Something similar happens when a teacher tells the girls to sit on the right side of a classroom and the boys, on the left side – the teacher instates a law into something that was potentially anarchic. On the other hand, if the educator is absent and each child can choose where to sit, the final result should show mixed girls and boys, with numerically distinct groups on the left and on the right. This is what happens in the runoff election: with only two candidates, there are often quite distinct amounts of votes for each side, since the final results are based on the free will of each voter – 75% vs. 25%; 80% vs 20%; 60% vs 40% are normal results in situations of this nature.

²⁷ Matlock 1997 p. 220. And more, “Mills reports having found *no case* of sex change among the Gitksan – also spelled Gitksan – (indigenous group of Canada. Author’s note) ($N = 35$) or the Carriers (indigenous group of British Columbia, province of Canada. Author’s note) ($N = 28$), but three (13%) among twenty-three cases among the Beavers... According to Stevenson and Mills, the Druzes, Alevi, Tlingits (indigenous group of Southeast Alaska & British Columbia. Author’s note) *guarantee to be impossible* to change sex between lives... The Haida and Gitksan do not reject the possibility of sex change, *although no cases* of sex change have been reported as occurring in these societies... Considering the cases of all other cultures in which sex change was identified collectively, female subjects more often claimed to have remembered past lives as a male subject than vice versa by a margin of 3 to 1. In some cultures, the proportion is even higher. In the United States, only one out of fifteen children who claimed to remember a past life of the opposite gender was a boy” (idem, bold italics mine).

Meanwhile, for Kardec, in *The Spirit's Book*, the spirit-world is autonomous, that is, each spirit freely chooses the sex in which he wishes to be reborn, considering the trials that he intends to undergo:

“202. Does a spirit, when existing in the spirit-world, *prefer to be incarnated* as a man or as a woman? That is a point in regard to which a spirit is indifferent, and which is always decided *in view of the trials* which he has to undergo in his new corporeal life. [Kardec's addendum:] Spirits incarnate themselves as men or as women, because they are of no sex and, as it is necessary for them to develop themselves in every direction, both sexes, as well as every variety of social position. Furnish them with special trials and duties, and with the opportunity of acquiring experience. A spirit who had always incarnated itself as a man would be only known by men, and vice versa”²⁸.

As for Stevenson, it can be inferred from the results presented in his work that each spirit has a “preference” for being reborn in one or other sex. Nevertheless, for both authors, the crucial point of the question *would be linked to the free will* of the spirits & the spirit-world – being therefore fundamentally volitional. Even in the case I present here as being paradigmatic, the case that was obtained by Linda Tarazi (where one of her patients recalled several incarnations, and for one of them, in Spain, there is documentary corroboration regarding some of her claims), the North American researcher neglected the subject of sex change in the various narrated lives, not providing the information²⁹.

It should not be overlooked that the law which regulates the sex of the infants is natural, that is, like the evolution by natural selection of Wallace & Darwin, it belongs to “our world”. It is as natural as the law that makes the overwhelming majority of human beings to be born with head, torso, and limbs etc. It is very little variable, tending randomly to the ratio of 1:1 in both time and space. If this was not the case, if the sex of the children depended on the free will of the spirits or the spirit-world (on a plan or sexual inclination, autonomously), other ratios would be commonly found in the history of mankind – in fact, as in the runoff election, they

²⁸ Kardec 1972 p. 96 (bold italics mine).

²⁹ Cf. Tarazi 1990.

would constitute the rule: 0.5:1.5; 1.3:0.7; in some cases perhaps even 2:0 would have occurred worldwide – a circumstance that neither happens nor has ever happened before.

