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The Marriage of Religion and Science Reconsidered: Taking Cues from Peirce¹

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Abstract:

Taking an 1893 exchange between Charles S. Peirce and *Open Court* editor Paul Carus as its point of departure, the paper explores the relation between religion and science while making the case that the attitude that scientists have to their subject is akin to a religious devotion. In this way it is argued that a reconciliation between science and religion cannot be confined to religion blindly accepting the results from science, but that such a reconciliation is possible only when both (re)connect with what truly inspires them, the experience of reverent wonder about the world within which they find themselves.

Keywords: Charles S. Peirce, Paul Carus, *The Open Court*, Science, Religion

In February of 1893, Charles Sanders Peirce published a short article called “The Marriage of Religion and Science” in the Open Court Publishing Company’s weekly journal *The Open Court*, which, as its masthead shows, was “devoted to the religion of science.”² The title, “The Marriage of Religion and Science,” is a bit of a misnomer, and wasn’t Peirce’s. We know that because Peirce’s handwritten submission is preserved among the Open Court papers at SIU. Peirce had titled his article “What is the Religion of Science?” and it is easy to see from the entire thrust of the article that it aims to answer precisely that question. Moreover, rather than writing just another article for *The Open Court*, Peirce was explicitly aiming to address the journal’s very own *raison d’être*—its self-proclaimed devotion to the religion of science.³ What the article very clearly doesn’t do is to argue for a *marriage* of religion and science. Not only does word “marriage” nowhere appear; it is also doubtful that Peirce would even have considered it an apt metaphor, as a marriage suggests a self-transcending union of two autonomous entities. If anything, Peirce *rejected* the idea of a marriage of religion and science, as in his concluding paragraph Peirce states very clearly that each should go its own way.

Peirce’s article is immediately followed by a short reply of the journal’s editor Paul Carus, who was most likely also responsible for changing the title of Peirce’s original paper. Carus’s reply, which is titled “Religion Inseparable from Science,” is clearly aimed at Peirce’s conclusion.⁴ Publishing such follow-ups was common practice at the Open Court. Their aim, not unlike that of a newspaper editorial, was to steer the debate and express the standpoint of the journal. Oddly enough, Carus’s reply doesn’t mention marriage either. Instead, religion is said to be *inseparable* from science, and Carus does not say whether science is similarly inseparable from religion. Reading though the reply, however, one gets the strong

impression that whereas religion quite desperately needs science to help it separate truth from fancy, science does not need religion for anything at all. Hence, if it is a marriage, it is clearly an inequitable one. Moreover, at no point does Carus talk about *the religion of science*, nor does he draw any connection with the journal's masthead motto, its devotion to the religion of science.

Reading through Peirce's article it is quite clear that Peirce had no idea what the phrase "religion of science" meant to express, and part of his charge is that the journal's editors had no idea what it meant either. It is further evident that he found it a clumsy expression at best. After first asking, "what is science" and "what is religion," Peirce reluctantly takes the phrase to apply to the state of mind of a believer who is willing to approach religious matters with the very same attitude with which true scientists approach their subject matter. I agree that the phrase "religion of science" is at best a rather confusing expression: "The religion of science" can express the idea that science has certain religious aspects, or "the religion of science" can refer to a religion that embraces certain scientific elements. I myself initially took it to mean the former (that science has certain religious aspects), Peirce, and Carus, took it to mean the latter (that religion has certain scientific aspects), and in what follows I will argue that it should mean both. So whereas each in his own way Peirce and Carus argue that religion should embrace science, I'll be arguing that *in addition* science must be engaged in with an attitude that deep down is religious.

In what follows I will discuss first how Peirce distinguished science from religion in *The Open Court* and elsewhere, focusing mainly on his writings in the mid-1890s. Next, I will discuss Peirce's view on the relation between the two. I will show that Peirce rejected the view—one he ascribed to *The Open Court*—that the conciliation of science and religion is possible only when religion one-sidedly bows to the scientific method and the results to which it leads. Peirce in fact rejected that science could be defined in terms of its *method*—the so-called scientific method—arguing instead that science is characterized by the *attitude* with which inquiry is engaged in. Although Peirce does not make this move in his *Open Court* paper, I will argue that this scientific attitude is in the end a *religious* attitude, so that the issue is not merely whether religion needs to become scientific, but also whether science needs to be religious as well. Having laid out Peirce's view, I then compare it with some things Paul Carus wrote about the religion of science and about the conciliation of science and religion.

In "What is the Religion of Science?" Peirce describes a person's religious experience as "a sort of sentiment, or obscure perception,—a deep recognition of a something in the circumambient All, which if he strives to express it, will clothe itself in forms more or less extravagant." Later that year, in an article called "What is Christian Faith?" also published in *The Open Court*, Peirce is more explicit about why religious expressions tend to the extravagant.⁵ "Religious phenomena," he writes, "are sporadic, not incessant." As a consequence, religious ideas are easily doubted, and not only that, they are bound to engender strong counterarguments. Since religious ideas are so easily doubted, Peirce continues, religion tends to degenerate from a perception to a trust, and from a trust to a belief, where the latter has the

tendency to become more and more abstract and detached from its originating experience. Put briefly, religion displays a natural tendency to calcify into a creed or dogma. When such a religion finds itself within a broader public arena, and seeks to defend itself against outside forces, whether by persecution or debate, this process tends to get only reinforced. The tendency is to declare these abstract beliefs, their truth and one's adherence thereto its essence, thereby further diverting the attention from the experience that set (or sets) it all in motion. In Peirce's view this is precisely the wrong response, and one that is doomed from the beginning. A religion that centers itself around its creed, Peirce observes in "The Marriage of Religion and Science," is "Like a plucked flower, its destiny is to wilt and fade."

Does this mean that to escape this destiny religion must embrace the method of science and its findings? To answer this question we should look a bit closer at what Peirce says about science. Peirce starts off by rejecting the standard definition of science, which describes science as systematized knowledge. In fact, Peirce doesn't think that science should be defined in terms of knowledge at all, whether systematized or not. What sets science apart is *not* that its conclusions are right, but *how* these conclusions were reached—the method that was used. This method, however, is not some extraneous rule that is imposed onto science from on high, but this method is itself an outcome of scientific inquiry. Put briefly, science itself determines what counts as acceptable inference, and it does so, as it were, on the fly. Now, since the method of science is itself a *conclusion* of science, and since we just rejected the idea of defining science in terms of its conclusions, we cannot define science in terms of its method either. What is left, according to Peirce, is the *intention* with which the activity is engaged in. An inquiry is scientific, he argues, when we enter into it with a living and genuine desire to find answers to the questions that are being asked without any concerns whether these answers are wholesome or dangerous. That there are such answers is in the end an issue of faith. That is to say, within scientific inquiry we proceed upon the hope that there is a true answer to every question that is being asked, and we make this a regulative principle of inquiry. Science, for Peirce, is furthermore a communal affair in which individual inquirers correct each other's quirks and biases, and in which individual experiences are transformed into communal assets. My private experience of feeling feverish is transformed into the publicly accessible and easily conveyable reading of 100.6 °F on a thermometer.

Not everyone who purportedly does science is infused by this attitude. Many enter into activities that seem to have all the trappings of scientific research with very different motives, running all the way from appeasing those who control grants, to gaining fame or notoriety. Some even deny that there is such a thing as a true answer to a question, but that there is only practical efficacy, and that it is the latter that science should strive for. For Peirce, none of that qualifies as science.

In sum, what makes inquiry scientific, for Peirce, is not its outcome (systematized knowledge), nor the method that was used (the "scientific method"), but the attitude that drove it and that continues to drive it. Consequently, if the demand is that religion becomes scientific, this must not be taken to mean that it mindlessly accepts received scientific opinion, nor that it embraces the so-called scientific method, as if such things were assets brought into the marriage by the

more affluent partner, but that one engages in religious matters with the very same attitude that makes an inquiry scientific.

So one interpretation we can give to the phrase “the religion of science,” to which, as said, *The Open Court* explicitly devoted itself, is that one approaches religious questions with the attitude of the scientist—that one engages in it with the faith that the questions that are raised have answers while being infused with a living and genuine desire to find those answers without any concern whether these answers are wholesome or dangerous. Such a religion would be one, Peirce writes, that is “animated by the scientific spirit, confident that all the conquests of science will be triumphs of its own, and accepting all the results of science, as scientific men themselves accept them, as steps toward the truth.” Moreover, Peirce adds, and I think this is an important addition, it would be a religion that assumes this “not at the dictate of science, still less by way of compromise, but simply and solely out of a bolder confidence in herself and in her own destiny.”

In his brief response to “What is Christian Faith?” Carus writes: “we have to tell him [i.e., Peirce] that he misunderstands our enterprise. When we speak of the Religion of Science we do not mean to set up a church for the ‘scientifically educated.’ We only intend to make prominent a principle which must sooner or later be recognized in all the churches, viz., that religious truth rests upon the same basis as scientific truth, and that the same methods of inquiry must be applied in religion as in science.”⁶ That religious truth must rest upon the same basis as scientific truth, and that religion should apply the same methods as science does, suggest that contrary to Peirce, Carus sees science in terms of its outcomes and its methods, arguing that religion in the end has no other option but to bow to these outcomes and methods. As we have been able to see, Peirce rejects this. It would merely mean that religion dropped one creed only to embrace another. Instead, Peirce wants to harken back to experience as that what inspires both science and religion.

Hence, the question we are left with is this: is the attitude that drives scientific inquiry also applicable to religious questions, or is religious experience sufficiently different from the experience that inspires science to demand an altogether different approach to the questions it raises? Peirce only vaguely describes religious experiences, but we can say that they can be external (experiencing God in nature or being witness to a miracle) or internal (like having a vision or hearing an inner voice), they can be our own or those of others (as when Moses testifies about the burning bush), they can be genuine or counterfeit, and though they tend to be vivid they also tend to be singular, sporadic, and brief.

When reflecting upon scientific inquiry, a distinction is commonly drawn between the process of discovery and the process of justification. Our subjective experiences often play a central role in the process of discovery—whether it concerns the refraction of light or the burning of a bush that is not consumed by fire. However, such experiences play no role in the process of justification other than as a recipe for guiding others to the relevant experiential states, even if only vicariously. What enables scientific knowledge is that certain facts are shared and stubborn; they are public and don’t disappear or change when looked at from a different angle or by different people. This is true also for accounts of singular, non-repeatable events. Such *events* may not be repeatable, but the accounts of them are, as one can

guide others to the evidence one has used. This is what historians do when they discuss a past singular event such as the Battle of Waterloo. It is this stubbornness of sharable facts that provides the basis for Peirce's notion of the scientific attitude; it is what enables us to make it a regulative principle of scientific research that we can answer any questions about these facts, at least in principle, through a prolonged inquiry that serves no other purpose than finding those answers.

Hence, to determine whether the scientific attitude is applicable to religious experience, and consequently to religious beliefs, we must consider whether we can extract from religious experience facts that can similarly be considered shared and stubborn, because only when religious experience results in religious facts that are shared and stubborn—that are public and persistent—does it make sense to insist that religion be approached with the scientific attitude. If Peirce is correct, however, in stating that religious experiences are sporadic, disjunctive, and brief, this requirement is unlikely to be met, and a religion of science as Peirce conceives it—that is, a religion infused with the scientific attitude—may not be possible, or may amount to very little, no matter how confident it may have become of itself.

This negative conclusion hits a religion that seeks to be scientific in two ways: On the one hand, it *cannot* employ the scientific attitude *positively* to develop something like a religion of science, because even if religion were to find that aim desirable, the experiences within which it is grounded do not seem to lend themselves to such an approach. On the other hand, it *must* employ the scientific attitude *negatively* by cleansing itself from unwarranted dogma, as those *do* lend themselves to a scientific treatment. The first of the two seems the most formidable. What is religion to do with religious experiences, when neither science nor its own traditional ways can provide an answer? Neither Peirce nor Carus addresses this question.

I'll try to get a little closer to answering this question by going back to the scientific attitude as Peirce described it and explore an aspect so far ignored. This is that the attitude that defines science is one of profound epistemic humility. The scientist does not approach her subject with the aim of taming the world, but with a respectful awe, with a reverend wonder, with the aim of letting the world speak for itself as much as possible. This attitude, this state of unpretentious wonder, is itself a religious one, even if the religions Peirce is criticizing have mostly lost it. Hence, at its very core, the devotion scientists have to their subject is a religious one. What sets science apart from other reactions to the religious experience is that science specifically focuses on the public and the persistent, rather than on the private and evanescent. In other words, science is only one kind of response to the religious experience. It is the response that focuses on the objective, on facts that would be the same whether or not we existed, rather than on the subjective lived experiences and their role in trying to make us feel at home within the world. If this is so, it makes little sense for a religion to try to emulate science, as there are other valuable reactions to the religious experience besides the scientific one. If we take this route, science should aim at being religious, meaning that deep down its inspiration should be a religious one, and we should not similarly require that religion seeks to become scientific, as Paul Carus had suggested. All religion would have to do is avoid making pronouncements for which the scientific attitude is the most appropriate one.

Interestingly, this not too far removed from the conclusions that Peirce's close friend and fellow pragmatist William James draws a few years later in his famous paper "The Will to Believe."

If what I have said is reasonable, then one way of looking at science and religion is to consider them as different responses to the sense of wonder, and if they turn out to be complimentary, perhaps a marriage between the two may have some chance of success. We could even apply the phrase "religion of science" to such a union, though I myself prefer to see that phrase forgotten.

¹ Presented at the Hegeler–Carus Mansion, 21 February 2014; an earlier version was presented at the 2013 annual meeting of the Catholic Philosophical Association, Indianapolis 1–3 November. This research was made possible in part through a generous grant from the Alwin C. Carus Foundation.

² Charles S. Peirce, "The Marriage of Religion and Science," *The Open Court* 7.286 (16 February 1893): 3559–60. Listed as P545 in Kenneth L. Ketner e.a., *A Comprehensive Bibliography of the Published Works of Charles Sanders Peirce*, 2nd edition (Bowling Green: Philosophy Documentation Center, 1986).

³ The change in title clearly marks a missed opportunity, and one that could not have escaped Peirce. Peirce's article is published immediately under the journal's masthead, with its corrupted title only an inch from the journal's motto, and the article fills the entire first page.

⁴ Paul Carus, "Religion Inseparable from Science," *The Open Court* 7.286 (16 February 1893): 3560. Carus signed the reply PC.

⁵ Charles S. Peirce, "What is Christian Faith?," *The Open Court* 7.309 (27 July 1893): 3743–45. Listed as P548 in Ketner op. cit. Carus's response is found on p. 3750 of the same issue.

⁶ Notes, *The Open Court* 7.309 (27 July): 3750. With his reference to a church for the scientifically minded, Carus may be thinking of Peirce's "Pythagorics," *The Open Court* 6.263 (8 September 1892): 3375–77. (P510 in Ketner op. cit.) In this paper Peirce described a (fictitious) secret society of scientists called "the Pythagorean Brotherhood."

Objects of Knowledge in Science and Religion

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Abstract

If science disputes the validity or authenticity of religious knowledge it is because both the scientist and the rational man assume that every object of knowledge there is or can be exists as a material percept in time and space. If we assume that knowledge of material objects is definite knowledge – an assumption itself suspect considering that the latest WMAP data indicates that 95.4% of the total matter in our universe is dark matter and dark energy – all scientific knowledge (confined as it is to knowledge of 4.6% of the visible universe) is definite knowledge; but because it's knowledge is confined to a miniscule fraction of all knowledge there is or can be had in our material universe, it can scarcely be said – as Sir Bertrand Russell claims – that all definite knowledge is scientific knowledge.

There are other reasons why all definite knowledge is not in the domain of science. Parts of the universe are; the universe as a whole isn't. The sentient body is; the Self that is clothed by that body isn't. Analysis of both these *wholes* reveals the possibility of the existence of a third entity that is beyond scientific knowledge. This humanity calls God. A detailed investigation not conducted but outlined here reveals that (a) Russell's claim that science holds a monopoly of definite knowledge is false: he probably meant that science has a monopoly of objectively verifiable knowledge; (b) as objective verifiability is contingent upon objectively real existence, science's monopoly is over entities that are objectively real; (c) all objects of knowledge are not

material objects in time and space: there are objects that, because they are not percepts, are not objectively verifiable. There is nothing indefinite about knowledge of such entities.

There is nothing subjective about the knowledge of such entities either: so it is not open to science to dismiss knowledge of such entities as subjective, arising from the state of mind of the observer. Space and time are aspects of objective reality and not of subjective reality. The second part of this paper briefly examines the nature of dimensions. Space, time and Self consciousness are three types of dimensions considered.

The third part of this paper speaks of a concept called *immutable wholes*. This is a logical culmination of the paper because dimensions are the state-giving norms of the wholes that these dimensions define and characterize. Spiritual seekers make these entities (*sub specie aeternitatis*) objects of their realization. Such entities as the Universe as a Whole, the Self, and God belong to this class of existents. If Universe as a Whole {not parts of it (study of which is in the domain of science), no matter how large those parts are, but the whole. Only a true seeker can tell science why the whole \neq sum of all its parts – but that would be the subject of another paper}.

KEY WORDS:

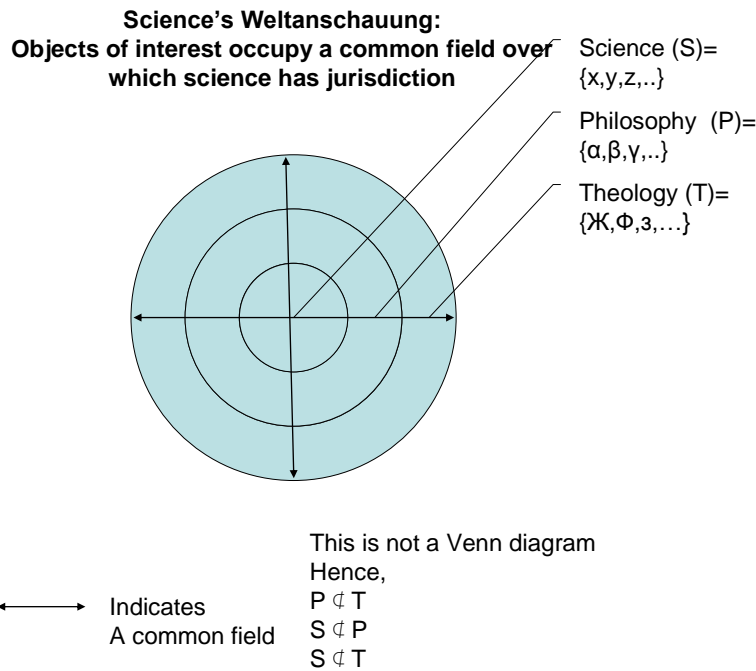
Russell, Objects of knowledge, Definite knowledge, Objectively verifiable knowledge, Set/s, Space, Time, Percept, Perceiver, Perception, Dimension, Whole/s, Objective reality, Subjective reality, Truth, Consciousness, God

1.

