Probability Methods and Multiple Conscious Lifetimes

W. J. Cocke
Department of Astronomy
University of Arizona
Tucson AZ 85721
cocke@email.arizona.edu

Abstract

Having a conscious, first-person awareness carries information. Simple probability arguments are used to show that the chances are large that the author has experienced more than one conscious lifetime. These arguments are based on the premise that the author's awareness of being alive *now* is improbable, in the sense that his first-person awareness could have taken place at any time over the past many millions of years. It is argued that the methods of physical science are in principle not able to deal with the author's first-person subjective awareness.

KEY WORDS: Consciousness, probability theory, reincarnation, large-brained mammals, self-awareness, maximum likelihood, Bayes' rule

1. INTRODUCTION

It seems unlikely that probability methods would have anything useful to say about a subject like consciousness and its persistence over multiple lifetimes. There is, however, information content in the fact that I have a first-person conscious awareness at this point in time.

In what follows, I sometimes refer to the uniformity principle. Consider a set of N events alike except for some kind of label. This principle would assign each event the same probability, $1/N$. For example, if we draw a card at random from a pack of 52 playing cards, the chances of drawing a particular card — say, the five of spades — would be $1/52$. See for example Feller (1968), pp. 19 - 20. (On the Internet, the reader might look in *wikipedia.org* for entries on the principles of indifference and insufficient reason.)

Another example would be the occurrence of my winning a lottery. Suppose I am guaranteed to win once and there are N possible dates for my lottery win to occur. If there is no reason to favor one particular date over another, the uniformity principle implies that the chances of my win's happening on a particular date are $1/N$. Some of the reasoning in the present paper is an appeal to this principle. And as far as the debut of my own particular consciousness is concerned, there should be nothing special about this particular point in time.

Also, I argue that my consciousness, my sense of being alive, could have been connected with a great variety of physical bodies. However, I restrict the discussion to large-brained mammals such as elephants, cetaceans, and the great apes. There is strong evidence that this class of animals shows mental and social qualities in common with *homo sapiens.* See for example Nani et al. (2011), Deamer (2011), Suddendorf (2011), and Marino (2011). These qualities include self-awareness and complex social interactions.

It is of course possible that the class of animals that enjoy such qualities is far larger than the class of large-brained mammals. Koch (2008) argues that even honey-bees have conscious self-awareness. He observes that bees, which obviously have complex social interactions, perform tasks involving abstract associations and pass difficult memory tests.

Marino (2011) states that the earliest true cetaceans appeared about 35 million years ago. I therefore propose that my own conscious awareness could have appeared at any time over, say, the past 30 million years. Or of course it could take place at some time in the future.

Hence my being alive and aware *now* is improbable, in the sense that my life and awareness could have taken place at any time during the past 30 million years.

The thesis of this paper depends on the assumption that it makes sense to ask whether or not my conscious awareness appears only once in all of time. This is certainly what people mean when they say: "You only live once." It follows that the converse statement would also make sense, so that we can inquire about my having multiple lifetimes, as in the title of this paper.

Being alive now is like being a big winner in a lottery. I am very lucky to be here now, as a winner of this lottery. The critical point is the current now-ness of my win.

The next question is to ask why I have won the current biological lottery. Was there some kind of arrangement that made a win likely at this time? For example, I might have acquired a large number of lottery tickets.

In Section 4 I discuss an imaginary lottery that introduces and clarifies the probability methods we apply to the multi-lifetime analogy treated in Section 5.

My life — my conscious awareness — is certainly happening now. I have won the lottery, but there are lots of current winners, and indeed this has been going on for millions of years. The reader may well ask: "What is so special about you at this particular time?" The really special thing is the coincidence between *my* awareness and geological (physical) time *now.* It is the point of this lottery that winning the current drawing means existing now. Large-brained mammals that are already dead have won in past drawings.

Certainly, the actual number of current winners is irrelevant: the probabilities for my own awareness are the same, whether I am merely one winner out of 10 billion or the only winner.

