



Vital Signs

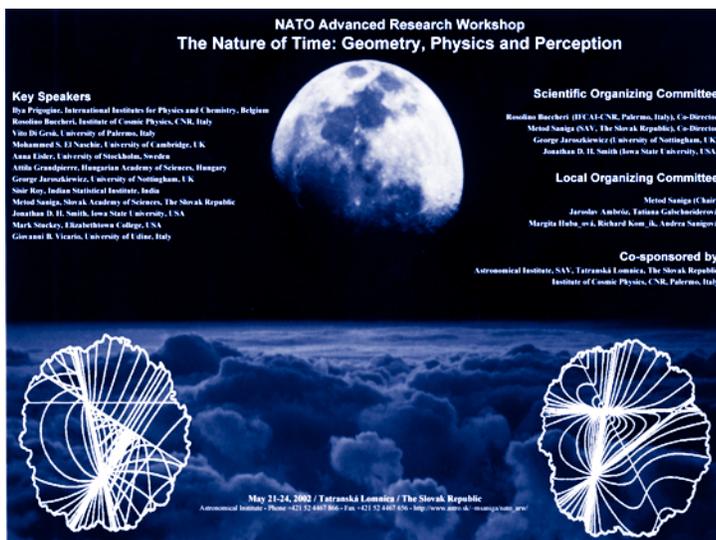
The International Association for Near-Death Studies, Inc.

Vol. XXII, No. 2, 2003
\$5.00

PHYSICIST USES NDEs TO CLARIFY THE NATURE OF TIME

by Paul Bernstein, Ph.D.

This year at professional conferences in Oxford, Paris and Prague, as last year at academic gatherings in Germany, Italy, and Greece, European astrophysicist Metod Saniga explained to his scientific colleagues how the NDE research of Raymond Moody, Kenneth Ring and PMH Atwater has helped him to develop a mathematical model of time that seems to offer solutions to problems that have vexed scholars since Einstein.



Poster announcing the international Advanced Research Workshop on the nature of time, co-directed by Dr. Saniga.

In brief, Dr. Saniga takes seriously the testimony of NDErs when they describe being in a realm where “time stops”, and where some of them “see the past, present, and future all at once.” To this occurrence of what he calls “the Pure Present”, Dr. Saniga adds the experience of mystics, clairvoyants and others who’ve experienced suddenly being in the *future*, and still others who describe being drawn involuntarily back into the *past*.¹ Saniga uses these “anomalous experiences” to show that a single mathematical model can account for *both* the conventional and the extraordinary ways that humans experience time. Yet the model also remains compatible with what is known about time throughout the *physical* universe, and even sheds interesting light on the possible nature of time and space at the very early period of our Universe just after the Big Bang.²

MEDIA WATCH:

MAGAZINES HIGHLIGHT NDEs’ IMPLICATIONS

In August, the mass-circulation *Reader’s Digest* (11 million copies monthly) carried a cover story entitled *New Evidence: Life After Death*. Inside, the article was subtitled *The Scientific Case for the Human Soul*, and it focused on recent research into near-death experiences. The following month, the avant-garde health magazine *Spirituality & Health* (85,000 circulation) carried a cover story entitled *Beyond Fear: The New Science of Near-Death Experiences*.

What caused these two articles to be written just now?

In the case of *Spirituality & Health*, it was the journalist herself, Jill Neimark of New York, who suggested the NDE topic to the magazine’s editors: “It was my interest after seeing Pim Van Lommel’s study in *The Lancet*,” she told *Vital Signs*.

“I thought it was a good robust study, so I asked the editor of *Metanexus*, the

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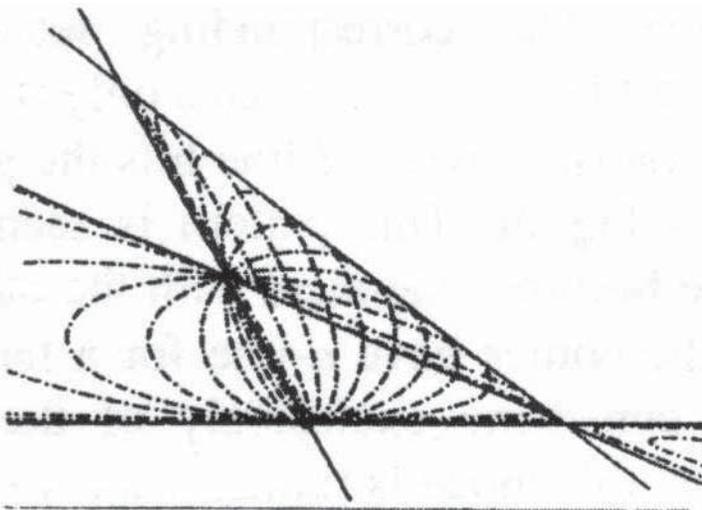
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Because the same mathematical principles can connect all these different experiences—both physical and psychological—Dr. Saniga asserts that any attempt to dismiss non-ordinary states of consciousness like NDEs “as pure hallucinatory phenomena would simultaneously cast a doubtful eye on the very role of mathematics in our understanding of Nature. To the contrary, it is mathematics itself...that tells us that it is far more natural to expect all these ‘unusual’ perceptions of time to be simply *as real as* our ordinary (‘normal’) one.”³



Dr. Saniga’s model cannot be fully described without using the specialized mathematics known as ‘algebraic projective geometry’. And since most of us have not been trained in that math, I am forced to risk oversimplifying his explanation a little bit here, in order to share it with the general public.