Writing his masterpiece, *The History of Western Philosophy*, more than sixty years ago Bertrand Russell begins his work with these words:

*Philosophy, as I shall understand the word, is something intermediate between theology and science. Like theology, it consists of speculations on matters as to which definite knowledge has, so far, been unascertainable; but like science, it appeals to human reason rather than to authority, whether that of tradition or that of revelation. All definite knowledge belongs to science; all dogma as to what surpasses definite knowledge belongs to theology. But between theology and science there is a No Man's Land, exposed to attack from both sides; this No Man's Land is philosophy.*⁶

Here/ Russell has made two critical but unstated assumptions. The first is that the objects that science investigates belong to the same genre as the objects that philosophy and theology concern themselves with. The second, and by no means unconnected to the first, is that just as a common set of laws governs the objects that science investigates the laws governing objects of interest to theology cannot be any different from scientific laws. This worldview immediately rules out putting objects under investigation of science, philosophy and theology in separate and unconnected domains. While in standard set representation, objects of knowledge in science, philosophy and theology should have been elements contained in three separate circles, this will not be so if Russell's assumptions are true. *Science's belief that all objects are governed by a common set of laws and that it is science's business to unravel these is based on the rather simplistic assumption that all objects of inquiry there can possibly be in a multiverse firmament occupies a common field.* Going by this world view, if one were to represent in circles the domains of science, of philosophy and of theology, one would get three concentric circles, somewhat like in the figure here:



Sets S, P and T comprise, respectively, all elements that are science's, philosophy's and religion's objects of knowledge. This diagram is not intended to suggest that the realm of philosophy is larger than that of science or the questions that theology addresses are broader than those that philosophy does. All that it intends to show is a worldview where objects spread over a multiverse spectrum occupy a common ground. That means objects belonging to set S are ejusdem generis with objects belonging to set P and these in their turn are similar in nature and character to objects belonging to set T.

There is some justification in Russell's assumption. It is a fact that there was a time, a time in the early history of man when science was in its infancy, when most of the questions that science later asked and answered were addressed by theology. In the two thousand and five hundred years that have passed since, the history of human

knowledge is largely the story of the birth, growth and evolution of rational inquiry and empirical knowledge and the corresponding development of science. Science showed that in answering correctly questions that theology had once answered – wrongly – theology had overstepped its jurisdiction. Some very influential thinkers now believe that science can answer all questions and theology has no jurisdiction in anything. They assume that as scientific knowledge grows, so will the inner circle and the area inside it. It is hoped by most who repose faith in reason and science that the growth of science will lead to a gradual shrinking of the theological space and the eventual disappearance of the outer circle altogether. These optimistic souls dream of a day when the two outer circles will be swallowed up by the inexorable expansion of the inner circle and all knowledge there is will be in the realm of science.

What Bertrand Russell meant by “definite knowledge” is not difficult to spot in the diagram. Scientific knowledge belongs to the innermost circle. Since scientific knowledge is definite knowledge the innermost circle contains definite knowledge. The middle circle, again according to Russell, contains all speculations on which science has, as of now, no definite knowledge, and this is why such things are in the nature of speculations. The outer circle, like the middle circle, also contains speculations, but unlike the middle circle which purportedly contains philosophical speculations, this one has speculations of a religious nature. The difference between the speculations of the philosopher and the theologian, according to Russell, is in the methods they use in their searches and inquiries and in the prestige and acceptability that their methods give to their hypotheses: the philosopher uses the rational tools of inquiry of science while the man of religion seeks to answer the unknown by taking

recourse either to revelation or to tradition and Russell is convinced that both revelation and tradition are dogmas. The philosopher's inquiry (or speculation, if one prefers that word) is, therefore, more respectable than the theologian's inquiry (or dogma, if, a la Russell, one prefers that word).

As we have just seen, this diagrammatic structure of the field over which objects of knowledge are strewn assumes that all objects of knowledge, whether in the universe or beyond it (if there is a "beyond" that is), whether it is a particle or it is "mind" or God, whether it belongs to the inner circle or the middle circle or the outer circle, belong to the same category or genre.

What is meant by same genre? Look below:

Universal Set {U}

S = {x | x ∈ Matter}

[essential condition for set S is existence of a common space-time environment]

P = { α, β, γ, ... E_n(space), π (time), ... }

[where space and time are prerequisites of S they cannot be elements of S]

T = {₁K₂ (Self), Φ_ε (Ab. Frame), 3, ..., τ₃_{E_n} universe, ... }

[where space-time is condition for S that which contains space-time can have no objective reality at all]

In this slide there are three sets. For now please ignore the contents of these sets. They may come across as strange and unfamiliar. To start with, let us assume

that there are these three sets, namely S, P and T, and each contains some objects or elements. If elements of P and T are in the same class as elements of S, it is self evident that all three sets must have something in common. Since the issue is one of proper investigation and right understanding of the objects in question, elements in T and P cannot be clubbed together with objects in S unless the common basket (which we call universal set \mathbb{U}) has a certain quality about each of the objects in it that assures us that one day we will know them by using the methods that science has used so successfully to understand and comprehend the objects of the physical-material world and the laws by which they are governed. The *sine qua non* of the same genre requirement, then, is that though techniques and methods of inquiry may differ from object to object and from case to case, a common essential and critical quality must inform each and every object, a quality at once immutable and incapable of being altered. That fundamental, immutable, unalterable essence is mass-energy—or something ultimately reducible to matter. While mass-energy describes the character of the elements of the universal set \mathbb{U} the field over which elements of \mathbb{U} lie is a common spatial and temporal environment. It follows that:

1. Every object of inquiry is—or must necessarily be, if it has to be an object of inquiry at all—a percept. A percept is any object or entity that can either be perceived with the senses or will show up as existents in sophisticated tools of inquiry.

2. As perception, either directly or through tools of inquiry, is not possible without a perceiver independent of the percept, every inquiry presupposes a perceiver that perceives a percept.

3. There must be a one-to-one relationship between the perceiver and his percept. This presupposes the existence of a common space-time environment.

2.

Does *all* definite knowledge belong to science as Russell claims? How could Russell be so sure? Nothing can be more definite to a person than his/her knowledge that he/she exists. Yet, no one can prove—in the sense in which science understands the term “proof”—that his/her ‘I’ does, indeed, exist. There are two reasons for this strange dilemma: the first is that the knowledge of my own existence is entirely and exclusively *mine*; the second is that my Self cannot be *quantified* or *objectively verified* on a universally accepted yardstick. Knowledge of object x is definite when the same tests on x are done by different observers time and again under the same test conditions and every time x shows up as a definite entity and gives the same result. This is why knowledge that is subjective and so cannot be objectively verified cannot be the property of science. This un-verifiability disqualifies such knowledge from the domain of science but it does not cease to make such knowledge definite – or legitimate. It does make such knowledge subjective and not objectively verifiable but there is nothing indefinite about it. Prima facie it seems that the claim that all definite knowledge belongs to science is doubtful. Yes, all scientific knowledge is definite knowledge. But all definite knowledge is not scientific knowledge.

Let’s go back to Russell. A few lines after the one quoted, the great philosopher says/ that, historically, philosophers have found the classic “No Man’s Land” in dealing with questions that science cannot answer. This is a surprisingly candid admission from one who believed that reason and science can answer all questions.

He says that questions that science cannot answer are “of most interest to speculative minds” such as (again to borrow verbatim from his work):

Is the world divided into mind and matter, and, if so, what is mind and what is matter? Is mind subject to matter, or is it possessed of independent powers?

Here, Russell has asked two questions. Both should interest science. Why, then, can't science answer them?

It is a pity that though Russell admits that science cannot answer the classic (non-teleological) questions that preoccupy the philosopher from the latter's No Man's Land, he does not ask why, if objects of knowledge in science and philosophy are in the same genre bound together by the common thread of essential material quality, science cannot answer these two questions. Can it be because at least one of the two objects of knowledge he mentions, namely mind, though a definite existent whose knowledge is definite, is not objectively verifiable?

Russell probably meant that science's domain is in *all objectively verifiable* knowledge. Indeed we have in the criterion of objective verifiability one of science's most edifying and valuable principles. The fact that all percepts in the phenomenal world of matter fulfill the criterion of objective verifiability vis-à-vis perceivers is the reason why percepts, perceiver and one-to-one relationship are the essential condition for scientific investigation. As material objects are either themselves objective reality or parts of some specific objective reality, another way of stating this principle is to say that science investigates objective realities. The corollary to this sound principle is that nothing that is not an objective reality belongs to the domain of science.

Nothing otherwise explains why, if philosophers use the tools of science for their inquiry, can science not answer questions philosophers ask; or, why philosophers themselves cannot answer those questions. Russell, without probably knowing it, does not ask these questions because this most praiseworthy scientific principle that makes objective verifiability the cornerstone of scientific investigation is also its biggest weakness. It leads to huge problems—as weaknesses invariably do. Sir Bertrand Russell was himself not innocent of the problem though he probably did not suspect its cause.

3.

Here is Russell one more time:

When we ask 'why?' concerning an event, we may mean either of two things. We may mean: 'What purpose did this event serve?' or we may mean: 'What earlier circumstance caused this event?' The answer to the former question is a teleological explanation, or an explanation by final causes; the answer to the latter question is a mechanistic explanation. . . . Experience has shown that the mechanistic question leads to scientific knowledge, while the teleological question does not. . . .

In regard to both questions alike, there is a limitation which is often ignored. . . neither question can be asked intelligently about reality as a whole (including God), but only about parts of it.⁶

The passages quoted acknowledge that in dealing with wholes we are up against a problem. As much of the problem we encounter has to do with our lack of understanding of wholes, a word on how best to identify a whole might not be out of place. If you ask the teleological question 'What purpose does this serve?' regarding an entity and you do not have an answer, there is a possibility that you may be dealing with a whole. Existence—human existence—is a classic case in point. Direct the

question: ‘What is the purpose?’ to your own existence. Do you have a meaningful answer (without resorting to God)? You don’t. Does this mean that existence is a whole? It is risky to jump to a conclusion: there are more things that do not have a purpose than things that do. The Himalayas—or any other geological formation on the earth’s crust—, the earth itself, the Sun, the Solar System, the Milky Way—and indeed all forms of matter—entirely lack purpose. That does not make matter wholes. To answer conclusively, we will have to subject the entity under investigation to two other tests. One of these is the test of beginning. If the entity in question is a whole it will defy an answer to the question: ‘What earlier circumstance created this entity?’ Of course these two ‘tests’ follow from Russell. But there is one further test, a test Russell fails to enumerate. This is the test of objective reality. No entity that is a whole will be objectively real. It is only when an entity answers in the negative all the three questions set out above that it can be said with certainty that it is a whole.

A word on the correlation between objective reality and objective verifiability will not be out of place. If an entity, say \mathcal{K} , is a whole, it will fail, by the third test, to register as an objective reality. But then, what is not objectively real is not objectively verifiable either. For this reason \mathcal{K} will not be in the realm of science.

4.

If it is true that (a) all definite knowledge does not necessarily belong to science and (b) the domain of science is in objectively verifiable knowledge then it seems reasonable to posit that there may be elements that belong to set T whose knowledge may be definitively had; but because such knowledge cannot be

objectively verified such elements do not belong to set S. As we have just seen, objective verifiability of an entity is contingent upon it being objectively real.

We have seen that, theoretically, at any rate, there can be a class of objects that may not show up as objectively real existents. We have called such objects wholes. We also understand that when a whole is called an object what is meant is that they are objects of knowledge, not material objects or percepts in time and space. We will now identify an actual, concrete existent we all are familiar with, an existent that has been the subject of wonder, speculation and debate since ancient times. The virtue of selecting this entity among several similar entities in the same set of elements is that, as this existent is an integral part of our universe it is our transcendental reality: no one will, therefore, deny its existence. This entity is Space, E^n .

Is space matter? Can it be a perceiver's percept? We do not need physicists to answer in the negative. Space is an entity that does not belong to the set S containing all matter. We are sure that it exists; but because it is not an objective reality, it is not objectively verifiable either.

Take another entity. Time. Is time matter? This question is easier to answer. Time is, of course, not matter. Like space time is an entity that does not belong to S. We all are aware of the passage of time but time itself is not objectively real.

It will be noted with interest that both Space and Time are what is called dimensions. A dimension is what gives a whole a state of being or defines its state of existence. One can say they are norms that give "stateness" to a whole. The conceptual problems concerning dimensions and wholes begin right here. Neither can there be any proof that dimensions exist nor is any proof supposed to exist. If they are not

objective reality, they are not objectively verifiable. Nothing that is not objectively verifiable can either be proven to exist or proven not to exist. This is a “vice” every whole suffers from.

Now, imagine our universe stripped of every single particle of matter from ones as large as stars and black holes to the most fundamental subatomic particles such as the neutrino; imagine this universe bereft of all inertial frames from galaxy clusters to Einstein’s train carriage. Imagine that only you are in this universe, (you *minus* your body). Will you be aware of Space? With your body as the last possible inertial frame also gone and with no other inertial frame existing it will be impossible to tell whether you are in a state of rest or motion. Now you will neither be aware of Space nor be able to tell whether Space exists. In this same matter-stripped universe would you be aware of the passage of time? No, decidedly not. Does Time exist in this situation? This is a little more difficult to answer.

Time and Space are entities that occur as realities (though not as objective realities) only in association with matter.

5.

Two possible deductions emerge from this. One is that Space and Time are attributes of matter. This is what science deduces. The *locus classicus* on behalf of science came from Albert Einstein, who rejected the idea that space is an objective reality: “Space-time is not necessarily something to which one can ascribe a separate existence, independently of the actual objects of physical reality,” he wrote. “Physical objects are not in space, but these objects are spatially extended.” That is another way of saying that S is the only set that exists – that S is coterminous with \mathbb{U} .

The spiritual metaphysic conception is in agreement with Einstein that space and time do not have real existence, but it avers that just because a thing does not have objective reality it does not *ipso facto* mean that it does not exist. It exists as a nonmaterial entity, devoid of objective reality, but very much an existent.

6.

The spiritual-metaphysic conception of things is that a dimension is a state-giving norm. It determines the nature and character of the whole whose chief attribute it is. Apart from Space and Time many dimensions exist. The most important in this scheme is Self-consciousness, or the ability in sentient beings to be aware of its own existence. At the core of this ability is a source-origin of consciousness we call the Self, \mathfrak{K} . The dimension \mathfrak{K} gives the Subject the ability to know itself. However, as subject cannot be the object of its own awareness \mathfrak{K} cannot be subject and object alike. This necessitates a conjunction of \mathfrak{K} with matter. The physical manifestation of this conjunction is life. Like with Space and Time, Self's conjunction with matter – the gross animal body in which it finds expression – obfuscates its reality. Just as time and space register as existents only in conjunction with matter, likewise the Self is traceable only in conjunction with matter. Just because Time, Space and the Self end up either in causal connection with matter or seem to be aspects qualities of matter it does not mean that they are not realities. To deny their reality is to aver that objective reality is the only reality there is. To deny their reality is to deny the existence of two other realities: subjective reality and truth.

Also, the state-giving norm determines the nature of the whole. Where dimensions are spatial and (or) temporal, the whole is a space-time web in which

there may (or may not) be matter. This we call a universe. Where the dimension is Self-consciousness, the whole is the Self. In conjunction with matter, consciousness is conditioned by time and space. When thus conditioned it appears as life. Conscious life is under the cusp of time because it expresses itself through the gross sentient body; as the sentient body is matter it is necessarily under the aspect of time. Hence the Self conditioned by the body is consciousness *sub specie temporis*. When matter decouples with the Self, which of course happens at the instant of death, the Self is no longer conditioned by the body. In this state it reverts (in a very qualified way) to *sub specie aeternitatis*. As the Self never owed its existence to matter, death does not extinguish it. It is the need to understand what happens after death, the need to answer the question, *where do I go after my death?*, that drives the spiritual quest.

7.

The spiritual metaphysic stream of consciousness recognizes three types of realities. They are: 1. Objective Reality. 2. Subjective Reality. 3. Truth. Objective reality has already been discussed in some detail. Subjective reality is the meaning that a conscious entity gives to a given objective reality – and the meaning he thus gives is that conscious entity's subjective reality. Not unnaturally, subjective realities in regard to the same objective reality may and does vary widely from person to person. A Himalayan rock is an objective reality; but for the geologist that rock on the Himalayas may be a sedimentary rock whose formation in that region is the subject of keen scientific interest; for a man contemplating murder it can form the ideal place to commit the crime; for the road builder it may be an unnecessary hindrance; for devout locals of the vicinity it may represent divinity, an object of worship and

eneration. Each man has given the same objective reality—an object called a rock—different meanings. Because such human conditions as happiness, sorrow, hate, love, anger and peace are subjective realities, religions concern themselves with these creations. Subjective reality, then, is the sole domain of religion.

The problem with truth is that it has to be defined. The problem with definitions is that every definition is a subjective reality. The problem with subjective reality is that it is not the truth. In the ultimate analysis truth does not exist. Anybody who believes that he is in possession of some aspect of the truth is deluding himself. Nevertheless, let us see if a subjective definition takes us somewhere.

If truth is that which does not alter or change, is eternal, immutable, indestructible and omnipresent then an entity with these attributes is neither objective nor subjective reality. The only thing that has all these characteristics is a whole. The spiritual world explores this aspect of reality. It is not concerned with nomenclatures; it is concerned with the state of existence. The seer subjectively experiences truth. The tragedy with Truth is that those who experience it do not, for some strange reason, articulate it well. This has given rise to a very general perception in the scientific and rational world that seers purvey nonsense. The truth about wholes can be expatiated. Every subject has a language unique to it. Every subject has a grammar; by grammar I mean logic that gives it sound theoretical underpinnings. These had not been developed till very recently. One small example will suffice to drive home the point.

Among the many wholes that the spiritual seeker knows exists, one is entirely bereft of space and time. In this Absolute Frame (ϕ) is “embedded” consciousness

that, unlike the Self, is not hampered by that inflexible principle that compels the individuated Self to conjoin with matter. This consciousness is the repository of absolute knowledge. Humanity calls this entity God. Russell was right when he said that God is a whole.

But conceptual problems remain – problems religions have created. As this entity is never in conjunction with matter and has nothing whatever to do with our universe, it is not a victim of subjective realities. It does not get angry, there is no need to pacify it because it is in no “mental” state that would require pacification, it does not love or hate, and it does not teach love and compassion or advocate hate: in short it creates nothing that the holism \times creates. The value-emotion connotation that goes with the idea God is a very human subjective reality; and subjective reality is not truth. Though religion has discovered God, it has also been instrumental in giving God a persona.

The problem is with the inaccuracy, misconceptions and widespread logical obfuscation in religious concepts. For instance, an attribute of God is that He is eternal. Eternal on which time scale? Our time scale began 13.7 billion years ago. Also God is considered omnipresent. Omnipresence has a spatial connotation. We have just seen that God is not part of this universe. Spinoza’s taunt had an unassailable logic. Lastly, in the context of Absolute Frame, I used the term “embedded consciousness”. Would “consciousness hypostatized” be more apt: embedding conveys a physical-spatial idea. What humanity needs is a very clear understanding of fundamental religious concepts and spiritual realizations.

On Making Science and Religion Live in Harmony

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Abstract

This paper is proposing an answer to the question “How can science and religion have a harmonious relationship?”. The answer has been developed in three steps. Firstly, five conjectures have been formulated as alternatives for typical assumptions characterizing the science worldview. Secondly, these conjectures have been integrated into an interpretation of what’s going on in our universe. Thirdly, three tests have been executed to see how different worldviews fit with the interpretation. The tests show that (1) all supposed “miracles” in Quantum Mechanics (QM) and General Relativity (GE) ontologically look “normal” in this interpretation, (2) the time-concept in this interpretation fits with both QM and GR also mathematically, and (3) concepts in the religious domain like Eternity, God(s) and Self easily fit into this same interpretation too. Based on these steps the proposed answer to this question is “By accepting that our universe might exist of Time-Object-Subject-Combinations”.