Using probability methods to deal with these questions in entirely appropriate. It would be disingenuous to claim that there is nothing improbable happening because the laws of physics have actually *caused* my awareness to appear at this time. Indeed, we know much less about the physics of subjective consciousness than about the physics of hands in a game of cards. Yet we are perfectly content to make statements like: "I was dealt a royal flush in a poker game last night. This was very improbable."

The analysis in this paper depends on knowing simply that my conscious awareness coincides with time *now.* I know nothing about possible episodes in the past. In effect, we are *forced* to deal with a particular time — we are at geological time *now* — and the result is consciousness for *me.*

This procedure contrasts with picking out an improbable event from a long sequence of trials. The latter procedure would involve knowing that I was aware at some time in the past and computing the probabilities associated therewith. That is a different problem and is not relevant here.

It is occasionally said that statistics and probability should be a science of last resort, and

that one should use it only if the results are reasonable and not counter-intuitive. Many people consider the idea of reincarnation to be quite reasonable, however; and certainly any number of people — including many Westerners — believe in the survival of consciousness after death.

In Section 5 I use the lottery analogy to make a very crude estimate of the probability that I should be alive now, if indeed I live only once. This probability might be very roughly 1 part in 2,000,000. This number is very uncertain; the main point is that this probability is extremely small.

But if there *are* multiple lifetimes, the probability that I am alive *now* can be much larger. I use the maximum-likelihood method to conclude that it is highly probable that this is indeed the case.

This method connects logically with Bayes' rule. I use this rule in Setion 5 to show that the reader must be extremely skeptical to continue to insist that I only live once.

Zuboff (1990) has employed similar reasoning to conclude that all consciousnesses are really the same; we are all one consciousness. My conclusions intersect with his to a certain extent, but mine are much less sweeping.

Please note that I am emphatically *not* addressing broader problems such as how probable it is that *homo sapiens* has appeared at this particular time. I accept the following two statements as working hypotheses: (1) Mammals with large brains appeared on earth about 35 million years ago and are still functioning today. (2) The physical (geological) time is now 2011 CE, roughly 4.65 billion years after the formation of the solar system. For the purposes of this paper, these two hypotheses are assumed given and are not random variables.

2. THE REMARKABLE FACT OF FIRST-PERSON, SUBJECTIVE AWARENESS

In discussing first-person subjective awareness, I must certainly consider more species than just *homo sapiens.* As stated in the Introduction, my consciousness could just as well have been centered in the brain of any large-brained mammal, or perhaps any vertebrate at all. Can anyone doubt that dogs and cats, for example, share with us certain key elements of

this conscious awareness? To assume that only the genus *homo* could possess conscious awareness is really unwarranted and unbiological.

This paper grew out of my feeling that there is something very significant in the fact that I happen to be alive and conscious at this particular moment. If I am to have only one lifetime, then the coincidence between physical or geological time *now* and my being alive would seem really improbable. I should have been dead for many millennia or simply not yet born.

And it is interesting that physical science has nothing to say about what "now" might mean. How does it happen that geological time is now $t_{\text{now}} = 4.65$ billion years since the formation of the solar system? Certainly, one can determine this fact from studying the concentrations of various isotopes, but the point is this: there seems to be no basis in physical science for concluding that there should actually *be* a time t_{now}, let alone what that time might be. See Nagel (1986, p. 57n) and Dummett (1978).

Rudolf Carnap (1963) reported a conversation with Albert Einstein, who told him that physics had nothing credible to say about the distinction between past and future, a distinction we human beings find very important.

Zuboff (1990) has this to say about our conscious experience and the nature of the present: "If this experience of yours occurring *now* depended on objective time being at a certain point ..., then it would be an incredible coincidence from the perspective of this experience that it *is* now. For it would be so much more likely that this experience would now be blank, lost in the vastness of past or future, untouched by the razor-edge present."

I wish to project a strong sense that the existence of our individual first-person awarenesses is extremely peculiar. This sense runs through some philosophical discussions of the "hard problem" of consciousness. Nagel (1986) and Himma (2005) discuss this question clearly.