As examples, imagine that during the Paraguayan War, the systematic death of Paraguayan men touched “the world of Paraguayan spirits”, which, determined to help its nation, began to promote systematic births to restore the extinct male population³⁰. To help its people, they would be reborn in the proportion of two girls to eight boys. But we have seen that this scenario has not happened, since until the beginning of the last century, the evaluations on the subject indicated that the Paraguayan male population had not fully recovered from the decrease. In contemporary China, because of the size of the population, over a billion human beings, the Chinese government and its citizens are not at all discreet about their preference for boys; sometimes they even promote abortions of female fetuses or the physical elimination of girls already born. However, girls insist on naturally being born to the approximate ratio of 1:1, regardless of conveniences and will of people involved. It could be argued that spirit-world does not care about the conveniences of our world; but still, observing only its interests, spirits continue to present themselves here, at any place and time of mankind existence, to the approximate ratio of 1:1 – regularity that would have no reason to be if the ratio of births depended on any other factor than the previously mentioned natural law.

And the problem is not in the ratio presented above, *but in the existence of a fixed ratio*, a fact that is not in line with the freedom and autonomy attributed to the spiritual world or with what this would mathematically mean if it were true. Such natural regularity demonstrates that the varied and existing reincarnationist narratives (and their cultures) about the sex of reincarnators, in order to be suitable to the natural law, *should at first* have obeyed the golden rule of 1:1. However, in the overwhelming majority of the existing palingenetic descriptions these circumstances

³⁰ In the absence of adult men, who were eliminated in the first part of the war, the Paraguayan government used boys to rebuild its troops, which greatly unbalanced the relationship between men and women in Paraguay for decades.

did not occur; a fundamental principle of credibility has not been observed, making the vast majority of the reincarnation descriptions refutable and impacting the very heart of the subject, after all, if there are no rationalizable narratives about reincarnation, on what can the subject be sustained?

III

The history of science, especially considering its revolutionary episodes, registers cases in which a whole castle of hypotheses was built *before* the peremptory evidence – a practice that proved to be very useful for the development of knowledge. An example consists on nothing less than the first modern scientific revolution: when, around 1530, Nicolaus Copernicus revolutionarily *proposed* that the Earth does not remain at rest, but it moves, there was no satisfactory physical evidence to justify such an outstanding statement³¹. Effectively, critics have precisely argued that if the Earth is in motion, some perceptible effects should appear (consider that our planet rotates at a speed of about 1,675km/h³²); however, on the contrary, both the immediate experience of the people and the experiments only available to the sages did not sustain such ambitious change in the whole scientific, religious, and political framework of the time. According to Roberto Martins:

“When Copernicus proposed his heliocentric system in the 16th century, *the idea that the Earth moved was unacceptable* from the physical point of view... according to the mechanical knowledge of the time, *if the Earth were to move, phenomena would be observed on the Earth*, because of this movement. The movement of the Earth should affect the motion of falling bodies, the projectiles, the birds, the clouds, etc. *The rotation of the Earth should produce the expulsion of all bodies from its surface*”³³.

The common man would wonder: if the Earth is in motion, how is the flight of birds not immediately altered, as well as the course of all objects thrown in the air?

³¹ Cf. Burt 1989 p. 29.

³² Cf. Martins 1994 p. 198. *Article originally written in Portuguese.

³³ Martins 1994 p. 196 (bold italics mine).

Why, effectively, are the sun and the stars the ones that run in front of everybody's eyes? The sages have asked themselves: how can one not observe the phenomenon of extrusion, that is, how does the Earth have no pieces torn from its surface due to this extremely rapid movement? There were no answers to such objections, and yet Copernicus and his sympathizers persisted in their conviction; however, the Polish astronomer did not ignore the most challenging criticism of his proposal, for he pointed out the existence of an ancient objection to the Earth's motion in his most important work:

“But things which undergo an abrupt rotation seem utterly unsuited to gather [bodies to themselves], and seem more likely, if they have been produced by combination, to fly apart ***unless they are held together by some bond***. The Earth would long ago have burst asunder, he [Ptolemy of Alexandria] says, and dropped out of the skies (***a quite preposterous notion***); and, what is more, living creatures and any other loose weights would by no means remain unshaken”³⁴.

When Cardinal Robert Bellarmine, the first Catholic inquisitor³⁵ in charge of prosecuting Galileo Galilei, replied that the notable Italian scientist's Copernican system was *absurd*³⁶ (meaning *impossible*), in fact, physics of the time had not solved

³⁴ Copernicus, *De Revolutionibus*, 1.7 (*apud* Martins 1994 p. 197 - bold italics mine).