1. Introduction: what’s going on in our universe?

In their book “War of Worldviews” Chopra and Mlodinow (2012) are describing how science and religion are giving conflicting interpretations to the

phenomena in our universe. This is partly due to demarcation and representation problems.

The demarcation problem is about defining a borderline between science and other activity. So far, it has divided this world into scientifically recognized phenomena ϕ_s – mainly objects O_s such as gold atoms, protons and Higgs particles – and all other phenomena ϕ_{AO} such as subjects, God, UFO's and spirits of the deceased. The Wiener Kreis (1827) has chosen verification as a demarcation criterion, Karl Popper (1934) falsification. Whomever is “right” or “agreed with by more experts”, the impact of applying a set of criteria is the same. Some phenomena ϕ “out there” will enter the science domain, others will not. The demarcation line has caused some confusion, since many people think that when scientists talk about time, they talk about “the” time ϕ captured by scientists as ϕ_s . In reality, time in GR is continuous while QM has come up with the surprising concept of discrete amounts of (Planck) time. We might have $\phi = \{ \phi_{AO}, \phi_{S/QM}, \phi_{S/GR} \}$ as a collection of phenomena, each of them defined from another perspective. The same is for observers in QM, mysteriously converting wave functions into objects (Griffiths, 2005). Whether certain ϕ should be classified ϕ_s is risk management (Bresnik, 2000), not differentiating based on meaningfulness.

The representation problem is about the question whether science is about the real world. Philosophers of science are having a lot of debate on this relationship. Muller (2009) considers it the leading theme in 20th-century science philosophy. Van Fraassen (2008) breaks it in two pieces. The first is between the phenomena “out there” and the data structures ($\mathcal{D}\rho_s$) that scientists have

empirically gathered while “measuring ϕ_s ”. The second piece is between $\mathcal{D}\rho_s$ and models \mathcal{G}_s that have been constructed to represent ϕ_s . Philosophers of science like Toulmin (1974), Suarez (2003) and Giere (2004) have been pointing out that there are lots of problems in making sure that \mathcal{G}_s are indeed representing certain ϕ_s “in reality”. Once the datasets “about” ϕ_s have been captured, science can do no more than process $\mathcal{D}\rho_s$ and develop models \mathcal{G}_s and theories T_s . Muller refers to this as the “problem of the lost beings”, referring to “Beings” as special cases of ϕ_s .

Next to demarcation and representation problems, the pictures of both religion and science might be “coloured” by assumptions. Starting at the easier end, in an attempt to remove the colours, five conjectures have been developed by assessing five common assumptions in the science domain. It is irrelevant how many scientists are really making them. The exercise is just meant to deliver conjectures, meaningful statements impacting on worldviews that cannot be disproven (otherwise it would be theories) nor disproven, but that should be about consistent with all known facts.

The first assumption is that objects have “Ding An Sich”-like characteristics. Objects can be different “things” for different groups of people. In daily life, we use names λ to refer to objects O_λ . Those of us speaking the same language know what we mean. In QM we should be more careful in speaking about “object”, even if there seems to be a good λ for it, like “light” or “atom” to describe certain ϕ_s . In QM, observations generate one off measurement results, typically characterised by

properties π , such as speed or location. The property is “owned” by an object ω , linked to a specific measurement. Hence, the word “object” can refer to ω (the measurement), O_λ (language approach) or O_E (the scientific approach). Herein, $O_S = \{\omega_1, \omega_2, \omega_3, \dots, \omega_N, A_\beta\}$ is a set of objects ω_n (as they have appeared during measurements) and assumptions A_β that are added to fill in the gaps between small sets of measurements and the “object” that scientists might think that O_S is. In the famous two-slit-experiment (Jönsson, 1974) for example, a photon is defined by $O_S = \{\omega_1, \omega_N, A_\beta\}$. Herein, ω_1 refers to the measurement indicating that this “thing” has been present at the beamer during the start of the experiment, ω_2 referring to the measurement that this “thing” has arrived at the detection screen some time later. A_β is referring to the assumption that “the thing” has actually travelled. Empirically, there is no more than ω_1 and ω_N . The rest is A_β .

It is common practice that scientific peers “agree” on the existence of objects O_S , like Higgs particles, judging the credibility of A_β . Emmanuel Kant was one of the first and most famous persons to promote that A_β might be non-empty, arguing we cannot fully appreciate what an object “really” is because of our limited observation capabilities (Kant, 1781). He said that the object we can see is only part of what he referred to as “Das Ding An Sich”. Assuming that Kant is right is a choice rather than following an objective standard. By observing an object we might also have received all the information available already, having seen “The Measurement An Sich” (in which case $A_\beta = \emptyset$). In the two-slit-experiment, it is undoubtedly tempting to make the assumption $\omega_1 = \omega_N$, applying the concept of “the same”. However, we cannot be sure about what happened with the photon since departure. We cannot even be sure

that the measured properties π are part of an ω at all. Perhaps a 100% change in ω has occurred, so it all boils down to lessons from Theseus story. This Greek captain left the harbour with a ship of 100 planks. At sea he replaced the all, one by one. Did Theseus return with “the same” boat? We cannot choose yes or no by only referring to the series of events that took place. The answer is merely a language and definition issue. At some point, we must accept that our measurements might deliver the same results, but that these results themselves still don’t prove that we identified “the same” object, nor that it has “travelled”.

An object might also (partly) be a “*Fantasie An Sich*”. Like some datasets have erroneously not been classified as $\mathcal{D}\rho_s$, others might have been accepted erroneously, resulting in fantasy- ω 's. Constructive empiricists are fully relying on $\mathcal{D}\rho_s$, considering other datasets $\mathcal{D}\rho$ as “unobservable” events, processes, objects and structures. Scientific realists are not so sure, claiming that certain ϕ might “exist” without having a $\mathcal{D}\rho_s$. What’s unobservable for one, could be observable for another. The first conjecture, empirically radical, is that objects are “*Measurements An Sich*”.

The second assumption is that objects can exist without observers. The belief in separation between mind (not acceptable as an O_s) and matter (generally accepted) is deeply rooted in modern western culture. Descartes (1647, 1649) suggested that the body works like a machine with material properties. The mind or soul, on the other hand, would be nonmaterial and not follow the laws of nature. Somehow, this has become the leading – but unproven – conviction for scientists.

On the other hand, we have this famous empirical question often attributed to philosopher George Berkeley: “Does a falling tree on an island make a sound if no one can hear it falling?”. The existence of sound cannot be empirically proven in the absence of an observer, but its non-existence can never be proven at all. It’s a conjecture. “Real” empirical evidence can only be obtained during an observation itself, requiring an observer to exist at least during each observation. The “existence” of fundamental particles in between observations is either an assumption or a scientific model.

Remaining consistent with the above, we can define a subject σ as “that what is observing” (not to be confused with “living being”) and an object ω as “what can be observed”. We could imagine objects and subjects existing in pairs. Approaches like this can be found in Relational Quantum Mechanics and Quantum Information Theory, as described by Rovelli (1996), Groenewold (1957) and Bub (2004, 2005). The quantum universe can then be described as a set of $\{\sigma, \omega, A_\beta\}$ instead of $O_s = \{\omega, A_\beta\}$. This couldn’t harm any of the existing theories or models for ω or O_s , because σ cannot be classified itself as an ω or O_s anyway. Being as radical as the first, the second conjecture is that objects cannot exist without subjects.

The third assumption is that subjects can exist without objects . In the western world the conviction that “we ourselves” have continued to exist in between any two $\{\sigma, \omega\}$ measurements is a fundamental one. The outcome of many hide-and-seek experiments might have strengthened our conviction, but it cannot

be proven. Interpolations in between $\{\sigma_1, \omega_1\}$ and $\{\sigma_N, \omega_N\}$ might have been practical to predict an ω_N , but they do not prove the continuity of an ω -independent $\{\sigma\}$, nor in substance, referring to the assumption that $\sigma_N = \sigma_1$, nor in time, referring to the assumption that $\{\sigma\}$ has always existed. Observation of an object is required to be sure about the existence of a subject, as much as it is required vice versa. Criteria for existence of trees and “selves” can be mirrored.

Whatever fundamental conviction about “self” or “observers” is chosen, the absence of a subject is “annihilating” the problem of the absence of an object. There is just no subject to worry about this absence. Without a subject, the question what or where the photon was in the two-slit-experiment “while travelling unseen” (which is already an assumption) is completely irrelevant.

The third conjecture is that subjects cannot exist without objects.

The fourth assumption is that subjects can be separated from objects at all. No one has yet been able to solve the philosophical Problem of Perception yet, dealing with the question how this would be possible, as is extensively described in the Stanford Online Encyclopedia, referring e.g. to Armstrong (1968), Dretske (1969), Jackson (1977), Martin (2002), Moore (1905), Peacocke (1983), Strawson (1979), Tye (1992) and Valberg (2002).

As long as we haven’t solved the Problem of Perception, we cannot simply draw a clear line in the world stating “the right part of this line is the object” and “the left part is the subject”. In fact, it doesn’t make sense to separate one part of “mixed subject-object soup” from the other and focus on just the object part of

everything. We might consider not to sign the Declaration of Independence for $O_s = \{\omega_1, \omega_2, \omega_3, \dots, \omega_N, A_\beta\}$ within the $C_{\sigma\omega} = \{\sigma_1, \omega_1, \sigma_2, \omega_2, \sigma_3, \omega_3, \dots, A_\beta\}$ collection, refusing to accept vague and fuzzy mixes of “beings” in science that way, missing out on potential $C_{\sigma\omega}$ impacts on ω_N .

The problem of perception generates the fourth conjecture: subjects are entangled with objects.

The fifth assumption is that time is an independent entity. Time too could be a “Ding An Sich”, a “Fantasy An Sich” or a set of measurement values. There are many views (Ashmead, 2010), but we haven’t observed time directly as such. We might have been too enthusiastically assuming that watching the clock a number of times has learned us all about time. We might just have defined a concept for something that might not even have “flowed” in between the two measurements.

If observers are not O_s , then time needs not to be. In Einstein’s GR theory the amount of time passing by is co-depending on both the observed and the observer. Velocity and acceleration of the observed in the observer’s framework are impacting on how much time has passed in each event for each observer. Time is linked to an observer. If objects cannot exist without an observer, time cannot either. Time needs to be observed in order to meaningfully “exist”. Therefore, time might be the missing part of $\{\sigma, \omega\}$. Our universe might consist of a huge collection of $\{\sigma, \omega, \tau\}$. The fifth conjecture is time does not exist outside subject-object-combinations.

2. An alternative interpretation built on conjectures

Since conjectures cannot be unproven, it is relatively safe to develop an interpretation based on them, being sure that we are not violating scientific evidence. As a result, an interpretation too is a story that cannot be proven nor unproven, like Copenhagen and Many-Worlds. On the positive side, it might provide satisfactory explanations for what is happening in our universe (satisfaction being a matter of taste), and a wider perspective in which both scientific theories and individual observations fit in well, even if these observations haven't passed the demarcation line.

Combining the five conjectures is resulting in an interpretation in which our universe is existing of millions of Time-Object-Subject-Combinations $\{\sigma, \omega, \tau\}$, abbreviated "toscies". It is providing a wider yet consistent framework for the traditional scientific view, in which it is existing of millions of Os moving in "time". Scientific theories about Os and "time" should hold in $\{\sigma, \omega, \tau\}$ too.

3. The first test : Can the interpretation look QM and GR miracles look "normal"?

One of the tests to assess whether the interpretation can contribute to the harmonious relationship between science and religion is whether it can make all supposed "miracles" in Quantum Mechanics (QM) and General Relativity (GE) look ontologically "normal". This will be demonstrated by providing nine "satisfactory" (depending upon the taste of the reader) explanations.

The first "appealing" explanation is answering the so-called measurement problem. In QM, observations are mysteriously impacting on O_E , converting complex

wave functions and probability distributions into objects and measurement values. Making observations in the two-slit-experiment, for example, is changing the light patterns on a detection screen. Many variations of this experiment have confirmed that this is due to the observation, not to the camera. Whether the observation has been made by a technically “dead” camera or by a living being cannot be known without a living being. Otherwise – according to QM itself – the camera will remain in superposition until another observation has been made, thus requiring an observer anyway. Some scientists might believe that one day observers will turn out to be misunderstood ω or O_s . However, subjects will never be able to fulfil the minimum requirement for classification as O_s , which is having some properties π that can be confirmed by others. Every π is related to an ω , by definition. Hence observations can be no other than σ impacting on O_s . If we accept the possibility that σ and ω are existing in pairs only during measurements, the measurement problem is not a problem anymore. It’s the nature of the Toscie world, being made a problem by accepting some of the seven assumptions mentioned above.

The second explanation is answering the problem of discrete time in QM. Time is passing by only during Toscies, so time can only “exist” in units of τ . Time is not passing by during the absence of Toscies. In between Toscies, there is no time, no subject and no object. There is nothing. Time in QM is discrete and quantified in small pieces. The concept of Planck time could be easily understood as the minimum or standard duration of a single τ .

The third explanation is how the discrete quantified time concept in QM is compatible with the continuous relative space-time concept of GR. Time for subjects in GR is continuous, because subjects aren't there when time isn't there. Subjects will never experience the absence of time. For them, time is continuous and always present. If the duration of a Toscie would be in the order of magnitude of the Planck time, which is 10^{-43} s, we could never observe this short time under normal circumstances. In cinemas nobody ever complains about 50 pictures per second as being too low of a frequency for a movie, for example.

The fourth explanation is answering the question how QM objects can be quantized in the first place. Electrons "jumping" between different energy levels, photons suddenly "appearing" in places and "tunnelling" are interpolations in our minds. In this interpretation, they have never been "underway". There is no "underway".

The fifth explanation is answering how different time speeds can exist in GR ontologically. The same event could be mapped into 20 toscies for us *and* in 5 Toscies for someone else. Time is not a background structure, independent of us. All observers are experiencing proper time in their own area, but could view different timescales in other areas of "their universes" in accordance with the Einstein field equations. Without observers, time nor space does not exist. They are really relative.

The sixth explanation is answering why light is bending in gravitational fields, that is, from our perspective, while it doesn't in quantum vacuum. In gravitational fields the speed of light is 3×10^8 m/s for local observers, but they are experiencing light go by in a frequency that is lower than ours. For them, light is travelling in a straight line with that speed. For us however, Toscies are sequencing each other faster, making us believe that the light is slowing down and bending, like in a prism. In reality, there is no space that is "the same" both for them and for us, as GR is predicting.

The seventh explanation is answering what the nature of gravity "is", because implications for light in gravitational fields are also applicable for masses with a certain speed. Observers reappearing more quickly will be perceiving curves where their slower counterparts see straight lines. Movement and speed are nothing more than data facilitating a prediction of a similar measurement in a later Toscie. The prediction can be done by the combination of QM or GR, which are complementary in this interpretation in a way that normally one of them can be neglected.

The eighth explanation is answering the problem of matter-wave-duality. There is no such problem in this interpretation. This is a problem created by making assumptions, certainly not a miracle. Interpolation between two measurements is a story that cannot be empirically proven. In this interpretation, there is nothing in between two Toscies, no wave and no particle. It's a concept. There is no subject that can see this. If a subject would be trying to observe the object, he or she is

“creating” (or being created in) another Toscie. QM’s wave function would instantly collapse. Trying to interpolate certain ω and not succeeding doesn’t mean that something is wrong in our universe.

The ninth explanation is answering the problem of non-locality. Pairs of coupled quantum systems are not at all “influencing each other on a distance”. There is no such thing as a coupled set of separate quantum systems that might be communicating with each other. All there is are Toscies. The Schrodinger laws are mathematically connecting measurement values in them to values in other ones. Position dependencies, like being far away from each other don’t have any impact at all. This is reflected in the mathematics of the Schrodinger equation, in perfect harmony with the absence of space as a permanent background through which certain information would be transported.

4. The second test : Can the time concept mathematically fit in with both QM and GR?

No matter how appealing all these conjectures might be, no matter how much satisfaction these explanations might generate, the only part that is scientifically relevant is the O_s part of it, in which models T can help predict measurements on \mathbb{G} representing certain ϕ . Therefore, we should test whether the $\{\sigma, \omega, \tau\}$ concept is consistent with current theories in physics, at least GR and QM.

To define postulates based on $\{\sigma, \omega, \tau\}$ in the science area, we need to get rid of the subject σ first. In QM this is straightforward. Observations are already implicitly defined as an operation on the wave function, creating an ω without needing a $\{\sigma\}$. Many ω plus a couple of assumptions make Os and here we are. In GR the $\{\sigma\}$ are implicitly – invisibly yet completely – defined through coordinates of ω and movements of the reference frame. Assuming that σ is in the centre of each reference frame, the presence of Os properties like impulse and location are avoiding a “Problem of the lost σ ”.

We also need to “unplug” the $\{\tau\}$ components from the toscies. In QM it is more complicated, but it can be done by first defining time in a similar way as we did for objects and then migrating this independent phenomenon into a flexible background structure that can be fixed by GR. Time is made “invisible” in $\{\sigma, \omega, \tau\}$ by introducing a dimensionless sequence number, which is basically the same as assuming that time is granular at small time scales. This number is made “observable” by introducing a local measurement operation that might have an ω -like τ as its result. This can be done by sampling wave functions at a frequency near Planck scale. The result is a discrete version (in time only) of the Schrodinger equation, for example:

$$i\hbar\Psi_{k+1} = \hat{H}_k\Psi_k \quad (\text{postulate 1})$$

in which \hat{H}_k is a discrete time Hamiltonian. It has been based on a forward difference scheme, so in fact $\hat{H}_k = \tau^*H(k\tau) + 1$, where τ is Planck time. The short sampling time

intervals will make sure that this equation is empirically consistent with its continuous counterpart. Next step is to link the sequence number to the observable “time” by flexibly introducing a fixed “background”, postulating:

$$t_k = k * \tau \quad (\text{postulate 2a})$$

in which t_k is what we perceive to be the time from a Newtonian or GR perspective. We might want to take into account that τ could have different durations in different toscies, converting t_k into a summation of τ_k with different durations. This would introduce some extra complexity, but increase the flexibility and the ability to measure “anytime”, rather than “only” 10^{43} times per second.

The flexible background structure can now easily be “fit” into GR space-time by applying:

$$t_k = \int g^{ab} ds \quad (1)$$

in which g^{ab} is the metric tensor in the Einstein equation (Penrose, 2005). One could say that space is now granular as a consequence of the quantization of time, which fits in well with the canonical approach to quantum gravity (Kiefer, 2012), but the causality is arbitrary because the “trick” to remove background dependencies for time could also be applied to space.

This way the $\{\sigma, \omega, \tau\}$ concept can be made consistent with both GR and QM. It can even execute a partial reconciliation, even if it is far from complete yet.

5. The third test: Can religious concepts fit in with the Toscie interpretation

One of the tests to assess whether the interpretation can contribute to the harmonious relationship between science and religion is whether it can provide a meaningful context for religious phenomena such as Eternity, God(s) and Self

What a Self actually “is” can be seen in different ways in this interpretation. The conjectures are providing a toolset, not a prescribing solution. The most generic way of looking is defining Self as $\Sigma = \{\sigma_1, \sigma_2, \dots, \sigma_N, A\}$, where A can be any set of assumptions, which might be that physical components such as a “fixed” body belong to it. Whether $\sigma_1 = \sigma_2 = \sigma_3 = \dots$, which is the typical Western way of looking, or not, which conviction is more popular in Eastern countries, is not prescribed by the interpretation. σ_1 might be the subject experiencing birth, while σ_N might be experiencing dying. Or not. Stating that $\sigma_1 = \sigma_N$ (which means believing in a permanent Self) is a conjecture. Stating that a transition $\sigma_N \rightarrow \sigma_1$ (which means believing in re-incarnation) is possible too. Worthy of sharing might be that Toscies are showing great similarities with cittas (Van Gorkum, 1985), which Buddhists refer to as short moments of existence and observation. The relationship between Karma and Vipaka might even be seen as the “morality part of the Hamiltonian” in QM.