It is hard to improve on this statement by Nagel (1986):

> It isn't easy to absorb the fact that I am contained in the world at all. It seems outlandish that the centerless universe, in all its spatiotemporal immensity, should have produced me, of all people, and produced me by producing TN [i.e., Thomas Nagel]. There was no such thing as me for ages, but with the formation of a particular

> physical organism at a particular place and time, suddenly there is me, for as long as the organism survives. In the objective flow of the cosmos this subjectively (to me!) stupendous event produces hardly a ripple. How can the existence of one member of the species have this remarkable consequence?

I have observed that nearly everyone is accustomed to his or her own first-person, subjective awareness, so much so that there is no sense of how strange and extraordinary this individual awareness is. It is easy to understand our lack of wonder at this strange phenomenon, for it has been the most prominent feature of our mental life since birth.

My sense of the passing of time may or may not continue after my death, but right now it is *concurrent with geological time.* To me, this seems quite odd, since my conscious lifetime could have happened at any time during the past 30 million years.

Nagel (1986, p. 55) would separate this issue into two questions. (1) Why should *my own* particular awareness have settled on this particular physical network, with its unique set of circumstances, active from the year 1937 until perhaps 2030? If consciousness is a purely biophysical phenomenon, physics itself would seem to rule out such a choice. There are, after all, currently perhaps 10 billion possible choices here. (2) More generally, why is it that my awareness has any kind of specific locus at all?

William James (1892) recognized the sharp, important dichotomy between the categories "me" and "not-me," and he pointed out the irreducible pluralism that this dichotomy entails: "The breach from one mind to another is perhaps the greatest breach in nature."

These considerations lead us into the well-known difficulty concerning the third-person laws of physics: there seems to be no way to reconcile these physical laws with the existence of my own first-person, subjective awareness. However, this difficulty might not stand in the way of using biophysics to model human thoughts and sensations. I discuss this further in Section 6.

3. POSSIBLE EVIDENCE FOR MULTIPLE LIFETIMES

Applying the tools of probability and statistics has many pitfalls, but here the data are simple: I am alive *now* and have a first-person, subjective awareness centered in my own

body. I have, in effect, won the current lottery.

The point is that, if this is my only lifetime, its present coincidence with geological time is a serious violation of the uniformity principle and implies a special coincidence in time for my own particular consciousness.

We are now addressing issues of the kind discussed in the cautionary remarks in the Introduction. That is, I assume that it makes sense to ask whether or not I live only once. The actual evidence for and against this multi-lifetime hypothesis is controversial. There seem to be three types:

(1) Revelation by higher authority. Here I include tenets of religious doctrine. For example, in many Eastern religions, reincarnation is a major feature. But in other typically Western religions, the multi-lifetime idea is either not mentioned or is declared heretical. Also in this category are testimonies by individuals who say that they have, perhaps in deep meditation, connected with past lifetimes. The reader may or may not consider these testimonies as evidence, depending on his/her cultural and educational background.

(2) Statements from people who have evidenced knowledge or connections that they could not have acquired during their present lifetimes. This evidence has sometimes surfaced while one is under hypnosis. Schwartz (2002) discusses some striking experiments involving spirit media. His book documents various experiences that seem to confirm the survival of conscious awareness after death.

(3) Instances of near-death and out-of-body experiences that show connections with events that should be inaccessible to unconscious subjects. See for example Dossey et al. (2011), Jourdan (2011), and Joseph (2011).

Some physical and biological scientists consider the multi-lifetime idea to be unphysical. But such an opinion is hardly evidence; and I argue in Section 6 that, although physical science might be able to model emotions and thought processes, it is *in principle* not capable of dealing with the fact of *my own* first-person awareness. See also my remarks in Section 2.

In this regard, I paraphrase Nagel (1986, p. 29) by suggesting that there is no way to construct my own subjective awareness out of 80 kg of subatomic particles. This impasse contrasts with the possibility of modeling awareness in general by using biophysics. Again, the crucial distinction is the *my*. This recalls James' dichotomy between "me" and "not-me." (James 1892)

It seems that the evidence for and against multiple lifetimes and/or the survival of consciousness is inconclusive. And on the basis of evidence alone it seems hard to justify a firm stand for or against the multi-lifetime hypothesis.

