# BOOK REVIEW

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**A Brief History of Time: From the Big Bang to Black Holes, by Stephen W. Hawking.** New York, NY: Bantam Books, 1988, 198 pp, $18.95

In February of 1989 I attended a lecture by the prominent physicist Kip Thorne titled "Black Holes, White Holes, Wormholes, and Tunnels Through Hyperspace." The flyer announcing Thorne's lecture declared that tunnels in hyperspace "can lead quickly forward in time to the end of the universe and beyond," and I immediately thought of the tunnels commonly described by near-death experiencers (NDErs) leading to the light beyond. I attended Thorne's presentation hoping to find some confirmation of near-death phenomena from the world of physics.

For a very similar reason, I recently read *A Brief History of Time,* by the eminent theoretical physicist Stephen Hawking. Hawking's goal was to write a book for the lay audience summarizing the latest thinking on the questions that motivated him to do research in quantum theory: "Where did the Universe come from? How and why did it begin? Will it come to an end, and if so, how?" (p. vi). What I found was that Hawking's book *does* help near-death researchers explain some of the phenomena commonly described by NDErs. But, interestingly enough, near-death theory and near-death research reciprocally help explain some of the unanswered questions posed by Hawking, as he takes the reader through explanations of the very tiniest bits of matter to the very boundary of a vast universe.

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Throughout the book, Hawking strives to find a "complete, consistent, unified theory" of "everything in the universe" (p. 155), the unification of physics theory. While remaining cautiously optimistic and realizing that physicists in the past were wrong when prematurely concluding they had discovered just such a unifying theory, Hawking suggests that the "string theory" may be "the long sought-after unified theory of physics" (p. 165). String theory postulates that a particle may occupy any one of a number of positions along a line, as if on a string. The string may be open-ended or closed in a loop-form, and the string may travel along a two-dimensional surface. Hawking concludes his discussion of the unifying theory of physics by writing: "A complete, consistent, unified theory is only the first step: our goal is a complete *understanding* of the events around us, and of our own existence" (p. 169).

As I read this last line, the near-death researcher in me could not help but think that the synthesis of the unification theory of physics with the theory of the near-death experience (NDE) gives us one way to meet Hawking's goal of understanding the events around us and our own existence. The synthesis of these two seemingly disparate areas of study may give us a unification of a physics/metaphysics theory to provide us with a more complete understanding of life, the universe, and the cosmos, from the smallest bits of energy of quantum mechanics to the infinite loving energy of the Light. The answer may lie not in a competition between physics and metaphysics for the "right" unifying theory, but in the integration of the two. With this in mind, I did find several ways in which physics and near-death studies interconnect with one another as I read *A Brief History of Time.*

Hawking's book helps near-death research in at least four ways. First, Hawking provides a physicist's explanation of time, which in some ways is not unlike the concept of time described by NDErs. Second, Hawking gives the reader a brief lesson in the history of the science of physics, a lesson that has great relevance for near-death research. Third, he clearly lays out the scientific methodology of physics, a process with implications for near-death research. And last, Hawking takes us on a journey into fantastic and unbelievable physical realms, from which I was left wondering which was more incredible, the realm of quantum mechanics or the realm of the NDE.

## Time

The string theories mentioned above "seem to be consistent only if space-time has either ten or twenty-six dimensions, instead of the

usual four" (p. 162). While Hawking does not explain why the numbers 10 and 26 are predicted by string theories and while we are still dealing with theoretical physics here, there is, nevertheless, the suggestion that other dimensions may exist besides the three spatial dimensions and the one temporal dimension of "ordinary reality." Perhaps one or more of these additional dimensions are where our NDErs travel during their out-of-body experiences.

Since the advent of the theory of relativity, Hawking says, we are forced to abandon our notion of absolute time. "Thus time became a more personal concept, relative to the observer who measured it" (p. 143). "Each observer has his own measure of time" (p. 87). Near-death researchers are quite familiar with the myriad descriptions of time given by NDErs: from time being distorted; to time being impossible to determine ("The NDE could have taken a second or an eternity—I just don't know which"); to "It seemed as if I was travelling at the speed of light." The near-death literature clearly shows the personal and relative nature of the descriptions of time given by NDErs.

Last, Hawking introduces us to a concept called "imaginary time," which is a well-defined mathematical concept, according to the author. If one measures time using imaginary numbers, rather than real ones, the distinction between time and space disappears completely. There are no differences between the forward and backward directions of imaginary time; one can go in either direction. Hawking writes,

> This might suggest that the so-called imaginary time is really real time, and that what we call time is just a figment of our imaginations. In real time, the universe has a beginning and an end at singularities that form a boundary to space-time and at which the laws of science break down. But in imaginary time, there are no singularities or boundaries. So maybe what we call imaginary time is really more basic, and what we call real is just an idea that we invent to help us describe what we think the universe is like. (p. 139)

For students of the near-death experience, what Hawking is saying here seems quite similar to what NDErs collectively say about their experience: that their NDE was more real than ordinary reality; that time doesn't exist in an NDE as it does in "real" life; that one could see the present, the past, and the future simultaneously during the NDE, or that one could go backward and forward in time during the NDE; and that the paradox is that what we think is real is not—that nearly dying tells us that our real home is in the light and our imaginary home is in our physical bodies.