With regard to Eternity, one could ask “How much time is passing by in *between* toscies?”. Local observers will answer “None at all”, Observers in other relativistic reference frames will answer depending on their relative local “toscie-frequency”, but an absolute answer can only be “eternity”, since unlimited numbers

of “extra” σ elsewhere can perceive the ω 's we believe are “here”. From an overall perspective there is no time at all, neither any space. This is putting the Big Bang in a different perspective. History is a set of toscies rather than a trajectory “through time”. Stochastic models are then just lack of information preventing us to see the deterministic universe. In this interpretation, all the toscies are happening at the same “time” in what we could refer to by “supra-reality”.

One could only say about God that science will never be able to help us with the evidence nor the contra-expertise, based on the current demarcation criteria, which is a valid statement. In this interpretation there is unlimited room for God, though. Since for us all Toscies arise out of and de cease into something that is invisible, the big “Nothing”, it can even be argued that the material world is just a fraction, a by-product, of the invisible and divine world. One could also say that the universe is full of life, as in fact, in this interpretation, no ω is existing without any σ .

6. The harmonious relationship

The question “How can science and religion have a harmonious relationship?” can now be answered with “By accepting that our universe might exist of Time-Object-Subject-Combinations”. If we do, the beliefs in other domains can be respectfully accepted as conjectures in our own domains. The belief “God exists” in the religious domain can co-exist peacefully with the conjecture “God exists” in the science domain. The big difference is in the application of demarcation criteria, which are choices rather than eternal truths. In the science domain, nothing is allowed entry without $\mathcal{D}\rho_s$ for good reasons. On the other hand, the religious domain would be rather empty if participants

would not be allowed to go beyond $\mathcal{D}\rho_S$ or O_λ . Just they will not be able to find an external jury confirming our experiences. In God, we can only believe.

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Science, Religion, and Moral Values

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Abstract:

In debates about the relationship between science and religion one critical issue that has received little attention is morality: What are the respective roles of

science and religion in formulating and fostering moral values? Stephen Gould and others defined a boundary that ceded the values-territory to religion, but some of science's advocates object that science also has a claim to that realm. This paper argues that while science can expand our understanding of morality, it cannot be the final arbiter; it cannot establish an objective basis for moral principles. Religions and other belief systems have been and remain essential factors.

Science, Religion, and Moral Values

In debates about the relationship between science and religion, evolution and supernaturalism have grabbed the headlines. However, one critical issue has been relegated to back pages, namely morality. What are the respective roles of science and religion in formulating and fostering moral values?

Stephen Gould's Non-Overlapping Magisteria⁶ (and before him, Moore's naturalistic fallacy⁶) defined a boundary that ceded the values-territory to religion, but some of science's advocates have objected, saying that science also has a claim to that realm. This paper will argue that while science can expand our understanding of morality, it cannot be the final arbiter; it cannot establish an objective basis for moral principles. Religions and other belief systems have been and remain essential factors.

Science, in that discipline's method and aim, has a narrow standard of value, namely, precision and reliability in prediction. This criterion has become the gold standard for factual knowledge about the world; that is, for knowledge about what one can expect of nature and what one can do to manipulate nature. From such knowledge scientists construct theories of causal mechanisms, which give us the feeling that we understand how the world works. But scientific knowledge is always tentative; theories that explain observations can be overturned by new observations. And even theories that have been thoroughly corroborated by testing may be so counterintuitive that "understanding" seems impossible. Just try making sense of quantum mechanics. Moreover, we can never be sure that the picture of the universe we build from our observations is the ultimately real universe. We obviously cannot step outside the universe to compare our picture with the original. Yet these well-known reservations about scientific knowledge are not the major consideration for our present discussion. Science may describe only the world of observations, but that's the world we live in. So let us grant, at least for now, that science is the best source we have for factual knowledge. That stipulation, however,

settles little of importance for the issue at hand. It does not give science pre-eminence in the realm of values.

Our purpose is not to evaluate knowledge as a value in itself, but to examine the assertion that science, through its knowledge about human nature and social interactions (and other aspects of life), can establish objective moral principles and demonstrate why any rational person would feel obliged to accept them. There are perhaps several fields of study in which that claim might be made, but we will concentrate on one area, the one in which, I believe, science has the strongest case. That area deals with moral intuitions, moral emotions, and innate moral grammar.

One of the leaders in the psychological study of morality, Jonathan Haidt, proposed that moral cognition, like many other areas of human cognition, operates in two parallel systems: an intuitive system that works quickly and without one's conscious awareness and a reasoning system characterized by slow, conscious, rational thought. In Haidt's "social intuitionist" model, moral intuitions lead to moral judgments and judgments lead to reasoning, as the person tries in retrospect to explain the intuitive judgments. Reasoning, though, is not deprived of all causal effect; one's reasoning can affect others' intuitions, which can influence others' judgments and reasons, which in turn can affect one's own intuitions, moreover, under certain circumstances one's reasoning can affect one's own judgments and intuitions directly. Nevertheless, not reasoning, but moral intuitions play the leading role.⁶

Moral intuitions are part of humans' innate moral faculty, a universal "deep grammar" for norms, judgments, and emotional reactions. There is strong evidence that several basic emotions are universal. For example, some types of emotional display – such as the facial expressions accompanying happiness, fear, surprise, anger, and disgust/contempt – are apparently shared by all humans, regardless of the particular cultures in which they live.^{6,6} Moral emotions arise along with intuitive moral judgments; the two are intertwined.

Social norms also show remarkable consistency across cultural borders. Alan Fiske studied the ways people in various cultures think about social interactions, and he developed a theory that social relations among humans are built from four fundamental models, which people implicitly (and often explicitly) use to structure interactions.⁶ Fiske's four models include:

1. Communal Sharing,
2. Authority Ranking,
3. Equality Matching,
4. Market Pricing.

There is also a null condition, that is, there are interactions between people where no social relation is seen to exist at all. In effect, a person in this case does not view others as people, but just as objects. Wartime combat is an example.

The models may be summarized as follows.

1. Communal Sharing

Essential characteristics: Group members hold resources in common; contributions and distributions take place without regard to what individual members have given or used. There is an equivalence of members; interests and identity are merged to some degree.

Roles: members of a family or family-like, close-knit community.

Core norms/basic expectations: loyalty (do not betray other members or pollute what is held in common) and sharing (not withholding resources from the group).

Emotions in response to violations: horror, disgust, or shame for transgressions against taboos, anger at betrayals.

2. Authority Ranking

Essential characteristics: Relations are arranged according to higher and lower status, with the lower-status role requiring deference and obedience. Higher-status roles carry not only the privileges of command of persons and control over resources but also the obligation to take care of subordinates in various ways. Participants are clearly not equivalent, and major rules focus on how the group establishes the status-ranking of its members.

Roles: authority (e.g., ruler, leader, teacher) and subject (e.g., follower, student).

Core norms/basic expectations: The authority will take care of the subject; the subject will obey the authority.

Emotions in response to violations: outrage, whether at insubordination or at abuse of power.

3. Equality Matching

Essential characteristics: Roles and actions are exactly equal: all participants in the relationship or social structure contribute the same things or amounts, all have identical power, and all receive the same allotments of resources and other benefits. The central rules establish what occasions and domains of activity call for equality-matching interactions and what counts as “equal” in contributions, distributions, or exchanges.

Roles: equal sharers

Core norms/basic expectations: reciprocity; equal shares of work, costs, & benefits. The core violations are intentionally taking more than one’s equal share and shirking one’s obligation to contribute equally.

Emotions in response to violations: righteous indignation (by the injured party) and guilt and/or shame (by the offender) over failures to fulfill obligations

4. Market Pricing

Essential characteristics: Market Pricing relations focus on exchanges of goods and services, which are calculated according to relative, proportional worth and determined by free negotiation between the participants. Market-Pricing interactions can and often do occur among individuals and groups (e.g.,

businesses) that have had minimal prior acquaintance with each other and have no expectation of an ongoing relationship once the exchange is completed. The major cultural rules for Market-Pricing relations require good faith in negotiating and fulfilling the terms of an exchange.

Roles: participants, i.e., those who agree with one another to fulfill certain defined actions or responsibilities

Core norms/basic expectations: Participants will carry out agreed actions in good faith. The core violation is fraud, that is, cheating in all of its forms.

Emotions in response to violations: anger at another's failure to fulfill a contracted exchange and guilt and/or shame at being exposed as a cheater.

Starting from a different angle, that is, their research on moral emotions, Jonathan Haidt and Craig Joseph came to conclusions very similar to Fiske's. They identified five focal concerns of morality, and proposed that those five reflect innate components of moral intuitions.⁶ The five concerns were:

1. Harm/care,
2. Fairness/reciprocity
3. In-group/loyalty,
4. Authority/respect,
5. Purity/sanctity.

Together the Fiske and Haidt-Joseph theories yield a set of apparently universal moral principles:

1. Care for others; do not harm others;
2. Share what you have; do not take more than you need;
3. Be fair to others; reciprocate;
4. Be loyal to your community (family, tribe, nation, etc.);
5. Respect authorities;
6. Fulfill your promises; don't cheat;
7. Avoid contact with sources of poison and disease.

Has science truly succeeded in transforming "is" to "ought?" Do these findings qualify as a scientifically proven, objective, universal moral system? It might seem so. The set of moral norms can claim to be universal because they are innate in all people. Nevertheless I'm not ready to grant that science has truly conquered the naturalistic fallacy. Science has not demonstrated what makes those principles morally right.

First, although the principles can legitimately claim to be "right" in the sense that they were adaptive for *Homo sapiens*, what was adaptive for hunter-gatherers 100,000 years ago may not be adaptive now. Our innate moral grammar evolved because it helped our species overcome problems of group life and thereby enabled our ancestors to gain the advantages of social organization, but that mental faculty may not be as successful in meeting the challenges of social living in today's era of instant global communication and weaponry capable of wiping out entire nations in minutes. Moreover, "right" in the sense of "adaptive" does not necessarily imply

“right” in the sense of “best.” Evolution does not guarantee that it produces the best-constructed organisms, only those that are at least a little more successful than their competitors. Besides, moral impulses are not our only evolved impulses. We also have urges to compete, cheat, and even kill in order to gain what we want. These self-serving impulses also were adaptive. Are they, too, morally “right?”

Second, what is “right” in the sense of successfully spreading our genes may not be what is best or successful for us as individual, self-aware persons. From an evolutionary perspective we may be gene-reproducing machines, but that is not all we are. We have aims and interests not always aligned with survival and reproduction. Self-awareness and free will allow us to transcend our evolved intuitions and impulses. We often have conflicting impulses, and conscious consideration can, at least at times and over time, influence the path we follow.

Third, human nature is not an immovable given. A proponent of the moral rightness of the seven research-derived principles might argue that regardless of whether they are ideal, those principles are in fact what we humans have; they are built-in features of human nature. But that argument is based on the questionable assumption that human nature is permanent and fixed. In fact, even inborn, evolved human nature can change, and not just on the time-scale of hundreds of thousands of years. We are now approaching a level of technology that will give humans the ability to alter the genetic basis of human nature. Suppose humans could be made much more intelligent, or more adventurous, or stronger, or more affectionate, or more independent, or more aggressive. Would society still operate in the same way? Suppose the mechanisms underlying emotions were altered so that people would no longer feel shame or guilt. Would anyone still behave morally? If those seem too distant to worry about, consider that genetic technology already has modified the “nature” some of the species we eat. And cure and prevention of genetically based illnesses through replacement of mutant genes with “normal” DNA are upon us. When technology makes it possible to modify human characteristics, on what basis will we be able to make decisions about which modifications, if any, are morally acceptable? The previous universals of human nature would no longer be reliably universal. If human nature can be changed by humans, the moral principles to guide these activities must be based on something more permanent than human nature.

Further, even without genetic re-engineering, human nature, particularly moral intuition, is malleable. Culture can twist moral intuitions in strange ways. Culture, that is, social learning, determines critical content of morality, including such aspects as the people to whom rules apply, the acceptable forms of rule-obedience, the actions that count as rule violations, and the prescribed responses to rule-violations. History teems with examples of the ability of cultures (especially the norms and beliefs of small communities) to induce quite “unnatural” behavior, such as voluntary poverty, prolonged silence, celibacy, and even mass suicide.

Before we leave the question of whether science can make “ought” from “is,” we need to touch briefly on game theory, which does not depend on human nature and thus is largely immune to the criticisms just raised. Game theory elucidates the logic of interactions in situations where participants’ strategies affect the rewards they receive. Game theory assumes that the participants, be they persons, genes, or nations, seek to maximize their rewards, which can be anything that motivates a participant or affects the participant’s future. To the extent that game theory might claim to furnish moral principles, the claim would rest on the theory’s ability to demonstrate that certain strategies would give participants optimal outcomes. But there’s the rub. “Optimal” can be defined mathematically in a variety of ways, depending on the structure of the “game” (the interaction). Moreover, an outcome that is mathematically optimal might not be seen as the most desirable from the standpoint of a particular participant, or even from the perspective of an outside observer.

There are, of course, other logic-based, a priori approaches to morality; they’re the stuff of moral philosophy. That field’s achievements are instructive for our discussion, but there is time to mention only a few. Immanuel Kant crystalized some basic axioms for morality: ⁶

1. Individuals are morally sovereign. As self-aware, reasoning beings, individuals are independent moral judges and sovereign lawgivers for themselves. They are morally responsible for their own actions and for the choice of moral principles they will follow.
2. Self-aware, rational beings have absolute worth.
3. If there are to be any moral standards beyond one’s own desires, the principles must be equally applicable to all persons.
4. If all persons have absolute worth, then all persons deserve respect and should be treated as ends in themselves, never as means to other ends.

From these points Kant derived what he believed was a “categorical imperative,” a universally binding moral obligation. His classic formulation of this was: “Act only on that maxim whereby thou canst at the same time will that it should become a universal law.”⁶ One would measure one’s proposed moral guidelines against that standard by imagining that all people followed those same guidelines and then assessing whether the resulting society was conceivable, and if so, whether the society would be one in which a person would want to live. The categorical imperative has been robustly criticized, but for our discussion it is interesting because it introduced a desirable-society criterion. That is, moral principles would be founded on the requirements for maintaining civilized society.

Social-Contract Theorists developed that idea further. In their view moral standards were based on the implicit agreement that binds a society together. [Thomas Hobbes](#) condensed the case for civilization into a few sound bites, such as “the state of nature,” which is the condition in which people would live in the absence of civilization. This condition would be characterized by lawlessness and the “war of

all against all.” In his most quoted line, he argued that without civilization, life would be “solitary, poor, nasty, brutish, and short.”⁶ To avoid descent to that state, people agree to give up some individual freedom in order to form social groups and establish governments. Just as the more intimate relationships of friendship and marriage impose constraints on one’s independence, so in larger communities people implicitly or explicitly agree to be bound by the moral standards and other rules of the community in return for the benefits of membership.⁶ However, in choosing to be members of a community, people take a risk. People must trust that others will carry out their parts of the agreement so that the expected benefits of community membership will actually come about. Morality is maintaining that trust. This notion can be framed as a moral principle: one should not act so as to violate the trust necessary for relationships and communities.

John Rawls began with Kant’s assumptions – each person’s moral sovereignty, each person’s equal worth, and the universal-application rule – he stirred in the concept of a social contract, and then he added one more fundamental principle, namely, that accidental fortune should not influence standards of justice.⁶ Justice should not depend on one’s luck, such as the family or nation one is born into or other fortuitous events of one’s life.

To recap, philosophy has contributed several additional candidates for universal moral principles:

1. People are independent, sovereign moral judges.
2. Any moral obligations should apply equally to all persons.
3. People have absolute worth and should be treated as ends in themselves, never as means to other ends.
4. One should not take actions that violate the trust necessary for relationships and communities.
5. A person’s accidental fortune should not influence standards of justice or morality.

The first two are matters of logic; they are implicit assumptions underlying the very concept of universal moral principles. The remaining three are value-principles, widely accepted perhaps, but nevertheless disputable. In the end, neither science nor philosophy has been able to establish absolute, universal, logically unassailable moral principles, so we are still left with a world in which moral systems compete and there is no independent judge.

This is where religion enters. Historically, religions have been important both in shaping and in expressing cultures’ moral values. Religions may influence a person’s morality directly, but they also exert their influence indirectly, via the norms a person absorbs from the communities in which the person lives. Of course, religions are not the only determinants of moral principles. Particularly in modern times secular ideologies, e.g., National Socialism, Communism, and politicized ethnic identity have powerfully motivated some people’s behavior.

Belief systems originated in prehistoric times, as evidenced by massive shrines, e.g., Stonehenge, and elaborate burial structures found many places in Europe, so we do not have a record of how the first belief systems developed.⁶ But it seems safe to say that early belief systems, like present-day ones, arose from the need to answer the existential questions that self-aware beings face:

Who am I?

What's my place in the universe?

What is the purpose of existence?

What should I do with my life?

How should I act?

We can't know the specific answers given by the earliest belief systems, but, since our innate moral grammar had evolved by then, we can assume that relational models and moral intuitions were significant sources of belief-content. But many other factors have molded beliefs in the millennia since then, including visions of shamans, judgments of priests, pronouncements of charismatic prophets, dictates of rulers, and, moderating all of these, people's sense of continuity with their community's history, felt as reverence for those who have gone before and for those ancestors' beliefs. The human, psychological origins of belief systems, of course, say nothing pro or con about the validity of any particular beliefs.

Science itself is not a belief system in this existential sense, but materialism is. Science uses materialist metaphysical assumptions as part of its methodology, but science does not prove materialist beliefs. Materialism, a.k.a. physicalism or naturalism, gives a set of answers to existential questions, and these beliefs compete with other belief systems. Since there is no objective, universally accepted standard for judging among belief systems including their moral components, no one system has exclusive possession of validity, and differences in beliefs and moral norms are inevitable. Among both individuals and communities such differences cause much friction, even conflict to the point of violence.

How should the competition among belief systems take place? How should one respond to differences in beliefs and moral norms? One option would be what might be called "parochial absolutism." A person taking this stance believes that the beliefs and norms of the person's particular group, say, a religious sect, are absolutely right and valid and therefore necessarily applicable to all other people, even those outside the sect, regardless of whether those people agree. However, this view fosters a totalitarian mentality in which it is permitted (even obligatory) to impose the sect's dogma and practices on other people, by force if necessary.

At the other extreme is cultural relativism, the view that no belief or moral system can claim more validity than any other, so one cannot take a stand in conflicts regarding beliefs or moral norms. This position has some attractions: it is conceptually consistent, and it has a nice live-and-let-live feel. But it is unsatisfactory in at least two ways. First, even if one fully accepts the rationale for relativism, that intellectual assent does not automatically banish uneasy feelings

about letting repugnant practices of others continue. The relativist may abhor another culture's customs, say, human sacrifice or female genital mutilation, but he or she has no basis on which to criticize them, no intellectually consistent way of responding to his or her own uncomfortable intuitive moral judgments and moral emotions.