4. A CONTEMPORARY LOTTERY ANALOGY

In this section I describe a thought experiment: an imaginary lottery that I hope will clarify the probability concepts and their their conclusions with regard to the multi-lifetime issue.

This issue is remarkable in the fact that a sort of "amnesia" is involved: If there *are* multiple lifetimes, hardly anyone remembers those lived in the past. Zuboff (1990) had to deal with a similar amnesia in his "big hotel" argument. See also his "sleeping beauty" in the Internet URL *en.wikipedia.org/wiki/Sleeping_Beauty_problem*.

So I have to describe a lottery in which I have a kind of amnesia and know nothing about any past lottery winnings. In this thought experiment I am an *idiot savant* who has a good memory of the events of the day but remembers little or nothing about yesterday or anything before that. However, I am enthusiatic about science and have a special interest in mathematics. I live in an assisted-care residence hall, together with others with similar disabilities and interests.

The lottery is run by the government, which wants to generate revenue using a website larded with advertisements. The lottery is to run for an entire year, and each citizen of the country is guaranteed to win at least once during the year. The prizes are modest amounts of cash, and the government is not divulging how many times during the year a given citizen might win.

New winners are posted daily, and to claim a prize you must visit the website during that particular day. Thus the true lottery addict would have to check the website (and its advertisements) each day.

The schedules for when each citizen might win have been set up for the entire year in advance by a random-number calculation. The calculation has allocated an undisclosed number of possible wins for each citizen.

This morning my friend Sally — also a resident of the hall — tells me about the lottery. She may have mentioned this sometime in the past; I don't remember. I look up the lottery website on the residence hall's computer. The lottery seems to have been running for a few months now. I work my way through several advertisements and then enter my name into a form on the website.

Behold, I am one of today's winners! I tell this to Sally, and she shakes her head in disbelief.

Later that morning I visit the hall's library to see if any interesting new books have arrived. I pick up a book on probability theory, in which I have always been interested.

I spend an hour reading through an introductory section on the uniformity principle; and I suddenly realize that, if the lottery software had allocated only a few possible wins to me, the probability that I would have won *today* would be small. Because I won today and have no idea what my past winnings might have been, what do I conclude about how often the lottery software has designated me as a winner?

Let L be the number of days that I am due to win, out of the total $N = 365$ days that the lottery functions. Of course, L must be less than or equal to N. Here, I assume that no particular days of the year are favored over any others. I have no knowledge to the contrary, hence I use the uniformity principle. This principle implies that the probability P that I would have won *today* out of the L possibilities is $P = L/N$.

If the software had me down for only *one* win out of the 365 possibilities, then $L = 1$. So the probability that my one win would have occurred *today* is $P = 1/365$. But if the random-number software had me scheduled to win every day, then of course $L = N$ and hence $P = 1$. That is, I would certainly have won today.

What should I conclude? Is it worth my time to start checking every day? Certainly the probability $P = L/N$ is greatest for $L = N$, and so $L = N$ is the best choice.

The event "I won today" coincides with two others: (1) this is the only time I remember visiting the website and (2) this is the first time I have studied probability methods in any depth. This coincidence makes my win today stand out as remarkable.

This brief analysis is a simple application of the maximum-likelihood method, which is a method for comparing hypotheses. These hypotheses should be logically connected with observed data. In this case, the hypotheses correspond to the various possible values of L, and the observed data are simple: My win occurred today, coincident with events (1) and (2) listed in the previous paragraph.

For more about this method, see Jaynes (2004, p. 89). The web page *en.wikipedia.org/wiki/Maximum_likelihood* is also a good reference. In this method, one uses appropriate hypotheses to calculate the probabilities that a certain event E would occur as observed. The method then chooses that set of hypotheses H that gives the greatest probability that E would have occurred. In this case, $L = N$ gives the greatest probability; but somewhat smaller values of L would give values of $P = L/N$ nearly as great.

