

'Chaos is the disordered dance of order'

In the late 1800s, King Gustav of Sweden, the story goes, offered a prize to anyone who could prove that the solar system was either stable or unstable. Poincare, a well-known physicist, proved that the system was stable, won the prize and even sent his proof for publication.

Just as the proof was to be published, he discovered a flaw in the proof and said, "hey, wait just a minute, there is a 'mistake' in my proof." When he started analysing that "flaw," he started a scientific discipline that in the 21st Century physics and mathematics is finding some very interesting applications.

Dr. Vaidya, a scientist at the National Institute of Advanced Studies here, is very much in love with what Poincare's flaw threw up.

"Chaos is the disordered dance of order," says Dr. Vaidya, an expert in mathematical modelling, among other things, at the National Institute of Advanced Studies here. It is sensitive to initial conditions, does not repeat itself, lacks long term predictability but is still deterministic and remains bounded.

Dr. Vaidya is currently working on developing a mathematical equation, that would accurately represent the way the human heart functions. "If we are successful, it (the equation) could be used to make the diagnostics related to the human heart much more rigorous than is presently possible," he says. Visit him at his compact room and office all rolled into one at NIAS and knock on the usually not closed door and say, "professor, there



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Dr. Vaidya

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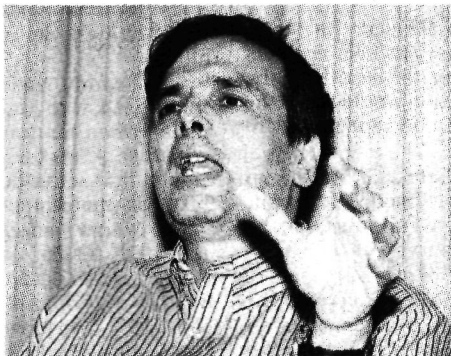


Photo: Sampath Kumar G.P.

A genial person, he takes his work seriously.

is this equation that I am having trouble with." Chances are you will be greeted by a warm boyish

smile, but you better be prepared for at least an hour or so of serious stuff. You might have wanted to just impress him with your doubt, but he takes his work very seriously.

If you persist, you will fall for his amazing ability to go from one idea to another effortlessly, making each sound more exciting than the previous one.

The problem with the "heart equation" is not the first time he is using chaos to find some solutions.

He successfully developed a method, which he called trans-spectral coherence, to analyse speech patterns in humans. The system could pick up early warnings of the development of polyps on the vocal chords of human beings. The point is, he says, modulated voice is periodic, but tired voice could be chaotic.

His own determined work is anything but chaotic though, in the way we would use the word chaos. He can draw a clear picture of all the facets of a given factor, and trace for you where each part of it stands, what is required to take the work further and so on.

There is more we could tell you about this professor.

But we will leave you with this very human anecdote he related once about a friend in Mumbai, which is where he comes from. "Many years ago, I used to visit a friend who gave me solace when I was troubled. I would walk along the beach in Juhu. Today, I go to visit that friend, and I find that they have destroyed my friend, with all that pollution. Ultimately, is it not the aim of all our research, to save that friend."