## History of the Science of Physics

Hawking, in a nonsystematic way, alludes to the history of the science of physics throughout his book. Several of the points he makes about research in physics are relevant for research into the near-death experience.

First, we know from the history of physics that a concept can be put forth, and even accepted, even though that concept has not been detected or proven. For example, gravitons, "what classical physicists would call gravitational waves," have never yet been observed (p. 70) and yet are an accepted concept of physics. Neutron stars could not be observed when first predicted and were not detected until much later (p. 84). And black holes were theorized before observational evidence supported the theory. Opponents of the black hole theory used to argue that "how could one believe in objects for which the only evidence was calculations based on the dubious theory of general relativity?" (p. 92). Near-death researchers may take heart from our colleagues in physics who have been, and still are, confronted with the situation of developing a theory before there is enough evidence to substantiate that theory, the same position in which we near-death researchers frequently find ourselves.

A second point to come from Hawking's understanding of the science of physics is that what we know today may be very different from what we will know in the future. Thorne said in his lecture that it took 50 years before there was enough evidence for the scientific community to accept the phenomenon of black holes. Hawking points out that what were considered the elementary particles of 20 years ago are not the elementary particles of today. The history of physics has numerous examples of changes in the establishment's thinking and the evolution of theories over time, such as a geocentric universe to a heliocentric one to the Earth on a spiral arm of the Milky Way galaxy; or Newtonian physics to the theory of relativity to quantum mechanics to the string theory. Again, near-death researchers should take heart that just because we can't explain or prove today everything NDErs tell us about NDEs doesn't mean that we won't have more evolved explanations or more powerful evidence in the future. It took physicists several centuries of research to get to where they are today; near-death research started in earnest in 1975.

Hawking also points out that criticism of new ideas from contemporaries happens within his field. Indeed, it happened to him as he was presenting his findings on the emission of radiation *from* black holes. His idea aroused a lot of opposition initially because it upset the

existing viewpoint, as the prevailing thinking at that time was just the opposite. So, again, even though our colleagues from various scientific disciplines and medical fields may call the near-death experience nonsense, just as a Hawking colleague so labeled Hawking's calculations on black hole emissions, calculations that turned out to be correct, we may take comfort in knowing that near-death research may then be challenging the prevailing paradigm of science. Near-death research may be upsetting the "existing viewpoint" from which paradigm shifts are made.

## Predictions

Throughout the book, Hawking alludes to the methodology of astrophysics. His point is that current theories are, of course, based on the measurements and the observations made so far. But in order for a theory not to be discarded, it must make *predictions* with respect to future observations and experiments.

Near-death studies, while still in their infancy, are beginning to make just such predictions. The work of Kenneth Ring, Bruce Greyson, Melvin Morse, and others on the aftereffects of NDEs is an example of being able to make predictions based on the current theoretical model. As near-death studies evolve as a science, we will need to look more and more at the predictability of our theories within the science. For example, if our theory is that a Stage 5 near-death experience redirects a person's life in a more spiritual way, will we be able to predict who then might have an NDE?

## What's More Fantastic?

As I was reading Hawking's book, he introduced me to a universe of physical phenomena that seem fantastic and incredible to me: black holes; imaginary time; antiparticles, antitime, antipeople; quarks, gluons, mesons; supergravity; a universe *with* a boundary; the total energy of the universe being *zero;* the fact that the light I see coming in my window as I write this left the sun eight minutes ago; time measured in light years so that the dots of light I see in the night sky may be from stars long ago extinguished or are from stars that are actually in another part of the night sky but look like they are where they are due to the bending of light from gravitational forces. These are amazing concepts and phenomena to my mind.

And so I began to wonder what is more amazing, the concepts in Hawking's book, or these: having an out-of-body experience and being able to describe accurately medical resuscitative measures being performed on one's body; traveling through a dark tunnel; having a life review; experiencing no sense of time; getting a peek at the future; meeting a deceased relative who sends one back to one's body; feeling love and acceptance from the being of light? I don't think what we are talking about here is a binary proposition. Both Hawking's universe *and* the NDEr's universe are amazing. Perhaps we are simply talking about a universe unfamiliar to a respective group of researchers. As a near-death researcher, I am not highly familiar with the universe of physics. And, it may be that many of the physical scientists are just not familiar with the universe of NDErs. Perhaps it's the unfamiliarity that makes it seem unbelievable.

The more I read and thought about Hawking's book, the more convinced I became that a reciprocity exists between near-death research and astrophysics research. Not only does research in physics help explain some of the NDE findings, but near-death research helps answer some of the questions posed by Hawking in *A Brief History of Time.*

## Four Dimensions

At the end of the book, Hawking writes, "The question remains, however: How or why were the laws and the initial state of the universe chosen?" (p. 173). Why is it that we live in three dimensions of space and one dimension of time?