The notation that probability workers use is $P(E|H)$: "the probability that E occurred, given the hypothesis H." In the lottery case, the event E is "my win occurred today." Hence the notation would translate as: "$P(E|L) = L/N$ is the probability my win occurred *today*, given that the software has me winning L times out of $N = 365$." So the method chooses that value of L — or range of values of L — for which L/N is greatest, in the case L nearly equal to N.

Thus the maximum-likelihood result is "A large value for L is most likely." Surely, $L = 1$ is unlikely, for its likelihood is only 1/365.

Zuboff (2000) describes several problems where one's perspective influences the likelihood one might assign to an hypothesis. In the lottery case, the coincidence between my win and events (1) and (2) justifies my conclusion that $P(E|L) = L/N$. This is a first-person perspective. My friend Sally has followed the events that occurred today and has the same perspective that I do. She agrees with my conclusions.

She has told other residents about my win today. And later another resident, Smith, drops by my room and tells me that he also played and won today. I explain my maximum-

likelihood result to him, and he says that he doesn't believe that anybody can win more than once. He says that such a policy would be too expensive for the government, which only wants more money from the advertising revenue.

I explain my reasoning again, but Smith says, "What is so special about today? I'm talking with you right now only because you won today."

I answer, "Today is the only day that I remember visiting the website. Also, it was just this morning that I learned about the uniformity principle, so it's quite a coincidence."

"OK," he says. "From your perspective that seems right. Actually, today is the first time I too remember visiting the website. I won today, so I think I'll check the website again tomorrow."

5. THE ANALOGY TO MULTIPLE LIFETIMES

I now apply the maximum-likelihood method to the fact that I am alive and aware *now.* Since we have only the vaguest understanding of how consciousness might work (Ellis, 2005), the methods of probability are appropriate here.

The transition from the lottery discussed in the previous section is simple. In describing that lottery, I use a sequence of time intervals, each of which is one day long.

For the multi-lifetime analogy, the time intervals correspond roughly to the length of a possible lifetime for me. The exact length of these intervals is unimportant; here I choose a length of 15 years. As discussed in the Introduction, I claim that it is reasonable to suppose that the whole sequence covers about 30,000,000 years.

I draw the following parallels with the lottery discussed in Section 4:

"Today's website visit followed by learning about the uniformity principle" in Section 4 is analogous to "my being alive at time $t_{\rm now}$." This $t_{\rm now}$ is singled out as special because it marks a coincidence between the appearance of my consciousness and the current geological time. It is indeed like *today's* drawing in the lottery. My amnesia with regard to past lifetimes is analogous to the day-by-day amnesia described in Section 4. As stated above, we are *forced* to consider this particular time $t_{\rm now}$, and no other.

In Section 4, the unknown L refers to the numbers of days that the software has me a possible winner. In the multi-lifetime case, it refers to the total number of lifetimes allocated for my consciousness. I refer to those in charge of this allocation as "the lifetime gods."

The hypothesis that I would enjoy only a single lifetime corresponds to $L = 1$. In this case the gods would guarantee me one and only one lifetime. And thus the chances that I would have won "today's" lottery — and be alive at geological time *now* — would be only $1/N$. I now argue that N is a very large number.

In choosing a value for N I am asking about the number of 15-year intervals available for consideration. This is the number of such intervals over the epoch of large-brained mammals, say 30 million years. Hence $N = 30{,}000{,}000/15 = 2{,}000{,}000$. And for $L = 1$ the probability of my current win would be $1/N = 0.0000005$, a small chance indeed. One could of course manufacture different estimates for N. The value $N = 2,000,000$ is a gross guess, the point being only that N is very large.

In relation to the maximum-likelihood method, the likelihood of a value for L is the same expression as in the previous section: $P(E|L) = L/N$. And for $L = 1$ we get $P(E|1) = 0.0000005$. This conclusion is valid for the same reasons advanced in Section 4: The probability for my winning the lottery at t_{now} is L/N.

My having an individual subjective awareness puts me in a special position for assessing the probability that I am gifted with multiple lifetimes. On the face of it, if I am allocated only one lifetime over the past and future N intervals, the chances are small that I would be consciously connected with geological time t_{now}, and not simply dead for something like 10,000,000 years, or even not yet born. Recall Zuboff's (1990) statement quoted in Section 2 about the nature of the present.