³⁵ This inquisitor was particularly important in the history of science. Jesuit, he studied geometry and astronomy, always committed to Aristotelianism; an enthusiastic counter-reformation militant, he burned Giordano Bruno in 1600, banned Copernicus's theses and admonished Galileo in 1616. According to Pablo Mariconda, Bellarmine (1542-1621) “occupied a prominent position at the Roman Curia as the main theological consultant of the Pontiffs Clement VIII and Paul V. Educated since he was a young man by the Jesuits... became a member of the Society of Jesus in 1560 and soon his talent for theology is noticed. Particularly gifted as a controversialist, he was sent, in 1570, as a teacher to Louvain, where he conducted a detailed study on heresies then in vogue. In 1576, he assumes the chair of Controversies of the Roman College and during that period writes his best known work... ‘*Lectures Concerning the Controversies of the Christian Faith Against the Heretics of This Time*’, in which he developed a systematic refutation of heresies, organizing the Catholic arguments in a way to lead to an effective controversy. Bellarmine's work has such an impact among the Reformed theologians that in Germany and England special chairs were founded with the special purpose to refute his theses... Bellarmine's discussions of the natural basis and legal origin of the State, the source of political authority, the rights and duties of magistrates, and the relations between secular power and ecclesiastical power represent the most systematic and clear version of the Counter-Reformation conception of the state and political power, which is why Bellarmine stands as the leading theoretician and ideologue of Counter-Reformation” (Mariconda 2000 pp. 117-118). *Article originally written in Portuguese.

³⁶ Mariconda 2000 p. 127.

the problem pointed out. Four years after Galileo had published his defense of the Earth's motion, found in the *Dialogue Concerning the Two Chief World Systems*, published in 1632, Marin Mersenne mathematically demonstrated that the Italian sage's geometric response to the problem of extrusion was insufficient³⁷. According to Martins:

“Galileo’s error did not go unnoticed at the time. It was noticed and criticized few years later by another defender of Copernicus and friend of Galileo: Father Marin Mersenne. In his work, entitled *Harmonie Universelle*, Mersenne points out... that Galileo was wrong. And this book was published only four years after Galileo’s work... It took more than Galileo’s geometrical argument to reply to the classic argument against the rotation of the Earth. That is; Galileo could not explain why the bodies are not thrown off by the rotation of the Earth. **Since there was at least one argument against the rotation of the Earth** to which Galileo did not give a satisfactory answer... **his contemporaries could rationally refuse to accept Earth’s motion** by using the rotation extrusion argument”³⁸.

Only thirty years after Galileo’s apologetic work, Christian Huygens was able to show that the terrestrial extrusion argument *was not necessarily pertinent*; mathematically demonstrating that it was not *impossible* for the Earth to move. Note that the Dutch physicist did not prove that the Earth moves, but that *it is not impossible* that it does, overturning the cardinality objection. Isaac Newton, in turn,

³⁷ For Martins, “in no way [Galileo] can present a complete and satisfactory physical theory, consistent with Copernicanism... Why do rotating bodies tend to... spread?” Currently, we interpret this as a consequence of inertia. Let us suppose that several bodies are initially attached to one another and that the array of bodies is spinning with great speed. If the connection between them is broken, each one of them will tend to maintain the speed it has at that moment and move in a straight line. As each of these bodies will be moving in a different direction (because of the rotation), the result will be that they will spread apart from one another... The rotation of the Earth tends, in fact, to expel the bodies from its surface; but... this tendency is much inferior than the gravitational attraction and, therefore, the Earth does not fall apart... **From the quantitative point of view...** [Galileo’s view] **is totally inadequate...** [He] believed that, however weak that gravity might be, it would be enough to hold bodies on the surface of the Earth” (Martins 1994 pp. 197-199 - bold italics mine). Moreover, to an Aristotelian, a critic of Copernicus, without the solid Earth, the very concept of gravity loses its meaning; for scholasticism, a body falls because the heavy material (gravitational, hence *gravity*) tends to the (theoretical) center of the universe (coincident with the physical center of the Earth). If the Earth moves and the center of the world is in the Sun, what is the sense of speaking of gravity in terrestrial physics? Copernicus and Galileo continued to speak of a force they called gravity, but this force called for a redefinition, which was only fully presented by Newton at the end of the 17th century.