Second, relativism erodes the force of moral principles, and not just across cultural borders. Under the logic of relativism, not only cultures, but individuals, too, are morally sovereign. If there are no transcendent principles, then each person's unique history of cultural influences makes the person, in effect, a society of one, the sole member of his/her individual culture. So a person has no basis for criticizing the moral practices of any other person. If no one can criticize anyone else, then everyone is freed from moral considerations. Moral practices become a matter of personal preference.

I believe there is a middle road between relativism and parochial absolutism. One can believe in the validity of one's own moral principles and still respect others' different norms. One can place great importance on one's own moral standards without concluding that those standards should be forced on others. The question then is, of course, how does one follow this middle road, in the face of moral conflicts? The goal is to arrive at a non-coercive, non-manipulative resolution of the disagreement over moral norms, and reaching that objective involves persuasion. Some persuasion can be based on an appeal to shared moral intuitions and emotions, for example, a reframing of an issue so that different intuitions and emotions come to the fore. From a broader perspective, persuasion involves getting another person to alter his/her belief system, by showing the person an alternative set of beliefs, ones that offer different answers to existential questions, a different ultimate source of value, and a different vision of what life is meant to be. In the end a belief system wins adherents by the attractiveness of its world view, by its ability to satisfy people's deep existential longings.

THE HARMONY BETWEEN RELIGION AND SCIENCE

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Abstract

Life as we know it existed before man had sight of it. An awakening is what took place, when man discovered the wonder of nature.

Light can be defined as that natural agent that stimulates sight and makes things visible.

Sunlight is the natural light that is referred to in the definition of light.

Each man's idea or perception of life is born in his mind.

Different perceptions of the very same earth _ religious fanatics and scientific fanatics.

No exact time as to when the Universe was created.

Aryan race was the first race – Hindus went to India- too hot to do any physical work , they began to look within themselves for explanations. The other group went to Greece, where Science was born.

Obtaining an idea is God's work at hand and developing an idea is science at work.

Had Bill gates not shared his knowledge of computers with the world, the world would not be as advanced as it is now. He received a firm grounding through Congregational Church.

No man can be an atheist because every man has some idea of belief or faith.

Both religion and science have always co-existed.

Religion and science have their origin in faith.

“Education is the manifestation of the perfection that is already in man” Swami Vivekananda

“Set goals and look for ways to reach them, through work, worship, psychic control or philosophy, by one or all of these”

Compare our world to a hundred years ago and there would be almost no comparison. Science and religion have progressed to such an extent that communication has now become effective. Inspiration for science was born in nature.

Despite all the natural disasters in the world, nature still provides in abundance.

Religion of yesteryear was superstitious, New age religion teaches us that God is a loving God and we must not just blindly accept what is taught by religious leaders, but question what they say.

Albert Einstein with his limitless knowledge received his elementary schooling beginnings at a Catholic School.

S.N Bose who could be regarded as the father of science in India. – Planck's law and Light Quantum Hypothesis, later on worked with Einstein on several applications, of most note was the "Bose- Einstein Statistics".

"Never accept an idea as long as you yourself are not satisfied"

Self control is essential in order not to be obsessive and fanatical.

Sir Jagdish Chandra Bose achieved the following fetes during his lifetime, he invented the mercury coherer which was used only two years later by Marconi to receive radio signals. A British editor once wrote "In Sir Jagdish the culture of 30 centuries has blossomed into a scientific brain of an order which we cannot duplicate in the West."

Every religion in the world teaches us about love and respect for our fellow man.

Secular definition of love can be defined as give and take, in the religious context of the word, love can be defined as give and give without thinking about the consequences or results. We are taught not to make any conditions and none will be imposed.

Science and religion can work simultaneously to bring about unity, peace and prosperity to all of humanity.

Religion creates a foundation, and science can continue, not by destroying the foundation but by continuing to educate and expand.

There have been outrageous claims made that science could evolve as a religion.

Where do we hear the answers? The answers beckon to you from the holy scriptures that your voice of reason, interprets in the most sensible way that your mind knows how.

If only man realised his own strength, he would be able to control the world internally and externally in much the same way as God does and science has been attempting to do.

1.

Life, as we know it, existed before man obtained sight of it. All that occurred, is that man became aware of that which existed before he did. An awakening is what took place in man's mind when he discovered the wonder of nature. There was day and night, rivers and oceans, animals and mammals. There is abundance everywhere that we look. In the words of Hafiz " the Sun never says to the earth you owe me." Man only gained knowledge of that which already existed. All discoveries require light. Can we receive knowledge without light? Light can be defined as that natural agent that stimulates sight and makes things visible. However, thanks to brilliant scientists such as Thomas Edison, electricity was discovered and a little bit more can be done now, when natural light disappears. Even Edison used natural light for his discoveries, i.e he worked mostly during the day. Receiving an awakening has been likened to a light bulb going off in our head. But, before there was the light bulb there was sunlight. Sunlight is the natural light that is referred to in the definition of light. Despite the advancement in science, it is generally accepted that human nature is such that people can do much more during the day than they can at night. The night has mostly been reserved for sleeping, because the human body requires rejuvenation. Every Guru that has preached on maintaining a healthy body has advised that sufficient sleep is required for our bodies to be healthy.

2.

An awakening occurs within the human mind. The beginning of every great idea begins in one's mind, from the lowest beggar, that lives on the streets to the richest man on earth. Each man's idea or perception of life is born in his mind. The beggar that was born on the streets and begged for a living probably has the perception that life is cruel because all he gets is the leftovers that people grudgingly hand down to him. He is not blessed and neither does he bless that money in return. In his model of the world, the world is a cruel place filled with pain and suffering. On the other hand we see a rich man whose model of the world is one of beauty and utmost bliss, there could not be a better place than earth for him. As these two people have a different perception of the very same earth, we have a separate group of people, each fanatical in his own right. We call them religious fanatics and scientific fanatics, without either group, there would be a noticeable void in the world. Why is it then that scientists believe that religious organisations are beneath them and religious leaders who look down on scientists and secular education with contempt and scorn. Isn't it about time that science and religion agree to disagree and get on with what they do best the creation of harmony albeit their differences. Despite all the advances that we have made in the field of science and discovery, man has not managed to put an exact time as to when the Universe was created. It has been said that the Universe always existed long before any religion or science. According to Hinduism it is said that the first race that existed was the Aryan race. This race was then divided into two groups, the one went to India, where it was very hot to do any physical work and so they began to look within themselves for explanations of the world around them. The Hindus discovered that there was no

limit to the power of the mind, they therefore sought to master this. Through the mind they learned that there was something infinite coiled up in the frame we call man.. The other group went to Greece where the earth was cooler and where the weather was much more conducive to working. Science was thus born in ancient Greece among the pre-Socratics, who were the first to look for natural explanations of the world around them. Thales's claim that everything is made of water is significant because it assumes that the fundamental building block of the world is a natural substance. Embracing this naturalistic outlook, the Greeks of the classical and Hellenistic eras made important advances in astronomy, geometry, medicine, and biology. Here we see that the world started out by man complementing each other in the fields of science and religion. The Indian contributing to religion and the Greek to the advancement of science.

3.

Every building, every bit of technology that we see in the world is due to an idea that was born in someone's mind and then developed through taking action. If a man has an idea and keeps it to himself, how would it benefit the world? A man can be a genius in his own right, but a selfish genius is of no benefit to himself or the world that he lives in. Without developing an idea it would be as good as him not even having such an idea. The obtaining of an idea is God's hand at work, and developing an idea is science at work. We again see the link between religion and science. It takes both, science and religion for the world to move forward . Had Bill Gates not shared his knowledge of computers with the world, our wonderful world would probably not be as advanced as it is now. Gate's when he entered the world of

computers, entered this business just to gauge the interest. He had no basic interpreter for the platform when he contacted MITS. All he had was time and a belief in himself that he could do what MITS required of him. Based on his belief system he developed Microsoft, which today is valued at billions of dollars. The fanatical scientists who believe that religion has nothing to do with science, would perhaps like to rethink those thoughts, as Mr Gates had received a firm grounding through attending Congregational Church with his family. The nexus between religion and science again comes forth. If he had not the belief in himself, I doubt whether he would have been able to produce such splendid work over his professional career.

4.

Religion is born in the minds of man. We can therefore deduce that no man can actually be an atheist because every human has some idea of belief or faith. Some religions may teach that religion is only religion when we have faith in some higher being, but Hinduism teaches that the greatest faith a man can have is faith in himself. This is the highest spiritual level that we as human beings can achieve. Scientist's however require physical proof that a thing exists and if it doesn't exist in the physical form they then deduce that it cannot possibly be sensible. However, the thing that makes the most sense in the world is that we have faith in ourselves. Instead of complementing each other and co-existing, our greatest scientists and religious leaders have chosen to look for differences in these two systems. At a closer look both religion and science have always co-existed. Fanaticism by

scientists and religious leaders have been the death-knell of advancement. We are all moving towards the same goals. My explanation may seem too naïve and perhaps over simplistic but not everyone is a scientist, however anyone can be a believer in God. "As long as there is misery and pain in the world, and man still thinks himself weak there will be a crying out of the heart of man in his weakness, there shall be faith in God". Science may cease when it has found all the answers, but as long as man is in search of God, religion will never cease to exist. Everyone, even the man that calls himself an atheist has at some stage met with religion, either through his parents, teachers, media or associations with religious men. Wherever there is faith there is religion. Even the scientist that loathes churches and religion has had his grounding in religion. Scientists may be adamant to accept it, but it is true. How? You may ask. Well, since religion has its origin in faith and science also has its origin in faith, therefore we can deduce that both religion and science have their origin. Faith does not have to mean faith in God, in any event how do we define God, there could be as many explanations as there are religions in the world. In Hinduism alone there are 330 000 000.00 Gods and Goddesses. It is almost impossible to get a precise meaning of the word God. Faith refers to a belief in something beyond our control, something that cannot be seen, yet we know it exists, we know in our hearts and minds that it is there, and yet if we had to ask a 1000 people what faith meant we could get a 1000 different answers. Faith begins with the self. Every person is born unique. Externally one can differentiate between a man and a dog by looking at the structure of both, however no two people in the world would ever be the same internally, because who we are internally only the

self knows. The “I” being the self differs from one person to the next. What is common however in every individual is “I”. Faith comes from the “I” which we are all born with. So by being born we have the “I” and the “I” reflects internally before it does so externally. A religious person may base his faith on the teachings he received through reading holy scriptures and a scientist perhaps through his knowledge he received from Einsteins theories. We can again see that both men base their lives on faith, albeit faith in two different teachings, nonetheless their origin is faith.

5.

People have been conditioned through media and almost everyone we come into contact with from a very early age that faith is external, however faith is really what we are born with. Faith manifests itself in the type of life we may lead, ie materialist, spiritual, technological, but all that is happening is that we are externalizing what the “I” has already internalized. So, if one man becomes a priest and lives a life of contributing to his community, what we are seeing is his external manifestation of what his soul or mind already believes. “Education is the manifestation of the perfection that is already in man” Swami Vivekananda. Once we know that “I” is perfect what we can deduce is that the world is a perfect place even before we receive any education. So if every man is perfect how can one become a Pope and another an Einstein. The answer is education. The priest’s education will teach him to have “blind “ faith in religion because of miracles that the great books have spoken of , whereas a Scientist’s education teaches him not to

blindly accept what has been taught, but to look for answers and stop not till the goal is reached. Incidentally this was also one of Swami Vivekananda's teachings, to set goals and look for ways to reach them, through work, worship, psychic control or philosophy, by one or all of these. If religion and science teach one and the same lesson, why then can they not live in harmony? The ultimate goal for a scientist is proof, he looks at nature for answers, whereas the religious look within for answers. The circle of life is such a profound miracle that it left scientists baffled for thousands of years. It is only in recent times that science has managed to catch up with nature by creating the test tube baby. According to the Vedas God has manifested himself on earth as man since time immemorial. From this we can deduce that man has walked the earth for millions of years, and that natural procreation has existed for millions of years. Again no scientific explanation or even any religious explanation has ever satisfied me on the question of procreation. All science has managed to do was simulate God's science.

6.

Compare our world to a hundred years ago and there would be almost no comparison. The various modes of transport was almost non-existent, there was almost no signs of effective communication from one country to the next, however thanks to science and technology the world has now become a Global village. A global village? Has the world become smaller in one hundred years, no not by any measure of the word. What it simply means is that science and technology has progressed to such an extent that communication has now become effective and it

does not take us as long as it used to travel to another country. Should we now be thinking along the lines of unifying the world in the true sense of the word. Science has managed to do what religion has been trying to do, bring the world closer.

Where has the inspiration come from. The inspiration was born in nature. There is only one sun that shines on every country on earth, there is only one moon that brightens up the night sky. Who created the sun and the Moon? According to all holy scriptures God did, if the scientist then has to draw inspiration, it stands to reason that it comes from the same source. If a scientist wants to see evidence all he has to do is look around. There is evidence all over nature that God does exist. If God has then unified the world by supplying light, scientists have unified the world by supplying electricity. If God has unified the earth by supplying water, scientists have unified the earth by creating turbines and different modes of water transportation to bring people together. If God has provided oxygen and atmospheric pressure, scientists have used it to develop aeroplanes.

There can be no science without faith and faith stems from belief, belief in yourself and belief in something greater than yourself that beckons to every person not to give up hope. Despite all the natural disasters in the world, nature still provides in abundance. Nature is harmonious, just take a look at the phenomenon of condensation. How beautifully it occurs without any complaints silently working together to bring rain to us in order for our crop to grow, in order for man to have food to eat. Why then can man not learn from Gods miracles, that we should not be complaining and working against each other. We should instead be working

together like the sun works with the rivers and the clouds work with the earth to bring it rain for its nourishment.

7.

It may appear on the face of it that there has been no advancement in religion, however since the religion of medieval times we can see a marked difference in the way religion is perceived. Religion of yesteryear was superstitious and was instilled in children and adults alike by using fear instead of love and understanding. No one questioned what was told for the fear of having to face God's punishment. Life is such a mass of confusion and suffering that nobody wanted to face more of God's wrath by questioning what was written in the scriptures. However, New Age religion teaches us that God is a loving God and we must not just blindly accept what is taught by religious leaders, but question what they say. If you are not satisfied with an answer question again and again until you are satisfied. This questioning is called the voice of reasoning, and everyone of us has it, so why do so many of us strangle this voice. Instead of asking, we then seem to be disillusioned and tend to refer to ourselves as atheists or scientists because we seem to believe that science has all the answers. "everything is determined, the beginning as well as the end, by forces over which we have no control. It is determined for the insect, as well as the star. Human beings, vegetables, or cosmic dust, we all dance to a mysterious tune, intoned in the distance by an invisible piper". Albert Einstein, if Einstein could acknowledge that there is an invisible piper that most people refer to as God, then who are we to declare that religion is wrong and science is right. Albert Einstein

with his limitless knowledge received his elementary schooling beginnings at a Catholic School. Among Christians the Catholics are regarded as having very strict rules when it comes to decorum and I am sure that this decorum was instilled in him from a very early age, thereby giving him the confidence he required to go out into the world and make such astounding discoveries that we are still quoting him, some 100 odd years after his death. Another notable personality was S.N Bose who could be regarded as the father of science in India. This great man who worked on Planck's Law and Light Quantum Hypothesis, later on worked with Einstein on several applications, of most note was the "Bose – Einstein Statistics" which is still used today in laboratories around the world. S.N Bose who revered Swami Vivekananda based his work on Swamiji's teachings " Never accept an idea as long as you yourself are not satisfied." This instilled in him the burning desire to learn and grow in the field of science, he was even referred to as setting the world of physics on fire.

8.

Swami Vivekananda was referred to as the re-igniter of modern India's National Consciousness . What this only means is that he instilled in the youth the flames to succeed in the fields of education, technology and science. He taught them how to strive to uphold their ancient values whilst fully participating in the modern world. He implored the youth that it was their first duty to cultivate physical strength and health, thus he stated: " You will understand the Gita better by playing football." This meant that it was the men who were physically weak that yielded to

temptations easily, and that those with plenty of physical strength were better able to resist temptations and exercise self control.. Self control is essential in order not to be obsessive and fanatical. In both, the field of science and religion we have seen so much disunion because men have not been able to control their mind and bring it under their command. By practicing swamiji's modern philosophy towards life we again see that religion does not have to be all pre-historic , superstitious jargon that make the youth doubt that religion can also make sense.

9.

One of India's leading scientists, Sir Jagdish Chandra Bose achieved the following fetes during his lifetime, he invented the mercury coherer which was used only two years later by Marconi to receive radio signals, he developed the use of galena crystals for making receivers, for short wavelength radio waves and he was the pioneer in the field of microwave devices.. Bose had secured his place in the world of science. Like many people Bose had encountered several obstacles during his lifetime, what kept him moving was his faith, faith in himself and that there was a higher power angling him towards success. Bose was a humble man despite all his achievements, and I believe that it was his solid grounding in religion that made him this warm and affectionate person. One of Bose's closest friends was the famous poet Rabrinath Tagore who described Bose as "God's instrument in the removal of India's shame " The West had made India look backward and barbaric and had portrayed to the world that India was a nation of idol worshippers. Rabrinath Tagore merely put into context that India too could compete with the rest of the

world in the field of science. In the East Bose kept the company of Swami Vivekananda, Sister Nivedita and Mahatma Gandhi. In the West he won the respect of George Bernard Shaw, Aldous Huxley and Romain Rolland. All these men appreciated Bose's attempts to prove the age old humanist faith in the basic unity of all life. A British editor once wrote " In Sir Jagdish the culture of 30 centuries has blossomed into a scientific brain of an order which we cannot duplicate in the West." It was heartwarming to hear these words being written by the very same people who had not too far in the past declared that the Indian race were idol worshippers..

10.

It is said that every science wants its explanations from inside, from the very nature of things and religions are not able to supply this. Was not religion developed by man, and haven't we by now realized that man's explanations come from the inside. Religion is as personal as one's own mind. There may be men that lead in the field in religion, however, due to man's curious nature, we listen, interpret and then make an informed decision on whether we would want to follow a leader or not. Even the idiot has these reasoning skills, it is by these skills that we can live in the world with its millions of choices. It is by our minds way of making sense of what we need, what we want and what we choose as important in our lives that we can make decisions. We are faced with decisions everyday, from waking up to going to work, to going to bed and everything that happens in-between. It all happens on the

inside, how then can the scientist say that religion does not have its answers and explanations on the inside.

11.

Swami Vivekananda's teaches that one needs a fit body in order to avoid fanaticism and obsession. In order to rid ourselves of these two very debilitating values we need towards what will empower us. Every religion in the world teaches us about love and respect for our fellow human beings. Love being the highest value taught in the Vedas, the Bible and the Quran. In the Bible we are taught that God so loved his people that he gave up his only son for us. In terms of today's language this seems a little bit unbelievable. In this materialistic world, love can be defined as give and take, if this is true why then is it that throughout history there are signs only of self sacrifice and misery when it comes to love. Christ was unselfish and yet he was crucified, this is true, however because of his unselfish love for his people millions of lives have been blessed with success. Religion teaches us that we must have love for humanity and work to make society a better place for everyone. We are taught through Hinduism that our work is to serve the poor and miserable, without distinction of caste or colour. Unlike the secular definition of love, where the relationship of love can be defined as give and take, in the religious context of the word love, we are taught to give and give without thinking of the consequences and the results. We are taught not to make conditions on love and none will be imposed. It is our duty to give out of our own bounty, just as God gives us. In nature we see this harmonious love in simple examples, look at the ocean and the waves.