And recall Smith in Section 4, who came to see me only because he himself had won that day. From my point of view, I could not argue that Smith's win implies that $P = L/N$ for him. For Smith came to see me only because he was already one of the day's winners. He appeared in this thought experiment *after* he had won, whereas I appeared *before* I discovered my win. Therefore an objective outside observer such as Sally, who followed my progress during the day, would draw the same conclusions I have drawn, because she would have the same data.

Of course, Smith's perspective differs from mine, and he would not be justified in using my win to conclude $P(E|L) = L/N$. His *own* win, however, does justify this conclusion from his point of view.

An important parallel conclusion is the following: In discussing the multi-lifetime issue, I cannot apply this chain of reasoning to someone else. For me to conclude that any of my friends must also enjoy frequent lifetimes would be wrong. That would be analogous to learning that he or she was one of today's lottery winners and then falsely concluding that he must also be a frequent winner. In the multi-lifetime case, the difference is that I am witnessing *my own* subjective awareness, and not that of a friend.

Therefore you, the reader, cannot apply this reasoning to me, the author. But you can apply it to *your own* awareness.

Using L/N as the probability of my being alive and aware today treats all intervals as enjoying equal probability. If we were to consider only *homo sapiens,* we might weight intervals near the year 2000 more highly than those in the past. Such a weighting would alter the outcome. Roughly 6% of all *homo sapiens* past and present are alive at this particular time (Curtin, 2007). Accordingly, if $L = 1$ the probability that I would be conscious now would be about 0.06.

But, again, there is no reason to believe that our species has a monopoly on first-person consciousness. Thus the simple L/N assumption for intervals over the past 30 million years seems to be the best we can do.

Thus I have shown that, if the lifetime gods grant me only one lifetime over the past 30 million years, it is extremely improbable that I would be alive *now.* But if they granted me a lifetime every *second* 15-year interval, the chances that I would be alive now would be 0.5. This in turn would correspond to $L = N/2$.

One can use Bayes' rule to compute the reverse probability $P(L|E)$. This is the probability that the lifetime gods have allocated L lifetimes for me, given my knowledge of the event E. This diversion requires a discussion of "prior probabilities," which I denote as $P(L)$. See for example Feller (1968) and Jaynes (2004).

I contrast these prior probabilities $P(L)$ with the conditional probabilities $P(E|L) = L/N$.

I introduced conditional probabilities in Section 4 and have used them freely ever since. Prior probabilities are sometimes controversial and characterize one's assumptions about a problem "prior" to the acquisition of data. For example, in drawing a card blindly from a deck, the probability of drawing the 5 of spades would be $P(5 \text{ of spades}) = 1/52$. This assignment seems obvious and reasonable, but it might not be if the deck were known to be defective. $P(5 \text{ of spades}) = 1/52$ is thus a prior proability.

In the multiple-lifetime case, assigning $P(L)$ would call for prior knowledge or assumptions about how many lifetimes L the gods allocated for me, before knowing that I am alive and conscious at time t_{now}. But as we have seen, there do not seem to be any hard data about multiple lifetimes. Therefore any such prior probabilities would reflect only opinions and prejudices. In the following paragraphs, I discuss the connection with the maximum-likelihood method as well as an alternative involving a degree of skepticism.

All the probabilities discussed here are *discrete* probabilites, because the set of possible hypotheses is countable. These hypotheses are of course the number of lifetimes L that the gods have allocated for my awareness. For finite sets of discrete hypotheses it is easy to show that the maximum-likelihood method is entirely equivalent to using Bayes' rule with all the prior probabilities equal: In this case, $P(L) = 1/N$ for all L.