³⁸ Martins 1994 pp. 204-205 (bold italics mine).

worked at a time when circumstantial evidence was advancing in a favorable direction for the scientific revolution, but heliocentrism was still a *hypothesis* which needed to obtain conclusive physical evidence. Only in 1851, Jean Foucault, a French physicist, presented an experiment that finally solved the problem, proving that the behavior of a giant pendulum attached to the dome of Paris cathedral could only be explained by terrestrial movement. However, more than three hundred years between the postulation and the final physical evidence of this movement had passed.

All of us, who have learned science at school, are deceived by the fact that in one single class both the problem and the answer are presented immediately, in a very short period of time, a situation that creates an absolutely rational image of the scientific enterprise, entirely distinct from any other human activity and free of hypotheses. However, hypotheses are not only useful in the historical elaboration of science as some of the most appreciated conjectures of the progress of human knowledge have remained the same for centuries. When Galileo, Mersenne, Huygens, and Newton (quite convinced that Copernicus was right) elaborated long treatises on the new world view, they had no peremptory physical evidence to justify such ambitious joint venture. Today, from the philosophical point of view, such effort can be presented in the stoic logical formula: if x, then y. If Copernicus is right (as must the Newtonians have said it until 1851), then the best available model of the world is Newton's (with its innumerable details which were therefore also necessarily hypothetical). This is perhaps the most accurate interpretation of the status of science during the scientific revolution – an effort whose happiness was to be on the right side of nature; not all sciences with revolutionary pretensions had the same fate, but they always had the same hypothetical-deductive structure.

Considering the natural & mathematical objection presented above, concerning the sex ratio in gestations and births, the subject of reincarnation presents itself just as the subject of the mobility of the Earth presented itself to Huygens. At the moment, I do not have satisfactory arguments to overcome this difficulty; on the other hand, thanks to the history of science, it is known that such a situation may be

due to a momentary ignorance or to the falsity of the theme. Therefore, those who study reincarnation from a scientific perspective need to be aware that, at the beginning, will inevitably have to use miserably hypothetical reasoning, hoping that nature will, in reasonable extent, correspond to their expectations and models, until the happy moment at which contact points between theory and reality can be recognized and explored.

Thus, here are some possible scenarios: if it is accepted that narratives and cultures do not suit the natural law of the sex ratio in human births when they should have, then the subject of reincarnation **a)** is refuted or **b)** a model that considers the mentioned natural law must be proposed. But what motivation would someone have to propose once again a now purely metaphysical subject? Another alternative consists in an effort to save the phenomena and to admit that, in order to keep *some* of the reincarnationist experiences and cultures valid, it is necessary to add an auxiliary hypothesis to the reincarnation's one: **c)** the spirits would have a way of knowing the sex of a newly conceived set of human reproductive cells. *Speaking ironically*, but not far from what would have to be real, something like a pink or blue “light”, depending on the female or male sex, should immediately spark from the pregnant women's belly, right after the conception, allowing the knowledge of the fetus' sex by the spirits who, depending on the trials they would like to undergo (Kardec) or the preference for one of the sexes (Stevenson), enter the fetus with the certainty of not being born in an unwanted sex.

Consequently, Kardec's thesis that the spirit begins to incarnate at the exact moment of conception³⁹ would not be accurate, since some time, whether or not short, would be necessary for the awareness in regard to the fetus' sex and the decision concerning reincarnation by a spirit. But the *ad hoc* claim of **c)** means to assume a great burden, since both Kardec and Stevenson describe the world of spirits

³⁹ It is read in *The Spirit's Book*: “344. At what moment is the soul united to the body? The union begins at the moment of conception, but is only complete at the moment of birth... 345. Is the union between the spirit and the body definitive from the moment of conception? ... The union between them is definitive in this sense namely that no other spirit could replace the one who has been designated for that body” (Kardec 1972 p. 166).

as a harshly complex place and state: people who have already disembodied and are not aware of it⁴⁰; spirits that invade adult bodies and torment them, claiming that they did not notice they were already occupied⁴¹ etc. How can one maintain that such troublesome spirits have always known precisely where to incarnate, so they do not mistake the sex? The pieces do not fit together.