12.

It is not my intention to say that science and religion are interchangeable, but rather that they are two opposite sides of the same coin. They can work simultaneously to bring about unity, peace and prosperity to all of humanity. This is not a new belief, these claims have been made before, however men of science and men of religion have undergone delusions along the way. They have managed to create such hostility between religion and science that they fail to realize that this was the way God intended his earth to work. If only science would realize that religion creates a foundation for its youth to build on. Science can then take over, but not by confusing and destroying a child's foundation, but by continuing to educate and expand one's knowledge of the world and its wonderful workings.

13.

Religion and science have been attempting to find distinct markers to identify science and religion. This I do not believe is possible simply because one cannot survive without the other. There cannot be scientific advancements without men who believe in themselves first. Belief is the foundation that societies require in order to continue with the great work of men like Sir Chandra Bose, Albert Einstein, S.N Bose and Bill Gates, all of which have had their feet firmly grounded in religion prior to any greatness they achieved. There have been some outrageous claims made that science could evolve as a religion. How then will people practice religion

if science is made a religion. Will we then be genuflecting before some motorized robot or computer. I think not. Science cannot be practiced as a religion, contrary to popular belief by some fanatical scientists. God lies within man. Despite the many ways in which we choose to show our adoration to our chosen deity, be it through idol worship, genuflexions or attending church, the only place a man can ever find God is within himself. Do we hear or see some mighty hologram in the sky showing up everytime we pray with a mighty voice of authority on everything we want to know. I haven't to this day seen such a thing. Where then do we hear the answers. The answers we so desperately seek come from within. These answers beckon to you from the holy scriptures that your voice of reason, interpretes in the most sensible way that your mind knows how. Herein lies all your answers. Man with all his power has forgotten that the most powerful being is himself. Swami Vivekananda speaks of superdivine power, he says that this is the only way out. He was a man of great knowledge and he knew that man, if only he realized his own strength would be able to control the world internally and externally in much the same way as God does and science has been attempting to do.

Science, Art and Religion: Different, Essential and Complementary

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Abstract: Science, Art and Religion share common roots and experienced periods in history when they all worked in harmony side by side. The current problem of

conflict, mostly between science and religion, stems from our inability to recognize their narrow domain and most importantly their limitations. This paper analyzes moments of collaboration in history as well as cases of conflict, accompanied with relevant quotes from scientists, philosophers, theologians and artists. The paper also identifies some common features shared by all three and proposes prospective future alliances between them, as they all strive for the common good, a cleaner and more peaceful planet and an improved quality of life for all humankind.

Introduction

Curiosity and emotional expression, the need to admire, reflect and be mystified, yearning to connect with others and an ability to distinguish between good and evil are important qualities that all humans share. They give rise to science, art and religion and whenever they are properly integrated in our lives or in the aspirations of a nation they can bring out the best in our human nature. During brief moments in history science, art, religion and the search for new knowledge worked together in concert. The Golden Age of Greece, the Golden period of Islam and the Renaissance, were such moments. These societies experienced all three, science, humanities/arts and religion working together in harmony. Yet history attests that more often we have moments of dissonance and conflict instead of harmonious collaboration. We have come to realize that to experience the fullness of science, art and religion we must treat each one as fulfilling different but complementary needs. We need to recognize their separate domains, their unique strengths and most importantly their limitations. Like three body organs, each one of them performs a vital function, but it is through their collective action that life is made possible. To underline their unique and vital contributions as well as the differences between them we may ask *“What is more important to life? Air to breath, water to drink or food to eat?”* The purpose of this paper is to provide a historical perspective of the relationships between science, art and religion and then differentiate the specific human need that gives rise to each one.

The paper concludes by proposing opportunities for collaboration and an alliance between them that can benefit humankind enormously.

A primitive synthesis

In primitive times the *Shaman* of the tribe was the storyteller, the scientist, the doctor and the priest. Chanting, wall paintings and dance rituals helped to express shared emotions or experiences and to some extent these helped unify the tribe. In ancient mythologies natural phenomena were explained in terms of gods and demons with anthropomorphic and supernatural powers, endowed with virtues and vices that represented the best and the worst in human nature. Most mythologies have stories of creation, heaven and hell, good and evil, just or unjust suffering, courage and heroic sacrifices. Mythology used this narrative form to explain natural phenomena, our origins, provide warnings about the perils of life, prescriptions for civic and moral behavior and served as a synthesis of primitive science and religion. Myths provided both

an answer to the mysteries of the working of nature as well as a pathway for the virtuous life as in **Aesop's tales**. Despite the modern advances in science and technology, modern society today continues to have an appetite for its own custom-made mythology. The evidence is clear and convincing such as in the stories of Harry Potter, Superman, Spiderman, Star-wars or Lord of the Rings. It appears that every culture in history has a need for its own custom made mythology. It is intriguing that modern mythology continues to narrate the same struggle between good and evil, personified in the main characters of the story as the ancient mythologies from the distant past.

Branching out

Greek philosophers were the first to recognize that natural phenomena are best understood through science and philosophy – rather than mythology. This marks the beginning of science and the gradual detachment from religion. Aristotle laid the foundations of modern biology and Democritus argued philosophically for the existence of atoms. Eratosthenes measured the size of the earth and Aristarchus proposed the sun rather than the earth as the center of the cosmos. Pythagoras and Archimedes regarded mathematics as an indispensable tool in the study and understanding of nature. Some philosophers were preoccupied with the question of what is the primal substance that makes up the universe. Some proposed air, others water and others still fire. Some envisioned an incorruptible and pure substance that makes up all the celestial bodies. In medicine Hippocrates identified the natural causes of diseases and his treatments were free of magic and superstition. Hippocratic medicine has also managed to integrate in its practice a set of rules that dealt with the ethical responsibility of physicians as expressed in the Hippocratic oath. For ancient Hebrews medicine and religion formed a strange but successful alliance. Much of Hebrew medicine was preventive and the dos and don'ts were communicated to the people in religious texts. Instructions about washing hands before a meal, isolating sick people from the group, abstinence from pork and shellfish were communicated to the public through commands that came directly from God, spoken through Moses and the prophets. It is interesting that recently a similar tactic is used in mass appeals. Religious leaders began to use religious language when asking their followers to do their part in addressing pollution and the current climate crisis. Thanks to this approach polluting is slowly being viewed as an immoral and a sinful behavior by millions of faithful.

Early law experienced a similar partnership with religion. At around 1800 BC king Hammurabi of Mesopotamia received a long list of instructions from the sun god. This long list of instructions, known as **The Hammurabi Code**, is considered one of the first legal documents in history. It spells out in detail specific punishments and rewards for services or damages done to others. In a very similar manner **Moses received the Ten Commandments** from God on the top of mount Sinai. These commandments became the foundation of the moral code not only for the Hebrews but the entire Western civilization. Both Moses and Hammurabi knew that their legal code would remain uncontested and easy to enforce if people knew that it was dictated directly by God. The legal system has advanced dramatically since then and has made

impressive and sophisticated provisions that deal with our complex society yet despite its exquisite sophistication and good intentions, modern law remains limited in scope, in that it cannot guarantee or promote our finest human qualities. It provides protection from causing harm to our fellow human beings or our environment but it cannot demand that we love one another, or that we should show compassion to the less fortunate and grant forgiveness to those that harmed us. A higher moral code is needed to achieve a great society and such a moral code often stems not from law or science but from religion.

Science and Christianity - Part I: The Great Alliance

Early Christianity placed emphasis on life in heaven rather than life on Earth. This mindset caused an unfortunate stagnation in both the sciences and the arts for a period known as *The Dark Ages*. Gradually and soon after the discovery and translation of ancient Greek treatises around the 12th century, Christian fathers acknowledged that faith can be reconciled – even strengthened - by reason. For *Thomas Aquinas*, the ultimate goal of theology was to use reasoning, as used by Aristotle and other Greek philosophers, to discover the truth about God and then to seek salvation. According to Aquinas, God reveals himself through nature, so the study of nature brings us closer to God. Aquinas blended Greek philosophy and Christian doctrine by suggesting that like revelation, rational thinking and the study of nature are valid ways towards understanding truths pertaining to God. Such theology demands an alliance between faith and reason, between science and religion.

The greatest gift of Christianity to science, according to philosopher A. N. Whitehead, is the belief that God's universe was built on a logical set of rules, rules that humans have the capacity to comprehend. Einstein echoed similar sentiments when he wrote *“The most incomprehensible thing about the universe is that it is comprehensible.”* **For many years after the Middle-Ages, God was seen as the ultimate scientist, an architect and a geometer and as Aristotle's “prime mover”** of the cosmos. In his paintings William Blake portrayed God and Newton as giants each one using a compass to construct and measure the universe respectively. Galileo emphasized this mathematical quality of God when he wrote, *“The holy book of nature is written in the language of mathematics.”* Since light was the first element created by God (according to Genesis), Middle-Ages scholars felt that the study of light must also be the first step in our study of nature. Ironically modern science attests to the extraordinary role of light in nature for very different reasons. It is the main theme of the field of optics, the central core of such field as relativity and photosynthesis and it is a critical component of quantum theory and cosmology. Likewise light and color fascinated artists and it played a paramount role in the advancement of the arts. Medieval studies of light led to the invention of perspective that caused significant revolutions in both science and art. In the late 19th century artists who were fascinated by light developed the movements of Impressionism and Fauvism.

The relationship between Christianity and science was not however always smooth and constructive. Theology often reigned supreme and it overruled any scientific discovery that appeared to contradict the

Bible. For centuries surgery remained stagnant mainly because the church prohibited anatomy. This was based on the expectation of a bodily resurrection at the second coming of Christ. Alchemy was viewed as black magic and the inquisition was ruthless on those who dared depart from Christian law and traditions. The trial of Galileo and his subsequent imprisonment for supporting the Copernican system remains the most dramatic example of the hostile position of the church towards science. But such a generalization of the relationship between Christianity and science is unfair. For hundreds of years Christianity served as the main patron of both the sciences and the arts. Monks and nuns organized the first hospitals providing comfort and healing to thousands – as Christ practiced and preached – and as in the story of the Good Samaritan. The Church built the **first European universities (Bologna, Paris, Oxford etc.)** so its clergy and other faithful could obtain an education not only in religion but also in other subjects – including the sciences. The core curriculum of these young universities, the *Trivium (Grammar, Logic and Rhetoric)* and *Quadrivium (Arithmetic, Geometry, Music and Astronomy)*, aimed at an integrated and well-balanced education that included science and mathematics. The church encouraged and sponsored the exploration of new worlds. Missionaries often accompanied explorers and soldiers, facing hardship and danger in order to “baptize all nations” (as Christ instructed) and preach Christianity to the natives of newly discovered lands. To glorify God and make the stories and teachings of the Bible come alive to the eyes of the faithful, most of whom illiterate, the clergy turned to the artists for help. For hundreds of years the Church was the most generous patron of the great masters who created some of the most spectacular works of art. It is said that if museums and galleries were to remove all the works of art with a religious theme then most of them will be half-empty, left with an eerie physical and cultural vacuum.

Science and Christianity - Part II: Different, limited but complementary.

Since Galileo’s time the scientific method has triumphed and continues to serve us exceptionally well. No other method has been as successful in our exploration and understating of nature as the scientific method. But we have also come to realize that science cannot answer all our questions, no matter how important or urgent they may be. We cannot turn to science for moral guidance, or ask questions about the purpose of life, right or wrong, justice, ethics, responsibilities, obligations and rights. And how about consciousness or altruism? The fact that humans can risk their own lives to save strangers makes no sense in terms of evolution yet it seems to be deeply rooted in all of us. Powerful as science may be, it is limited in scope and remains mute on such matters. Regardless, human beings have a basic need to ask these questions. We yearn to explore, to seek and experience mystery and wonder, to express our emotions and all these bring forth not only science but also religion and the arts. Since the beginning of our history we have been seeking a connection to the divine, a need that in the past was fulfilled by mythology, mysticism and magic. We have come to realize that science, religion and the arts, each can quench only a specific type of thirst in the human condition and their limitations were pointed to us by scientists, philosophers and theologians.

Concerned about the anticipated reaction of the Church to his book *The Two World Systems* that supported the Copernican heliocentric system, Galileo wrote to one of his patrons the Grand Duchess Christina of

Tuscany in 1615 “*Let us remember that the Holy Ghost teaches us how to go to heavens and NOT how the heavens go.*” **Albert Einstein** also expressed his view on the limitations of science when he wrote “*Knowledge and skills alone cannot lead humanity to happy and dignified life....“It would be possible to describe everything scientifically, but it would make no sense. It would be a description without meaning- as if you described a Beethoven symphony as a variation of wave pressure.*” Einstein did not practice any particular religion and he rejected the idea of a personal or anthropomorphic God. He did however believe in Spinoza’s God, a God of all nature. He regarded the contributions made by religious leaders to be superior of all the discoveries made by science. He wrote, “*What humanity owes to personalities like Buddha, Moses and Jesus ranks for me higher than all the achievements of the inquiring and constructive mind.*” Einstein was humbled by the limitations of science and admits that in part this is what made him “religious.” “*A knowledge of the existence of something we cannot penetrate, our perceptions of the profoundest reason and the most radiant beauty, which only in their most primitive forms are accessible to our minds: it is this knowledge and this emotion that constitute true religiosity. In this sense and only in this sense, I am a deeply religious man...*” To Einstein a religious person is one who “*to the best of his ability, liberated himself from the fetters of his selfish desires and is preoccupied with thoughts, feelings and aspirations to which he clings because of their super-personal value.*”

Charles Townes, (1915 -) who received the 1964 Nobel prize in physics for his invention of the LASER, was also keenly aware of the limitations of science. He wrote “*The question of the origins of matter and life, seems always left incomplete if we explore it from a scientific view alone.*” **Cardinal Newman** (1801- 1890) regarded both science and theology as important but as different pathways to knowledge. He scorned those who saw conflict between them and he regarded their viewpoints on the conflict as detrimental to the constructive relationship/dialogue between science and theology. Philosophers, scientists and artists have repeatedly called for a tolerance that recognizes the clear separation between science and religion. Yet the conflict between science and religion continues and remains unabated. What really is the main cause of this long battle that tends to cause polarization and tension in our cultures?

The Sins of Absolutism

Fanatic fundamentalism, the arrogant belief in absolute knowledge and the violent rejection of alternative viewpoints has been and continues to be a blemish on our human nature. It appeared throughout history, often in the form of a twisted form of “patriotism” or “purism” in defense of religion or a political system. Such thinking caused tragedies such as the Holocaust, the Inquisition or McCarthyism. It is a destructive force whose victims are often the arts, the sciences and any other discipline that demands a free and inquiring spirit. Religious fundamentalism is what caused Giordano Bruno to be burnt at the stake, Galileo to be imprisoned, works of art to be destroyed and books to be burnt or heavily censored. Even recently the

Taliban, a zealot group of Islamist Afghans, eagerly destroyed a landmark giant statue of Buddha in Afghanistan that stood for hundreds of year. **When religious beliefs are extrapolated beyond religion, they cause serious damage to the arts and sciences, the freedom of the press and social habits.** In his noble effort to get an estimate of the age of the Earth, 17th century **Irish bishop Ussher** used the Bible as a calendar. By counting the generations from Christ back to Adam he estimated that Genesis creation started on the 17th of October in the year 4004 BC. By his calculations the Earth and everything else could not be older than 6,000 years. Creation Science rejects Darwin's theory of Evolution and subscribes to the literal interpretation of the Bible and a 6,000-year old Earth. Sadly a so called **"natural history museum"** based on Creation Science was built recently in the USA. It is so perplexing that a country with the most advanced science and more Nobel Prize scientists than any other country in the world, is also home to millions of people who choose to believe in Creation Science. Those who accept Creation Science may not realize that by so doing they reject not only Evolution and the entire discipline of Biology but also Geology, Astronomy and Physics whose time calendars are based on an Earth that is 4.5 billion years old and a universe that is about 14 billion years old. People who believe in creation science are also unwilling hypocrites because they use without hesitation the latest technologies and medical tools that are the products of the very "unholy" sciences that they reject. The lingering question is why such well-cultivated and well-educated people still think this way? I humbly propose two answers. Perhaps their faith is built like a house of cards. They fear that if one card is removed their entire faith will collapse and this may be the reason as to why they adopt a literal and rigid interpretation of the Bible. But by so doing they unwittingly ridicule the Bible because if a rigorous literal examination were to be applied, then many of its events would collapse historically and scientifically. Take for example the definition of "day" in Genesis. How such a term be the 24-hour day we have today if the sun was not created till the fourth "day" in the Genesis story? How could these four days be counted without the sun?

Another reason why the followers of creation science reject the theory of evolution is that they do not fully understand the nature of science. The reason that science does not employ divine intervention in any of its sub-disciplines is not because it rejects God or that the scientists are atheists. It is the nature of science to handle only questions that can be dealt with the scientific method. Many important questions do not fall in this realm. Consider for example questions such as "How does the body function?" or "What are the parts of the human anatomy?" or "What were the causes of Black Death?" All these are good questions that science can handle. But what about questions like "Why am I here?" or "What is my purpose in life?" These are very important questions yet they are beyond the domain of science. Science's inability to handle such questions does not make such questions any less important. It merely suggests that such questions are best explored with philosophy, metaphysics, religion or even through the arts.

But just as much as we should not try to push religion into the domain of science we should not try to push science in areas beyond its legitimate terrain. Whenever this takes place it disrupts social harmony and it

negates the purpose of science. Social Darwinism and Eugenics are two cases of the misuse of science. In Social Darwinism the exploitation of weaker members of society or underdeveloped nations, were justified under the pretext of the “survival of the fittest”, the mechanism that Darwin used in his theory of evolution. Two millennia ago Greek philosophers advocated that the atomic theory could explain not only the material world but also human emotions. Love, fear, jealousy and anger were nothing more than specially shaped atoms oozing in and out of our bodies. The modern equivalent of such misguided extension is **Richard Dawkins** a professor at Oxford University, who proposes in his book *The Selfish Gene* that all human behavior can be reduced to strings of DNA. Caught in a state of genetic exuberance Dawkins also rejects God and religion. For Dawkins God and religion are lingering leftovers of a primitive and superstitious beliefs perpetuated mostly by the less educated masses. On the contrary fellow biologist and Nobel laureate E. O. Wilson of Harvard University believes that scientific humanism can never replace religion and that a limited alliance between science and religion will be a most welcome partnership in our society. The unfortunate situation with Richard Dawkins is that instead of limiting his attack on fundamentalists who insist on the literal interpretation of the Bible and a 6,000-year old Earth, he chooses to attack all religions and the idea of God. The very concept of God is a major philosophical challenge. Many different definitions and descriptions have been proposed. It can be argued that the best compliment to God, for someone who believes in one, is to admit that 99.99% or more of what God is beyond our human brain capacity. The tiny bit we experience we often relate to the finest human qualities like love, forgiveness, mercy and compassion. There are some who may be fortunate to also experience the divine. It is an absolute hubris for any one to dare define or describe God fully. So how dare Dawkins reject something that cannot be fully comprehended or be properly defined? He should instead be rejecting those anthropomorphic qualities of God that borders the superstitious and idololatric. It is so ironic that Dawkins has become a zealot, a science fundamentalist with the same arrogance and rigid mindset as that of the very religious fundamentalists that he attacks so often and with such passion.