Near-death research does provide a possible answer for Hawking here: The above conditions allow humans to experience *pain.* Unlike our NDErs who almost to a person say they were painfree while in their altered state of consciousness or in another dimension of the universe, the three dimensions of space and the one dimension of time provide both physical and psychic pain from which there can be transformational experiences for that person's psychological and/or spiritual growth.

## Our Place in the Universe

Also in the conclusion of his book, Hawking says:

> We find ourselves in a bewildering world. We want to make sense of what we see around us and to ask: . . . what is our place in [the universe] and where did . . . we come from? (p. 171)

Again near-death studies offer some help here.

It is not uncommon to hear people who have had deathbed visions say they are going "home," back to "the Light." In the altered state of consciousness when near death and looking up to greet the spirit or spirits who have come to assist in the transition, the dying person might say something to the effect that these spirits have come to take him or her "home." The implication then is we come from the Light and we go back to the Light, which is one answer to Hawking's question above.

## Entropy

Hawking talks about a "thermodynamic arrow of time," a direction to time in which disorder or entropy increases. "The increase of disorder or entropy with time . . . distinguishes the past from the future, giving a direction to time" (p. 145).

He asks why the thermodynamic arrow of time exists at all. He then proceeds to try to answer that question, first by using the classical theory of general relativity and then by using the quantum theory of gravity, concluding by saying that his revised calculations show that entropy would still *increase* with a universe contracting on itself.

But as I read this section on entropy, I thought about another explanation, not incompatible with the physical explanations, for the second law of thermodynamics: without entropy, there would be no death. And, without death, there could be no return to the realm or the dimension(s) of the near-death experiencer. So here again we see how the synthesis of physics concepts with NDE concepts can provide us with a fuller understanding of the universe. "A complete, consistent, unified theory [of physics] is only the first step: our goal is a complete *understanding* of the events around us, and of our own existence" (p. 169), writes Hawking. And so it is that with the synthesis of these two seemingly disparate disciplines that we can begin to approximate Hawking's goal for a complete understanding.

## God

Carl Sagan, who authored the introduction to Hawking's book, states:

> This is also a book about God. . . . The word God fills these pages. . . . Hawking is attempting to understand the mind of God. And

> this makes all the more unexpected the conclusion . . . :a universe with no edge in space, no beginning or end in time, and nothing for a Creator to do. (p. x)

Hawking makes a similar statement:

> But if the universe is really completely self-contained, having no boundary or edge, it would have neither beginning nor end. . . . What place, then, for a creator? (p. 141)

While Sagan and Hawking seem to have limited themselves by making the assumption that God has no role in the universe once the universe was started and then is functioning according to precise physical laws, once again near-death studies provide us with an expanded vision of God.

First, we do get an understanding of the mind of God from NDErs who have been enveloped by the Light. We are told the Light is unconditionally loving and forgiving, and intelligence itself. Second, we know from near-death studies that God is not as passive as Sagan appears to suggest and as Hawking seems to wonder. Perhaps God does not intervene in the physical laws governing the universe once the Big Bang, or whatever has started the process, has taken place. But we know that God may intervene in the lives of NDErs, hardly a passive role. For example, the near-death literature has many cases where the NDEr is either given a choice by the Light to return to the body or directly told by the Light that this is not the right time for this person, and that he or she *must* return to the body. Also, the Light has a most important role in the life review where the NDEr feels all the pain he or she has inflicted on others. Without the loving and forgiving Presence present during this kind of life review, such a life review would, indeed, seem to be a most unbearable task.

## Conclusion

Hawking concludes his book with the following thoughts. The scientists have been busy trying to describe *what* the universe is and have not asked *why*. Philosophers have asked *why* but don't have the technical background to keep up with the *what* question. Therefore, "if we do discover a complete theory, it should . . . be understandable in broad principle by everyone, not just a few scientists. Then we shall all, philosophers, scientists, and just ordinary people, be able to take part

in the discussion of the question of why it is that we and the universe exist" (p. 175).

Even though he doesn't say it, Hawking implies here that the complete theory may lie in the collaboration and cooperation of specialists in quite diverse fields. He does mention "ordinary people" taking part in this discussion, too, and it is interesting to note that more than one NDEr, having had a deep near-death experience, has come back saying, "I don't know why God or Jesus talked to me; there's nothing special about me. I'm just an ordinary person." So before we become too pretentious with our specializations, we need to be willing to listen to everyone, regardless of training, who is willing to participate in this discussion.

Thus, one step toward achieving a complete theory of why we and the universe exist would be the synthesizing of near-death research findings, based, in part, on what we are told by "ordinary people" who turn out to be "extraordinary people," with the unification of physics theory. For those engaged in the research of astrophysics, reading Moody's and Ring's works would be just such a start. And, for those of us engaged in near-death research, reading Hawking's book seems a most helpful beginning.