A hypothesis which was not developed to answer the question presented, but could be extended as an attempt to solve the problem, was commented by Muller (who, in his book, unthinkingly put the sex change in reincarnations along with *other secondary problems*):

“In the cases involving children, it was verified that 16% of the girls recalled the sex change. Among adults, 23% of women claimed to have been men in a previous life... Accepting the 16% as the most likely index, we will have, on average, **six incarnations** under the same sex... Few men recall having lived as a woman. It is possible that an incarnation under the female sex **is more difficult to remember because it is calmer** and more routine. **Violent death**, under dramatic circumstances, is prominent in male reports, notably among soldiers... Dr. Bjrkhem, who preferred to subject the subjects to a mild hypnosis, made the following observation: in the occurrence of a sex change, the individual tried to resist, but the phenomenon was compulsory. The previous personality manifested itself and the current consciousness could not interfere (on it). This proves that **there is a psychological mechanism** that filters and **protects the current sex** from the influences of the opposite sex. It is possible that this **psychological isolation** is stronger in men”⁴².

Therefore, one can point to: **d) the psychological isolation of the current personality** as a way of explaining the numerical discrepancies between the data obtained from the supposed past life experiences and the mathematical requirement.

Nevertheless, the premise of Muller’s reasoning is noteworthy: a female sex incarnation is more difficult to be remembered because *it is calmer* and more uneventful. Would it be possible to extend this assertion to the entire history of women? Most of the female existence happened among wild beasts and men (seven millions years...); the loss of children was – and still is – usual (as well as their pain);

⁴⁰ Cf. Kardec 1972 p. 163; Muller 1970 p. 195.

⁴¹ Cf. Stevenson 1970 p. 498.

⁴² Muller 1970 pp. 289-291.

women died frequently and still do in childbirths. Wars undoubtedly involve men, but they also involve women – usual victims of rape, abduction & death; they watched and still watch their entire villages being burned; the loss of loved ones, etc. Women were victims of plague, hunger, droughts, slavery, prostitution, religious sacrifices and all of the tragedies that had an impact in human existence. Violent deaths occur in traffic and affect both men & women. Muller’s claim may cover the recent history of European and North American peaceful women, or a little further than that.

Without a premise, Muller’s pure assertion that men have a certain block to recall female incarnations remains. Do boys from 2 to 4 years old (historically, a part of the main tellers of past lives) also already manifest this psychological & cultural difficulty? In the proportion of almost 100%, small numbers are often not explanatory to the difficulty pointed out. Moreover, in Stevenson’s work, the great majority of the studied suggestions of reincarnation were given in a very short period of time, in which there would be practically no time for intermediate incarnations of the other sex, whose opportune psychological block could explain the statistical problem. Finally, such intermediary existence of the other sex would be anti-methodological to Stevenson, as the reason for his research lies precisely in the *immediacy* between the current life of the child who narrates (the history/story) and his life recently lost in virtue of death – this proximity usually constituting the *sine qua non* circumstance for the child’s memory to recall an occurrence of this nature.

It has been previously presented how the addition of only one auxiliary hypothesis becomes heavy to a postulation, whether in Behe’s contestation over the gradualism of the theory of evolution by natural selection or in Wallace’s criticism of the gradualism of evolution by successive lives, practically invisible. An appreciated thesis remains, in probabilistic terms, increasingly unlikely – nevertheless, not yet impossible to be proved in the future⁴³.

⁴³ It should be noted that Matlock also makes two important notifications: “Slobodin reports a rate of 50% for forty-four cases among the Kutchins Indians (Alaska & Canada, N.A.)... In Nigeria male and female subjects claimed to remember past lives as the opposite sex in an equally frequent way” (Matlock 1997 220). Nigerians and their descendants are particularly important to the Brazilians scholars of this subject, as there are several communities of them in Brazil.