Recall how we all commonly think of time, as we go about our daily lives: time seems to be a simple ‘arrow’ or straight line running from the past, through the present, and pointing toward the future. However,



Geometric representation of NDEs’ experience of time as “pure present”

as Dr. Saniga points out, the fundamental equations of physics do not really insist on such a one-directional experience of time:

It is a well-known fact that the fundamental equations of physics are time-reversible, i.e. *they do not distinguish between the past and future*. Moreover, the very concept of the present, the now, has no proper place in the temporal of physics at all; this holds true whether one is talking of classical physics, quantum mechanics, or relativity theory.⁴

In other words, our “arrow of time always moving forward” experience, seems to be strongly related to what *we humans create as our experience* of time, not to any invariable aspect of physical time itself.

So in order for Dr. Saniga to encompass within one model both the conventional notions of physical time and the subtleties of human ‘subjective’ time, he found it necessary to expand beyond the simple *line* model of time. Consequently, instead of representing each event as simply a *single point* along a line of time, he found that a single event can more accurately be represented as a *curved line* within a group of “conics” (curves like parabolas and hyperbolas). And to express that most precisely, most scientifically, Dr. Saniga found that he should use both geometry (which is the mathematics for describing shapes like those curves) and algebra (which is the mathematics for describing relationships among such shapes).

To his surprise and delight, this combined ‘algebraic-geometry’ description then accurately predicted many variations in time that scientists have already observed in *both* the physical and the psychological worlds. The resulting model is a series of diagrams and equations that embrace the “ordinary” and the “anomalous” manifestations of time, including the following near-death experiences Dr. Saniga selected from the writings of NDErs and their researchers:

(1) “After...going through this long, dark place, all of my childhood thoughts, my whole entire life was there at the end of this tunnel, just flashing in front of me....*Not one thing at a time, but ...everything at one time. It was just all there at once.*” [An experiencer quoted in Dr. Raymond Moody’s 1975 book, *Life after Life*⁵].

(2) “Personal flash-forwards...take place while an individual is undergoing an NDE...*It is as though the individual sees something of the whole trajectory of his life, not just past events...To the NDEr they represent events of a conditional future — i.e., if he chooses to return to life then these events will ensue. In this sense, a personal flash-forward may be likened to a “memory” of future events.* [Dr. Kenneth Ring, in his 1984 book, *Heading Towards Omega*⁶].



When Dr. Saniga moves from such human experiences of time to cosmological conditions of time, his model suggests what might have occurred during the creation of our universe. “There is a growing suspicion among physicists,” he reports, “that the Universe might have been born with a different dimensionality than what we observe [today].” Specifically, instead of the 3 dimensions of space and 1 dimension of time that we are used to, the early Big Bang situation would seem to have been the opposite: *only one dimension of space—accompanied by three dimensions of time.*⁷ And instead of this startling notion having to remain a mere speculation, Dr. Saniga states that his model can, in principle, be tested by astronomers in the near-future, once sensing devices that look into deep space become more sensitive—because his equations predict that one of our current three dimensions of space should be slightly different from the other two spatial dimensions.⁸

Just as intriguing, this understanding of *physical* dimensionality matches some views of *spiritual psychology*, as expressed for example in a book by psychology-philosopher Michael Washburn, professor at Indiana University, and summarized years before Dr. Saniga had published his works, as follows:

Washburn asserts that who we ordinarily think we are (our ego) is only a part of our experience. The vaster part he calls the Dynamic Ground, in which he unites what others call our unconscious, our instincts, our libido, and the spiritual forces that inspire us. ...

Because the ego will cause its own misery if it remains closed to the Dynamic Ground (which it made unconscious during early childhood), people can hardly avoid a spiritual life eventually. The ever-so-common 'mid-life crisis', like the ancient's 'dark night of the soul', is the opening of the ego to the forces it had closed itself off from, during its earlier (and necessary) stage of development.