I write Bayes' rule as $P(L|E)P(E) = P(E|L)P(L)$, where $P(E) = \sum_{L=1}^{N} P(E|L)P(L)$ is the overall probability that E would occur, given the prior probabilities $P(L)$. See Jaynes (2004) and Feller (1968). For the maximum-likelihood method we assume $P(L) = 1/N$ and obtain $P(L|E) = P(E|L)/Q = 2L/[N(N+1)]$, where $Q = (N+1)/2$ and, as before, $P(E|L) = L/N$. This result for $P(L|E)$ is the formal expression of the maximum-likelihood result.

As an alternative to the maximum-likelihood method, I compare $P(1|E)$ with $P(N/2|E)$ and set $P(N/2) = \epsilon$, where ϵ is much less than 1. Also, I set $P(1) = 1 - \epsilon$ and assume all other $P(L)$ are zero. That is, I compare the hypothesis that I have only one lifetime with the the hypothesis that lifetimes occur every other 15-year interval ($L = N/2$). The condition that ϵ be small implies I am skeptical about such repeated lifetimes.

For this alternative I write Bayes' rule in the form $P(1|E)P(E) = P(E|1)P(1) = (1-\epsilon)/N$. It can easily be shown that, for small ϵ, $P(E) \approx 1/N + \epsilon/2$. Hence $P(1|E) \approx 1/(1+N\epsilon/2)$.

Therefore $L = 1$ is more probable than $L = N/2$ only if $N\epsilon < 2$. That is, $\epsilon < 0.000001$. This inequality reflects extreme skepticism about repeated lifetimes. Hence the reader must have an extraordinary degree of disbelief to deny that the lifetime gods have granted me repeated lifetimes.

6. CONCLUSIONS

Many readers would contend that there is something unphysical about the possibility of multiple lifetimes for a single consciousness. If consciousness is only biophysical, they may be right.

However, it is difficult to reconcile the existence of a first-person, subjective consciousness with the third-person laws of physics, which are viewpoint-invariant (Himma 2005, Nagel 1986). Ellis (2005) has argued that the bottom-up methods of physics can in principle never explain the high-level complexities of life, let alone consciousness. See Searle (1992, 2004) for discussions of the doctrines of materialism and dualism and how they relate to the mind-body problem.

Physics may indeed be able to explain or model emotions and sensory experiences as biophysical events. These conscious experiences are often called "qualia." The thought or feeling "I am hungry and want pizza" may correspond, then, to a certain identifiable series of biophysical processes.

Page (2003, 2011) has described a preliminary version of a theory that might connect quantum concepts with our conscious experiences. This would incorporate qualia into quantum mechanics. But it would not explain *my own* first-person, subjective consciousness.

Physics excels at making accurate models of physical systems, perhaps including qualia. But physics is in principle not set up to deal with the problem of my individual first-person, subjective awareness.

Consider, for example, the problem of modeling the radiation emitted by a gas of hydrogen atoms. What might be the rationale for singling out a particular one of these atoms from all the others? A particular atom may be said to have just emitted an H_α photon. That is no different from a Mr. Jenkins' becoming angry at having to wait through three cycles of a traffic light at 5:30 pm. But it is simply not equivalent to *my* being angry at the traffic

light, even if my name were Jenkins. In effect, there is no way for the "my" to enter the analysis.

Searle (1992) explains why it seems impossible to attribute first-person awareness to arrangements of physical particles and fields. A strictly materialist position can hardly, that is, account for the properties of a first-person conscious awareness. For a précis of these arguments, see Nagel (1995).

I must point out again that most people are so inured to being who and where they are that the unusual and really remarkable nature of this phenomenon remains poorly appreciated.

We understand very little about the biochemistry or biophysics of the higher levels of such phenomena. And in any case we must deal with the remarkable coincidence between geological time *now* and my present state of consciousness. The uniformity principle and the maximum-likelihood method, applied to the lottery analogy, show that such a coincidence is highly unlikely, if this is my only lifetime.

This one lifetime could have occurred at any point during a long stretch of geological time. But in truth I happen to be alive right now. And my conscious, subjective, egocentric awareness, centered in my body, is what makes this fact so significant.