In his classic book and BBC video series *The Ascent of Man*, the late **Jacob Bronowski** addresses the destructiveness of absolutism using the tragedy of the Holocaust. In his words the Holocaust was “*not caused by gas, it was caused by arrogance, by ignorance, by dogma and the belief in absolute knowledge.*” Bronowski argues that the notion of absolute knowledge led the Nazis to believe that the Aryan race was supreme and superior, and that the Jews were inferior and substandard humans. It is ironic that at about the same time in Germany, physics was developing Quantum Physics and most particularly the Uncertainty Principle. This states that even with the most precise instruments it is impossible to eliminate all errors and gain absolute knowledge. Bronowski states that it is inconceivable and indeed arrogant for anyone to claim absolute knowledge in any field, when the most precise of disciplines, physics, discovered in 1927 that such a goal is impossible. We ought to remember that each discipline whether in science, religion, art, or politics, can address only a narrow and specific area of inquiry and is limited. But even within an individual discipline, no matter how advanced and impressive new discoveries are, true scholarship demands ongoing inquiry that may ultimately upgrade or revise even the most respected of

theories. Bronowski says so with conviction.

“There is no absolute knowledge. And those who claim it, whether they are scientists or dogmatists, open the door to tragedy. All information is imperfect. We have to treat it with humility. That is the human condition; and that is what quantum physics says. I mean that literally.” Only with such a mindset can we avoid future tragedies and the sins of intellectual arrogance and dogmatism.

Shared attributes, creative dialogues and valuable collaborations.

So important are the unique and complementary contributions of science and religion to the human condition Einstein wrote that ***“Science without religion is lame and religion without science is blind.”*** By acknowledging science, arts and religion as separate but complementary and by respecting their distinct contributions to humanity, we can achieve a delicate, healthy and harmonious co-existence between them. Only with such an understanding can potential conflicts and tension between them be eliminated. Under these conditions meaningful alliances can develop to address global challenges and improve human welfare.

Apart from their common distant origins, science, arts and religion can be partners towards the common good. In a 1952 letter to New York Times and just three years before his death, Einstein expressed his concern about narrow specializations achieved at the expense of the liberal arts and proposed an education that is enriched with ethics, aesthetic appreciation and sensitivity towards suffering. He wrote:

“ It is not enough to teach man a specialty. Through it he become a kind of useful machine but not a harmoniously developed personality. It is essential that the student acquire an understanding of and a lively feeling for values. He must acquire a vivid sense of the beautiful and of the morally good. Otherwise he - with his specialized knowledge – more closely resembles a well-trained dog than a harmoniously developed person. He must learn to understand the motives of human beings, their illusions, and their sufferings in order to acquire a proper relationship to individual fellow men and to the community. ...”

The problem of narrow specialization was also raised by scientist/novelist C. P. Snow in his 1959 essay ***The Two Cultures***. To C. P. Snow the communication gap between the cultures of science and the rest of the educated elite can lead to an economic and cultural impoverishment. He proposed a stronger dialogue

between scientists and those in the humanities/arts advocating that they should all learn much more of each other's work.

• **Understanding our Humanity**

What is a human being? We are much more than a bunch of atoms created in the core and the explosive death of a distant star, later bound together into complex molecules to form amino acids and living cells. Any definition of our humanity must inevitably refer to our insatiable curiosity, our need to express a rich and complex spectrum of emotions and our yearning for a spiritual dimension that brings forth a set of standards and ethics, independent of time and culture. Even devout materialists are being challenged by the latest scientific discoveries that suggest that "our kind of matter" (of electrons, protons and neutrons) makes less than 5% of the matter in the universe. A strange material called Dark Matter and a bizarre type of energy called Dark Energy are now the dominant constituents of our universe. We are reassured that we will never run out of questions in science but we also recognize that our brain has a limit on the type of questions it can ask. There are features of this universe that our brain will never be able to frame questions for, let alone understand. An awareness of our own limitations in the grandeur of the cosmos prompts us to develop a deep sense of humility and respect for nature and its marvelous architecture. As Einstein put it "*One thing that I have learned in a long life: that all our science, measured against reality, is primitive and childlike – and yet it is the most precious thing we have.*" But besides our material dimension and the thirst for curiosity we are also creatures of a very rich and complex set of feelings and expressions. We are creatures of love and hate, laughter and tears, drawn to mystery, with the need to wonder, to admire, to celebrate, and to worship. Just as mathematical equations are sometimes the only means by which we can describe features of the universe beyond our empirical senses, art and religion help us express some of our most refined and complex emotions for which sometimes there are no words. But just as much as we recognize universality in science we discover also universality in religion. All religions are founded on similar beliefs and practices that boil down to three mantras. Live in peace, love one another, and care for those in need. One wonders as to how thousands of miles apart geographically and thousands of years apart historically, diverse religions developed a common core of similar beliefs and practices such as those of compassion and charity. Is it possible that this common core of beliefs and practices is deeply rooted in our humanity and transcends time or culture?

I believe it is so!

• **Mystery & Faith**

Despite their distinct character, science, arts and religion share a series of common attributes. They all recognize mystery as the ancient womb from which they were born and continue to claim it as an intricate part of their current personality. To this point Einstein wrote. "*The most beautiful experience we can have is the mysterious. It is the fundamental emotion that stands at the cradle of true art and true science. It was the experience of mystery – even if mixed with fear – that engendered religion.*" Besides mystery, science, arts and religion are driven by faith. We tend to associate faith only with religion. A deeper epistemological examination however shows that scientists and artists practice faith within their own

discipline as much as believers do in their religion. As a young child I remember asking why coins and hard candy do not grow and multiply like seeds when planted into the soil. Furthermore what is it in the bean that “orders” it to grow into a bean plant and not a tomato or corn plant? “*Farmers have faith in the seeds they plant,*” answered my grandfather. Years later I realized the full meaning of his words. Even before we knew anything about DNA and genetics, we had faith in the laws not only of botany but in all the laws of science. Today’s advanced and sophisticated science still demands from us that same faith in the laws of nature. We have faith for example that the four major forces, the gravitational, electrical, weak and strong nuclear forces will continue to keep the architecture of the cosmos intact and stop it from disintegrating. This means that electrons will not fly away from their atoms, stars and nuclei will not explode due to a temporary absence of gravity. Indeed gravity will continue to keep us grounded on Earth, keeping the galaxy, the solar system and the sun in balance. Long time ago I have come to realize that “faith” is by no means the monopoly of religion. Einstein marveled on how this type of faith - tied to the scientific method, a purely human invention, - enables us to discover so much about the amazing architecture of the cosmos. He wrote

“I cannot conceive of a genuine scientist without that profound faith ... that the rules that govern our world are rational and comprehensible to reason.” Faith in science is a measure of our confidence and trust in the laws of nature and the power of the scientific method - whereas faith in religion is an affirmation of a belief system that requires no proof and has often a personal flavor. Whether in science or in religion faith is often accompanied by feelings of hope, courage, humility, and the affirmation that all human beings share common qualities and aspirations that transcend time and culture. To some extent we are all people of faith. Scientists and engineers have “faith” in the laws of nature and that the universe can reveal its secrets through reason and the application of the scientific method. Artists too have “faith” in the universality of the human condition, that the suffering or celebration, joy or tragedy that they often try to capture in their art, let that be a painting, a dance, a photograph a poem, a song or a film, can be recognized through personal experience at any time by most people anywhere in the world.

• **Teamwork/collaboration requires effective intercommunication**

When he returned from space a Soviet cosmonaut stated sarcastically that while in space he looked for God and could not find him anywhere. To a believer the whole universe is filled with the presence of God, in an analogous way that a physicist knows that the leftover signal of the Big Bang is found everywhere in the universe. The majestic physical architecture of the universe can generate a spiritual feeling one that Einstein called “*cosmic religion.*” Even the tiniest change in any one of the fundamental physical constants, like the mass or charge of the electron, the speed of light or Planck’s constant, would mean the end of the universe. It is therefore of no surprise that in the midst of a major discovery scientists occasionally choose to use a religious word or phrase to express their exuberance. The Higgs boson, an elusive particle that gives mass to all particles, was often referred to as “the God particle.” When the photo of a young universe - merely 300,000 years after the Big Bang - was finally assembled in 1998 after

six year of **the COBE** satellite measurements of the Big Bang leftover microwave signal, the scientist in charge of the project struck in awe by the image commented ***“it is as if one is looking at the image of God.”*** When **Apollo 8** astronauts in 1968 saw the Earth rising from a quarter of a million miles away they sent Christmas greetings to Earth and readings from the book of Genesis. The image of Earth from space reminded us that we are all passengers of spaceship Earth and like Noah, we are obligated to act as its stewards. It has been suggested that the Earth rising image viewed from the moon boosted the environmental movement. Most religions now regard the caring of our planet as a moral obligation.

Humanity faces all sorts of challenges in many different areas such areas as genetic engineering, stem cell research, environmental pollution, nuclear proliferation and population control. Scientists and engineers cannot by themselves prescribe solutions or provide ethical/legal guidelines to these challenges. Nor can they, on their own, eliminate poverty, future epidemics or stop global warming. Space age technology cannot by itself guarantee peace amongst nations without the presence of good will. Surveillance cameras, no matter how intrusive, they cannot ensure a crime free society. What we need is to address the roots of these challenges. The opening paragraph of the UNESCO charter (United Nations Educational, Scientific and Cultural Organization) makes this point very clear. ***“Since wars begin in the minds of men, it is in the minds of men that the defenses of peace must be constructed; That ignorance of each other’s ways and lives has been a common cause, throughout the history of mankind, of that suspicion and mistrust between the peoples of the world through which their differences have all too often broken into war;”*** The future of the human race will depend on the ability of nations to collaborate on many different fronts. Scientists do play an important yet limited role in such efforts. They often work side by side with lawyers, economists, clergy, sociologists, philosophers and artists, government agencies and futurists, each providing an expert opinion on these critical challenges. In certain situations science, art and religion will need to form working alliances. Take for example the situation when science has an urgent message for the world, whether that is a pandemic, a climate crisis, a nuclear proliferation, overpopulation or the near extinction of rare animals . The warning pie charts and graphs of scientists seem to have no effect on the public at large. These “science hieroglyphics,” dry and unemotional, are unconvincing and are likely to be disregarded by most. The public is instead more likely to respond to a humane and emotional plea from a spectacular piece of art or a religious dictum issued by a spiritual leader who is admired by millions. For most of recent history scientists have ignored the possibility of such unconventional alliances with arts and religion. Perhaps the time has come to reinvent them. Moses and Hammurabi recognized that human welfare goals are sometimes achieved best through the voice of a god. Warnings about the climate crisis, AIDs, nuclear proliferation, poverty, or pandemics can be more effectively communicated to billions of people when religious leaders and artists weave that scientific message in their art or their theology. Our planet will be less polluted if billions of faithful embraced the belief that polluting as a sin. The American Indians had such reverence for the environment and they treated everything around them, the forest, the mountain, the bush or the river as the habitat of sacred spirits. Equally important is the transformative

power of Art. There are plenty of cases when artists acted as architects of social justice through work that conveyed a powerful moral message. The death of innocent civilians and the ugliness of war have been protested rigorously by Picasso's *Guernica*, or the photos of Nick Ut showing napalm bombed victims running away from their burning village in Vietnam. The plight of the poor was the motive behind most of the stories of Charles Dickens and Victor Hugo and during America's depression and the dust bowl, the songs of Woody Guthrie and the photos of Walker Evans inspired the creation of the Social Security system in the USA. Antiracism and the plight for civil rights were brought to millions through such novels as *To Kill a Mockingbird* or the classic movie *Guess who is coming to Dinner*. The moral power of art to transform is impressive yet it continues to be undervalued.

Collaboration between science, religion and the arts can successfully face future challenges such as a pandemic, overpopulation, or even more exotic events from outer space. SETI (Search for Extraterrestrial Intelligence) is a research program and part of Astrobiology, the search for life beyond earth. With the recent discovery of over one thousand new planets orbiting other stars and with sophisticated space telescopes we will soon be able to discern the atmosphere of such planets and recognize the undisputed elements of life in them using spectral analysis. Liquid water and energy, two essential requirements for life, have been discovered on some moons in our solar system. It seems almost inevitable that within the next 50 years scientists will obtain convincing evidence of life outside earth. How will the world react to such news, especially governments, religions and the scientific community, and how can we properly prepare the public for such a discovery? Only through an effective dialogue, starting now, between science, religion and the arts can we best prepare the world for what promises to be the greatest discovery in human history, evidence of life outside earth. Artists using science fiction novels and films have already prepared us for the possibility of extraterrestrial life. Yet often science fiction portrayed aliens as evil here to destroy us or as benevolent angels to warn us or protect us. What we have to do now is to gradually convert fantasy into a scientific reality in the minds of the public.

In Conclusion

Not too long ago I attended a lecture on evolution given by a distinguished biology professor from one of the prestigious universities in the USA. This was one of the most brilliant lectures I have ever heard. The evidence presented was so impressive it could have convinced even skeptics that evolution is a fine example of the scientific method at its best. Unfortunately the presentation was spoiled when in the last ten minutes the professor departed from his science. He asserted that since evolution is opposed on grounds of religion, if science is to triumph we need to abolish all religions. Such proposition was unfortunate and unnecessary, and spoiled an otherwise brilliant lecture. The professor backed up his statement using the results of a global survey carried out by Jon D. Miller et al. The professor concluded that Darwin's theory is opposed mostly in countries that are very religious and that successful societies (without defining what

successful is) are those with less religion. I questioned his statement by daring to comment that during Stalin's era that lasted 30 years, the Soviet Union denounced religion and promoted atheism that was taught in schools and universities. Therefore by his argument Stalin's society should have been the most successful in history.

We know otherwise. Stalin's era is marked as one of most horrible pages of history that saw the extermination of millions and the violation of basic human rights.

Any educated person who insists on the literal interpretation of the Bible and a 6,000-year old Earth, is in my opinion a sad paradox and an intellectual oxymoron. I am equally saddened whenever esteem scientists use their reputation to attack religion for which they often know very little. Richard Dawkins, that some call "the Archbishop of Atheism" for his many attacks on religion and his rejection of God, ought to realize that his viewpoint is as polarized and fundamentalist as the viewpoints of those he attacks for supporting creation science instead of evolution. I believe that good science can co-exist side by side with religion and I am proud to consider myself in that group of a long list of living scientists and many others from history. One such distinguished scientist is Francis Collins, the director of the Genome project who was recently appointed as the Director of the National Institute of Health. In a recent essay Dr. Collins wrote the following: ***"I was once an atheist myself, and so I understand the temptation to fall into a completely materialistic view of human nature. But seeing all of humanity's nobler attributes through the constricted lens of atheism and materialism ultimately leads to philosophical impoverishment and even to the necessity of giving up concepts of benevolence and justice. I found that a whole world of interesting questions opened for me once I accepted the possibility of a spiritual aspect to humanity."***

There is still hope that one day, Professor Dawkins and other atheist scientists will be able to make a bold and similar turn-around and express a similar statement as that by Francis Collins. Like St. Paul on his way to Damascus, they may one day be reawakened by the realization that one can indeed be a prominent scientist, a passionate proponent of Darwin's theory of Evolution and still be a person of faith.

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CROUCHING JAMES, HIDDEN DEWEY:

A DISTILLATION OF DAOISM AND PRAGMATISM

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ABSTRACT: Where one finds a divide, there one finds need for a bridge. The pragmatic method – a principle of direction theory into action, of determining what positive difference the tools (truths, theories, practices) we use make upon our lives – can serve as such by connecting seemingly disparate religious and scientific

practices. The metaphor of a bridge allows us the image of a relation between parallel and equal banks, rather than a subsumption of one side underneath the other; it allows for the intermingling of ideas from different places in a more neutral space; it allows pragmatic philosophy to take its place as that strange ambassador between fields of knowledge. The middle section of the paper provides an example of utilizing the pragmatic bridge through an investigation of the connections between pragmatic and Daoistic practices as based upon research of Taiji forms and Daoistic lifestyles. Common to both pragmatism and Daoism one finds several practices: radical empiricism, the use of all that experience has to offer in forming one's practices, which leads to a fallible plurality of tools; naturalism, a particular eye to our environment and habits in forming our tools; and the ever-important acknowledge of a necessary connection between theory and practice. The paper ends with a sketch of what one who uses the bridge might look like, with a focus on the relationship between his or her beliefs and actions. This sketch shows that pragmatism can not only bring together practices, but sort out those practices useful from those not; pragmatism, then, is a facilitator between and amplifier of any beneficial practices.

INTRODUCTION

“It is probably true quite generally that in the history of human thinking the most fruitful developments frequently take place at those points where two different lines of thought meet. These lines may have their roots in quite different parts of human culture, in different times or different cultural environments of different religious traditions: hence if they actually meet, that is, if they are at least so much related to each other that a real interaction can take place, then one may hope that new and interesting developments may follow.”⁶

1893 World's Parliament of Religions was in part devoted to “the actual harmony of science and religion; and the origin and nature of the alleged conflict between them.”⁶

Today, we again find ourselves gathered to commemorate the conversation between different realms. The connections between sciences and religions need not be treacherous; but if they prove difficult, I offer today what is hopefully a useful tool for discussion. Heisenberg's reflection is astute; new understandings, values, and processes can be gained by the mixing of concepts and methods and frameworks. I hope my contribution can provide a means for increasing the effectiveness of this intersection upon our lives by adding a conduit to facilitate interaction.

This project began as such an interest in connections, but with a more centered focus that formed after visiting Chengdu, China during the summer of 2013. While there, our research group investigated the physical aspects of Daoism by practicing Taijiquan at Green Ram Abbey, along with attending lectures concerning the relation between theory and practice in Daoism. Upon revisiting William James and being introduced to the John Dewey's *Human Nature and Conduct*, my experiences with Taijiquan could not but interweave with my reading of these giants of pragmatism. The project then focused on the fundamental tendencies shared by Daoism and Pragmatism, specifically in their understandings of habit formation. Understanding our habits – which, especially for Dewey, is just understanding ourselves – allows us to influence our future habit formations and sedimentations for the better, thereby allowing us greater control over our actions, assisting us in our quest for a better world.

Dewey said that philosophy is the “science of the sciences, the art of the arts.”⁶ Its task primarily, at least to the pragmatist, is to interpret the diverse knowledge of the world for the sake of better values, better actions, a better future, a better humanity. It is the art of living and the science of applying science to life, all for a fulfillment of ideals out in the world. The previous connection found between pragmatism and Daoism now serves as example for pragmatic philosophy's ability to connect in general any fields of knowledge and more specifically religions and sciences for this purpose. My proposed addition, then, to the understandings of the nexus twixt science, religion, and philosophy takes the form of a bridge.

I find it fair to begin with this little bit of logics of similitude, considering that

many of today's perceived problems between science and religion are manifestations of the rift between objectified knowledge and personal experience, created by an *episteme* resting fundamentally on binary logic, on the axiom that a thing must be either or and not both. But before the Rise of Western Reason, one could divine nature through a series of images ordered by their similarity to each other. Such logic has not disappeared from our world; in other cultures one still finds the power of argument not in logical conclusions but in the choice of correct metaphor.

At least for some situations, I find that the following metaphor can be used. Where one finds a divide between science and religion, there one finds need for a bridge. The metaphor of a bridge allows us the image of a relation between parallel and equal banks, rather than a subsumption of one side underneath the other. It allows for discourse, for meetings in the middle of the bridge, for the intermingling of ideas from different places in a more neutral space. A bridge allows for seemingly disparate ideas to occupy the same space. It allows us to investigate our faith, while at the same time having the necessary faith in our tools – tools like science – to use them.