Our ego, in other words, is good enough at operating in *the 3-dimensional world of matter and unilinear time*, but cannot of itself encompass *the world of eternity in which this 3-dimensional world is suspended*.⁹

In agreement with this psycho-spiritual understanding, Saniga's equations show that our 3-dimensional 'time-bound' world might indeed be suspended within a much vaster, endless, world of eternity. He adds a particular category of mathematics called "Cremona transformations" to reveal that our usual world of 3 spatial dimensions and 1 time dimension may very well be just an "island" in a much larger "sea" that is its opposite. As Dr. Saniga expressed this mathematical discovery to his academic colleagues:

There exists a totally amazing 3-to-1 splitting in the character of...fundamental elements. . . .The far prevailing mode is...*one spatial dimension...and three time dimensions*. The [everyday] configuration of 3 spatial with 1 time dimension can be seen as a mere 'island' in the 'sea' of 1+3's.¹⁰



How have his colleagues responded to this model? "The reaction has been positive," he wrote me, "but so far not many people have delved deeply into the ideas behind it." Jonathan Smith, mathematician at the University of Iowa, said, "I'm skeptical at the moment—but I'm willing to be convinced." At the same time, one Harvard astrophysicist wrote:

Saniga demonstrates that there are coordinate systems within a simple transformation of our present system that explain the broad range of time phenomena found in the psychiatric literature. Of course the demonstration that this is possible does not prove that it is true, but it does explain a lot of 'data'. And that is all you can ever ask of such a theory, so it deserves to be read and pondered.

Consider an analogy to the Einstein relativity principle, which showed that you do some transformation of the time and space coordinate systems to produce the result that the velocity of light is always constant, and all mass has an equivalence principle where the gravity associated with mass is equivalent to acceleration. The report by Saniga reads a lot like Einstein's *Special* Theory of Relativity, while the part equivalent to the *General* Theory of Relativity remains to be discovered.

And some NDErs who've read Dr. Saniga's work find a strong resonance in it to their own experiences. For example, a



Dr. Saniga (kneeling in center, hand on lawn) with international research colleagues

retired Air Force colonel from Texas wrote to Dr. Saniga:

I was most interested in your work on 'dimensionality of space'In 1957 when I was 13 years old, I was electrocuted with 7,200 volts and had the classic NDE experience. From that accident, and to this day, I am convinced . . . our world is not [just] a 3-dimensional one. . . .The conventional distortion is the construct of a "past", a "now", and a "future" At the earliest level of my NDE journey...that human construct fell away, that 'arrow of time'. . . .Then followed a series of increasing levels of consciousness. I clearly recall the joy of additional dimensionality, of wanting to pause and celebrate the arrival of each [additional dimension], . . .the blooming and opening up of another one....

At around the eighth level...I was beyond any joy I have ever known....But I was becoming distracted by the approach of the Light....The engulfing of the Light around me, the Being, and my Exchange with this Being, I strongly sense took place at a 10th or perhaps higher level of dimensionality.¹¹

Back in [our daily] three-dimensional existence, I see those [other] levels reduced to something like the presence of multiple panes of glass you view through, to see your sweetheart approach in her car outside your office. You see your sweetheart and her smile, oblivious of the 12 panes of glass you are viewing her through. It is not germane to the human experience, but we coexist in this multidimensional world just as a cube drawn on a blackboard exists in ours....

I sense, Dr. Saniga, that you are perhaps far more courageous to present this to your peers than I was when I came forward finally in 1981 to discuss my 1957 NDE. What excites me is your apparent suspicion that science in its present structure and approach is wholly ill-prepared to address this domain....Your discipline in the sciences combined with your tolerance and appreciation of this material is very powerful.

Because Dr. Saniga continues to gather NDEs for his research, you may email him at msaniga@astro.sk if you wish to tell him about the role of time in your own particular near-death experience.

PHYSICIST USES NDEs TO CLARIFY THE NATURE OF TIME

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- ⁸ Metod Saniga, "On Spatially Anisotropic Pencil-space-times Associated with a Quadro-cubic Cremona Transformation", *Chaos, Solitons and Fractals* 13 (2002) pages 807-814. Available online at www.ta3.sk/~msaniga/pub/ftp/cremona2.pdf.
- ⁹ Paul Bernstein, "Life's 3 Stages: Infancy, Ego, and Transcendence", 1998. Online at <http://members.tripod.com/pbernste/life3.htm> .
- ¹⁰ Metod Saniga, "On an Intriguing Signature-Reversal . . ." *Op. cit.* page 740.
- ¹¹ This might recall to some readers the 11 dimensions reported by modern physicists as potentially the essential structure of our universe. (See, for example, chapters 8 & 12 in Brian Greene's *The Elegant Universe: Superstrings, Hidden Dimensions, and the Quest for the Ultimate Theory*, Vintage Books, New York, 1999).

Dr. Metod Saniga conducts his research at the Astronomical Institute of the Slovak Academy of Sciences in Tatranska Lomnica, Slovakia. He also has worked at scientific institutions in Belgium, Italy, France, Germany, Hungary, Japan, Britain, and the USA. 



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