ACKNOWLEDGMENTS

I would like to thank James O. Allsup for his many suggestions, which greatly improved the readability of this paper. Thanks are also especially due to D. N. Page and B. Roy Frieden, as well as to J. L. Denny, Claire I. Cocke, Mark Gettings, Allan Goodman, Noah Goodman, J. R. Gott, R. T. Hubbard, D. E. Orne, W. R. Stoeger, Yervant Terzian, and Arnold Zuboff for their helpful comments.

REFERENCES

Carnap, R. (1963). Intellectual Biography. In: Schilpp, P. A., (Ed.), The Philosophy of Rudolf Carnap, Open Court Press, La Salle, IL.

Curtin, C. (2007). Do Living People Outnumber the Dead? Scientific American, Sept.

2007. See also Carl Haub's article with the Population Reference Bureau at www.prb.org/Articles/2002/HowManyPeopleHaveEverLivedonEarth.aspx

Deamer, D. (2011). Consciousness and Intelligemce in Mammals: Complexity Threasholds. J. Cosmology, 14, in press.

Dossey, L., Greyson, B., Sturrock, P. A., & Tucker, J. B. (2011). Consciousness — What is it? J. Cosmology, 14, 4697-4711.

Dummett, M. (1978). Truth and Other Enigmas. Oxford University Press, Oxford.

Ellis, G. F. R. (2005). Physics and the Real World. Physics Today, July 2005, p. 49.

Feller, W. (1968). An Introduction to Probability Theory and Its Applications, Vol. 1, 3rd Ed. John Wiley & Sons, New York.

Himma, K. E. (2005). The Problem of Explaining Phenomenal Selfhood. Psyche, 11(5) (June 2005). psyche.cs.monash.edu.au/symposia/metzinger/Himma.pdf

James, W. (1982). The Stream of Consciousness. Psychology, Chapter XI. Reproduced in J. Cosmology, 14, 4496-4508 (2011).

Jaynes, E. T. (2004). Probability Theory: The Logic of Science. Cambridge University Press, Cambridge.

Joseph, R. (2011). Dreams and Hallucinations: Lifting the Veil to Multiple Perceptual Realities. J. Cosmology, 14, 4800-4830.

Jourdan, J.-P. (2011). Near-Death Experiences and the 5th Dimensional Spatio-Temporal Perspective. J. Cosmology, 14, 4743-4762.

Koch, C. (2008). Exploring Consciousness through the Study of Bees. Scientific American Mind (December 2008). See also www.scientificamerican.com /article.cfm?id=exploring-consciousness). Quoted in Post (2012).

Marino, L. (2011). Cetaceans and Primates: Convergence in Intelligence and Self-Awareness. J. Cosmology, 14, in press.

Nagel, T. (1986). The View from Nowhere. Oxford University Press, Oxford.

Nagel, T. (1995). Other Minds. Oxford University Press, Oxford, Chapter 10.

Nani, A., Eddy, C. M., & Cavanna, A. (2011). The Quest for Animal Consciousness. J. Cosmology, 14, in press.

Page, D. N. (2003). Mindless sensationalism: A quantum framework for consciousness. In Smith, Q., Jokic, A.(Eds.), Consciousness: New Philosophical Perspectives, Oxford University Press, Oxford, pp. 468-506 [arXiv:quant-ph/0108039] <http://arxiv.org/abs/quant-ph/0108039>.

Page, D. N. (2011). Consciousness and the Quantum. J. Cosmology, 14, in press. arXiv:1102.5339v1 [quant-ph]

Post, J. V. (2012). Is Your Gut Conscious? Is an Extraterrestrial? J. Cosmology, 16, 6799-6824. Schwartz, G. E. (2002). The Afterlife Experiments. Atria Books, New York.

Searle, John R. (1992). The Rediscovery of Mind. M. I. T. Press, Cambridge, MA.

Searle, John R. (2004). Mind: A Brief Introduction. Oxford University Press, Oxford.

Suddendorf, T. (2011). Mirror Self-Recognition on Earth. J. Cosmology, 14, in press.

Zuboff, Arnold (1990). One self: The logic of experience. Inquiry, 33, 39-68.

Zuboff, Arnold (2000). The Perspectival Nature of Probability and Inference. Inquiry, 43, 353-358.