What I'm trying to do here is show that, when scientific and religious practices have some pragmatics in their fundamentals, they are not as different as we might have previously thought. The religions "by which men live" can share guiding principles with pragmatic thought and practice: radical empiricism, pluralism, fallibilism, naturalism, acknowledgement of a necessary connection between theory and practice, a concern for the quality of human life, among others. Similarly, the sciences can also share such pragmatic principles.

Further, the pluralism of a bridge partly wrought of radical empiricism easily

allows religion and science to co-exist. And this pluralism seems not only to allow for the co-existence, but necessitate it. In the giant James' words, pluralism is the permanent form of the world (and any who stake that claim are radical empiricists): "there is no possible point of view from which the world can appear an absolutely single fact."⁶ How, then, are we to gather the multitude of facts from the world without inhabiting different point of view, without using different tools and practices?

Aside from the allowance of plurality, it is my hope that in elucidating these common qualities, pragmatism can bring science and religion closer together, and that such a bridging can also strengthen all these different traditions. Today's presentation will serve as an example of how such a bridge can work. I will take us halfway across, giving an account of fundamental similarities between Taiji as a Daoistic, religious practice and common stains of pragmatic thought.

But first, allow me a circumscription, which will further articulate the ideas to be developed. This project concerns religions and sciences in the Jamesian sense, by which I mean religious or scientific *practice*. I do not mean, for example, religion a historical or cultural construct, or as a theory tucked away in a book or religious institutions – except, perhaps, an institution with loads of folks actively worshipping inside. By *practice* I mean application to one's daily life, the differences in one's actions that a belief makes: in the laboratory, in the church, in habit formation. You'll also note that I sometimes refer to religion or science as a plurality of such. This is not a mistake, but rather an important point about the nature of such practices. As Dewey notes, there is no religion or science in the singular. He does delineate the religious as a quality inherent in certain actions, but,

like James, refuses to give an overarching definition to the magnificent plurality contained within the single word religion. Those practices out of the diverse religions and sciences the world hold that abide by the pragmatic method are those that we can connect via the pragmatic bridge.

It is this emphasis on practice that makes Taiji exemplary for utilizing the pragmatic bridge, and it is here that I must make note of the relationship between Taiji and Daoism. Our research group was told time and time again by both monks and professors that one will never come to an understanding of Daoism if one does not practice Taijiquan. The Master at Green Ram Abbey laughed when we said we had read the *DaoDeJing*, and told us to try reading it after practicing Taijiquan for ten years. This is a theme present through this project: knowledge is unattainable without a practical, experienced aspect. An understanding of the Dao is not possible without walking it. Again, I think the same considerations apply to science as well, considering the indispensability of experimentation.

I choose to compare James and Dewey to Daoism rather than other pragmatic thinkers for several reasons. There is, of course, the practical concern that they are the pragmatists with which I am most familiar. Second, given my readings of them and other pragmatists, they seem most harmonious with Daoistic thought, and the interaction between them and Daoism realms looks most fruitful. James' emphasis on plurality and Dewey's work on habit are most notable in these respects. I am making no sweeping judgments about the nature of pragmatism overall, neither of James and Dewey, and do not wish injustice on the diversity of ideas therein – I only desire to compare strains of thought for the purpose of synthesizing a guide for creating better life practices from

many fields. The term pragmatism in this paper is to be taken broadly construed, in the form of Papini's metaphor, as a method rather than a specific answer, a principle of practicality rather than the respite of abstraction or dogma.⁶

I must also mention the status of Daosim. There is validity to both those arguments that claim it to be a philosophy and those who claim it to be a religion, because in a sense both are right. Daoism is a term that refers to many diverse schools of thought and practice, developed over thousands of years. What I term as a religious practice is shaped by James, of course: it is practiced for the betterment of the practitioner, usually accomplished in part through an experienced connection to something greater, or at least something fulfilling. It is an art of living. The line between philosophical and religious practices as such is, to me, a smeared line, a spectrum. Nevertheless, what is most important to remember for our purposes is the emphasis on Daoism, on religions, on sciences, as a practiced system of beliefs that intends to influence one's actions for the better.

Because of the narrow focus of my comparison between James, Dewey, and Daoism, I do not at all expect every religious practice or form of pragmatism to share all of the commonalities in the ways described. Further, the relationship between pragmatism and science, only briefly delineated here, will have its own peculiar characteristic, and I leave it to those with the required knowledge to elaborate on such relations. However, religion or science practiced to the benefit of the practitioner is essentially pragmatic – the practice is done for something, and accomplishes that goal. This is what truly brings things together here: what works for our given goal of a better life? Inscribed on the front of Master Mung's version of the DaoDeJing is the description: "Teachings of Laozi

provide practical solutions to problems facing a mundane and troubled world. Not for sale.”

In short, I make no unshakeable claims about the tendencies of sciences or religions towards certain attitudes. That is not the point here. It is rather to connect communicable and helpful tendencies, however statistically extant such tendencies are within certain practices. In the next section, I hope to make such connections, by comparing pragmatic practice with that of Daoism.

HALFWAY ACROSS: THE PRAGMATISM IN DAOISM

“Her only test of probable truth is what works best in the way of leading us, what fits every part of life best and combines with the collectivity of experience’s demands, nothing being omitted. If theological ideas should do this, if the notion of God, in particular, should prove to do it, how could pragmatism possibly deny God’s existence?”⁶

THE RIVER OF RADICAL EMPIRICISM AND ITS TRIBUTARIES

*Knowing one’s ignorance
of certain knowledge
is the best attitude⁶*

What must always be kept in mind for the remainder of this paper is the classic Jamesian question: *what works?* What makes a difference in our lives, what makes them better? What allows you or I to achieve ends, to create good habits for a good life?

To answer this question we need only drink deep from the stream of radical empiricism, its water flowing from the untouched and boundless glaciers of immediate experience, from which we construct our methods, which are then tested and applied back in the stream. Each of us nexus is a different perspective or position on the river, each with a different collection of habits, meaning we will experience different parts of nature, focus on different parts, and therefore construct different truths out of it. As James states, “there are various ‘points of view’ ... and what is inwardly clear from one point

remains a bare externality and datum to the other.”⁶ No tool will fix all problems, and no truth says all there is. Such a situation is not a thing to be feared, but appreciated; since each nexus differs, each requires particular tools and finds particular truths for their purposes. All is well as long as such truths “terminate” in the river of reality, proving that it makes a favorable difference.⁶ This pluralism of perspectives and projects is also found in Dewey; for him, “the same existential events are capable of an infinite number of meanings.”⁶ There are countless more meanings than things, for a thing can be used for many different ends. We can remake Dewey’s example of paper with any number of objects: a carrot is an ingredient to a cook, a snowman’s nose to a child; a forest is a home to woodland creatures, a vacation or a wasteland to city dwellers, property to the land owner, money to the businessperson. Further, an event may have multiple meanings to one person, either at one time or over time.

Thus our first comparison between Pragmatic and Daoistic thought, for the latter, too, shares this strain. The Dao, literally translated, means “way.” This can either refer to either: the ultimate way, the way that nature follows; or the personal path that each of us walks. Both are valid, and both elucidate Daoistic thought, but the latter interpretation is relevant presently. Daoistic thought acknowledges that each person has a unique situation, and therefore will walk her own road. “The wisdom of the Tao-te-Ching is to be applied with flexibility, not to be followed rigidly step by step like a technical manual ... the standard of ‘right’ is in ourselves”⁶

And the stream keeps flowing: the world may be half stable, but this means its other half is chaos. There are rocks in the river, and floods, and droughts. Thus, we must alter our methods and truths as time persists. “As Laozi puts it, each *dao* changes.”⁶

Radical empiricism, then, leads not only to pluralism but fallibilism as well. Before leaving for China, I attended a lecture given by a Taiji instructor who possessed extraordinary experience abroad with other practitioners. He told us the story of a particular form, one he had seen practiced in diverse corners of the world, in which every practitioner held their hand slightly differently during one part of the form. He began asking questions, and the self-correcting tendencies of the tradition became apparent. Now and in the past, various practitioners perceive improved circulation of blood and Qi by altering the position of one part of the body or another, and thus practice and taught the form accordingly. Such fallibilistic tendencies, I think, spring naturally from radical empiricism; observation in connection with ends will eventually encounter new and better tools, and even ends, in pragmatism, Daoism, and any other sort of practice.

NATURALISM

*Man takes Earth as his model;
Earth takes Heaven as its model;
Heaven takes Tao as its model;
Tao takes what is natural as its model.⁶*

And when radically empiricising, when testing out theories in the world, interacting with it, adjusting it and to it, it's hard not to have at least a tinge of naturalism. We are in the world and of it; we see, interact with, and are nature. Both Daoism and Pragmatism share models of nature in which humanity is a complex level of processes of its environment. And if our behavior is ultimately incompatible with nature's flow – as will happen to over-abstracted, civilized creatures such as us – nature will eventually cut us down to size. In order to survive, we must make sure *our* way is compatible with *the* Way, that our way follows Nature.

To detail the naturalism found in pragmatic thought, let us turn to Dewey's description of habit. Dewey is helpful for understanding habit formation, that art of life, because he looks to actual, natural human experience when formulating conceptions about our nature, abilities, and tasks. The problem is that habit-formation for daily practices, for those "intimate matters of self-regulation in health, morals, social affairs – in matters most closely connected with basic needs and relationships" has not before been taken up with a naturalized approach like Dewey's, one that so dissolves the distinction between outer world and inner mind, one that so connects us with the environment that we are but it.⁶ This allows us to explain the need and difficulty of intentional habit formation for 'intimate matters':

As long as our chief psycho-physical coordinations are formed blindly and in the dark during infancy and early childhood, they are accidental adjustments to the presence of other persons and account the consequence of these activities upon formation of habits and habituations. Hence the connection between consciousness and action is precarious, and its possession a doubtful boon as compared with the efficacy of instinct – or structure – in lower animals.⁶

The problem at hand are those habitual actions we have formed subconsciously that obstruct us in fulfilling our ends-in-view, removing these actions and replacing them with others, habituating our bodies and our minds such that we are able to fulfill those ends. Part of solving this problem is realizing that consciousness is indeed a part of the natural environment, even if thrice removed – the consciousness being a focal point of the system of the mind, which grows out of the psycho-physical, which grows out of the organized environment. Our conscious preoccupation with the relations between external things rather than our relationship to them is "the source of that apparent disconnection between consciousness and action which strikes us when we begin to reflect."⁶ We must reveal that connection to consciousness, allowing us to modify it and the two systems it

connects. We must realize that we are never outside nature: we are but a bundle of habits ever-situated within an environment. We are doomed if we fail to recognize this.

“Thus the sage behaves Without taking unnatural action...”⁶ Taiji, too, is exemplary in literally embodying what it means for humanity to be a part of nature. A large part of Taijiquan lore includes monks observing other animal’s movements and creating forms from them. The *DaoDeJing* is constantly making references to the flow of nature, describing aspects of it so that we may follow, alluding to the moral aspect in our choosing to or choosing not to follow. “Everything is a part of nature and develops according to Nature’s systems. Whatever moves with nature prevails.”⁶

THEORY AND PRACTICE

*Nothing in the world is more supple than water,
Yet nothing is more powerful than water in attacking the strong and the hard.
Why? Because nothing can take its place.
Everyone in the world knows ... yet no one so far can put the knowledge into practice.*⁶

One of the central issues for our research group was the relation between theory and practice in Daoism. Da Liu states that “if you want to learn meditation, first you must read the I Ching, the Tao Te Ching, and other works that speak of the Dao.”⁶ On the other hand, Master Li said in our first meeting that, though fundamentally theory and practice are one and the same, theoretical questions are without purpose if one does not practice what they read. To be interested in only theory is “the sign of a diseased mind.” Together, these two thoughts show that one without the other is of no use. A mind, reading, sitting in the chair, will never truly understand what is read if the body does not get up and move the moves of the theory. But a body moving without direction and purpose will not understand why it moves the way it does. Indeed, in early Chinese thought, there was no

diremption between belief and action at all, and such origins do not fail to influence thought today.

Dewey, though he is one of the most grounded and concrete philosophers, understood the importance of abstraction, of theory, for fulfilling ends. We have immediate experience which serves as evidence, from which we create theories. These theories are then tested back in experience, and/or used to construct agreeable realities. Theories, abstractions, are necessary tools for many projects. We just must remember to not take the theory for immediate reality. Language itself is an abstraction – it exists in reality, but its words are not the things themselves and should not be mistaken for such. This does not mean, however, that words are unhelpful. We need language in order to communicate between each other, share ideas, grow. Abstraction is useful for determining and fulfilling goals. What Dewey elucidated is that theory, including his denotative method as described, is just a particular type of practice, and that a theory is not complete if not carried out in other sorts of practices. “There is then an empirical truth in the common opposition between theory and practice ... it is, however ... a contrast between two modes of practice.”⁶ He draws a distinction between those who hesitate to act in favor of contemplation and those who push onward relentlessly. The trick is to find a balance between these two dispositions, one in which action is not suppressed but moderated.

All of this talk between Daoism and pragmatism is an example of how pragmatism can be linked to religious practice, which in itself serves as example of the utility of the pragmatic bridge. The bridge facilitates a sort of feedback effect. Not only

does Taijiquan exemplify pragmatism in such a way that the latter is elucidated and brought to life, but reading James and Dewey can also shed light on how to practice Taijiquan effectively and theorize realistically. I see Taiji as a clarifying example of pragmatic practice, and pragmatism as a guide for further practice. This relationship is not confined to pragmatism and Taiji practice – it is also found, I think, between science and pragmatism, as well as between pragmatism and any other practice.

Given the above, we see that the value of this synthesizing bridge is a furthered understanding of both the practice at hand and pragmatism. The next step would be to link the strains common to religious practice and pragmatism to scientific practice. This project is but a sketch of the pragmatic bridge, with an example of how to use it in part. It is hoped that this sketch will be of use to others in further bridgework.

SKETCH OF THE STRADDLER:

PRAGMATIC ACTION AND BELIEF

"It doesn't matter how beautiful your theory is, it doesn't matter how smart you are. If it doesn't agree with experiment, it's wrong." – Richard Feynman

"Thus the sage behaves without taking unnatural action"⁶

This bridge has already been and is being traversed. More and more often do we see the scientific testing of a religious adept, pairing or transforming the truth of a practical ability with or into the truth of scientific explanation. On the flipside, we get the religious affirmation of recent scientific discoveries, as seen in Fritjof Capra's *The Tao of Physics*. There is indeed appropriation on both sides despite Richard Dawkins or Ken Ham may tell you, another great example of such being Carl Sagan's *The Varieties of Scientific Experiences*. Before we end, I'd like to make a brief sketch of what a pragmatic

“straddler” may look like, using Dewey as my example, with a focus on pragmatic belief and action. What is the faith and practice of one who utilizes the pragmatic bridge?

Dewey valued science and respected the religious; he united science with a naturalist religion; he borrowed from both the sciences and religions to actualize his ideals; and most importantly, all his tools, methods, and knowledge were instrumental, motivated towards a purpose, one which he took up and stood up for in his daily life. Dewey embodied what he saw as the religious quality, what Corinne Frost describes as “self-sacrifice in the service of principles one believes in, regardless of personal risk.”⁶ The principle Dewey so believed in, to quote Frost again, was that science is the “greatest force in human history for producing social changes towards a human betterment.” His faith was a paradigmatic culmination of religious and scientific attitudes.

However, Dewey did not always hold such an attitude towards the religious. Nolan Pliny Jacobson describes a pre-1930s Dewey as looking in from the outside of religion, seeing nothing but dogma. This Dewey accuses Henry Nelson Wieman of “hypostatization” of things/persons/concepts deemed good into a singular existence deemed God, of subscribing to an “externally imposed standard” inconsistent with a naturalist approach.⁶ But, Jacobson continues, Dewey’s religious thought underwent serious transformation after further deliberation of his theory of inquiry, which resulted in inquiry’s extension into life. Inquiry was developing into his ultimate solution for humanity’s progression by solving the problem of evaluating our actions, ideas, and desires. Dewey, though he wears no rose-tinted glasses, had faith in inquiry to guide a humanity possessing goodwill towards their ideals, their God.

To finish our sketch of the straddler, we must investigate a little into the nature of

belief. Belief or faith is *not necessarily unshakeable*; an idea must only be “live”⁶ enough that one is willing to act upon it in order to be a belief. This can vary from the scientist entertaining it as a hypothesis for the purpose of an experiment, to the fundamental faith Dewey has in man and inquiry that allows him to bring his ideals into being. With the acknowledgement of degrees to belief, I think we are warranted in saying that someone can will to believe even if the idea entertained is not forced or momentous; the idea need only be live for him, and intensifying degrees of belief will necessitate that the idea is forced or momentous to be considered warranted.

We see then that Pragmatism is not only a link between all religions and all sciences, but a division between useful systems and those not, and therefore facilitation between useful systems. For our purposes, both the religions and sciences “by which men live” operate by a sort of belief, and the status of their beliefs over time can help us distinguish between religious and scientific practices that are pragmatic and those that are not. By belief, as stated, I simply mean a held conception or idea about the world that influences one’s behavior. Both scientists and religionists, then, have beliefs. A person, for instance, who believes in the inherent goodness of humanity, perhaps as created by some deity, will treat people accordingly, with kindness and trust. A person who believes in evolution and therefore adaption via natural selection, will finish their antibiotic regimen. What I would like to focus on right now is not pre-existing evidence for or against a belief, but evidence gathered whilst the belief is operative in one’s behavior. For it is here that we find a dividing line between dogmatic beliefs and pragmatic beliefs. The *pragmatic* scientist or religionist believes what she believes until experience proves otherwise, until the belief is no longer useful in life; the belief is then changed or

replaced. The dogmatic scientist or religionist will hold onto a belief even when experience has proved it inadequate. Such dogmatism is not always enshrined in religion; scientists, too, can exhibit dogmatic tendencies. The tides of scientific revolution usually encounter stubborn banks, those who cling to theories deteriorated by new evidence.⁶

This can be shortly summarized by a current meme that comments on the recent Bill Nye/Ken Ham debate, in which the mediator asks both speakers: what would make you change your mind? According to the meme, Bill Nye answers: evidence, and Ken Ham answers: nothing. Hence the distinction between the fallible pragmatist and the dogmatist.

CONCLUSION

All of this is not to gloss over the differences found between religions and sciences, neither the differences found within. A religion may allow a plurality of personal truths moreso than a science based upon the reproducibility or demonstrability of truth; a science may be more precise, methodical, or clear than a religion in its presentation of truth and a guide for action. Some religions are indeed more supernatural than natural, and some sciences may be so theoretical as to have a radically different relationship between theory and practice. Not only would it be disingenuous to cloak such differences, but difference itself can be pragmatic. An acknowledgement and understanding of different tools and methods deployed for interaction with the world is radical empiricism in action.

Of course, the pragmatist of pluralistic tendencies, myself included, would note that the proposed bridge is of course only one out of many useful tools for understanding

the intersection of religion, philosophy, and science. Further, the bridge rests on particular conceptions of what constitutes a religion or science. Still, it is my hope that this bridge of pragmatism can reconnect two fields of understanding that presently are so often understood as contradictory rather than complementary.

As well as bridging fields, as well as eliminating practices or beliefs harmful or inefficient, perhaps pragmatism can impart needed qualities to both religious and scientific practices. Some religious practices may stand for the importation of fallibility; some scientific principles could use a dose of radicalism to their pre-existent empiricism, and of course in other cases you may have the vice-versa. Perhaps this bridge can allow us to get the most out of our practices.

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