

A Conversation with Adrian Lenardic

Planetary thermal evolution, fluid dynamics, mantle convection, skateboarding.

Interview by Larisa LaMere.



At the skate park. Photo by Adrian Lenardic.

Dr. Lenardic, we at Rice know you as a highly accomplished geodynamicist and planetary geophysicist. But if somebody from outside the academic realm asked you at a party, “what do you do?” how would you answer?

That happens quite a bit. I usually start by saying I work at Rice and then wait to see what happens. The range of things that people have said to fill in the blank “Oh...Rice, so you _____” has been interesting. For the longest time one of our friends, from a Vespa group that my wife and I are a part of, assumed that I worked at Rice Epicurean (a grocery market). If people follow up, I tell them I teach and do research related to the evolution of our planet and how our planet compares to other rocky planets in our solar system. If they are curious beyond that I give some examples such as “Most recently I have become interested in how volcanic and tectonic activity interacts with the climate of our planet over long time scales and how that feeds into the conditions that have allowed for life on our planet over geologic time.”

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You recently had two groundbreaking papers published in Nature and Astrobiology about Earth's climate evolution and new potential for life on other planets. What was your most surprising finding from these studies?

Related to surprise, I can give you a quote from a paper we have in review: "... an enduring insight we as people have gained from our explorations of terrestrial planets, and satellites, thus far in our history of such exploration: Each has provided us with surprises and all, to variable degrees, appear to have evolved differently." Sometimes there is a perception that science, what with the laws of nature it has discovered and the rules it lives by, is a boring thing because "laws" tend to imply limited possibilities in terms of what can exist and in terms of what one can discover and, given that, there can be no true surprises. In my experience that is incorrect. Laws of nature mixed with evolutionary/historical contingencies allow for a range of diversity – a diversity we can study so as to gain some understanding (literally to stand below and see the structure). That diversity, within the laws of nature, when I step back a bit from the desk or the computer, still surprises me to no end.

Good mentors have the ability to influence the course of our lives. Who was your primary mentor while you were a student?

In graduate school it was my advisor William Kaula (Bill). Bill was one of the only professors at a major university who did not have a PhD – developing a new field will do that for you. It's rare. What it meant for Bill, in my recollection, is that he could break out of conventional lines of thought. There was a joke amongst graduate students that you had to learn Kaulaese (his own unique way of thinking and expressing thoughts) before you could even start to appreciate what he could teach you - not everyone learned his language and I have always felt lucky I did. He had little time for nonsense (a word he enjoyed), which was a term that went beyond just right and wrong answers to science problems but also applied to not getting bogged down in irrelevant formalities and/or imposed procedures that made no sense and/or feeling compelled to pursue problems simply because they could get you grants and/or publications. His take was to tackle problems that interested you at your core and (I recall him saying this to me directly) problems you actually had the skills for. In other words, he meant that I really needed to know myself and be myself before I could really contribute to science.

Bill also had a way of keeping the pressure off and reminding you that research, even if difficult at times, was supposed to be enjoyable. My family is first generation immigrants from Croatia, who started an auto body/mechanics shop when they came to the U.S. There's a Croatian saying that goes, "if you put the child on his or her feet and they are happy, you have done your job well." Being happy in what you are doing is primary and the job title itself is secondary – whatever you do is seen as valuable and there is no sort of rank ordering. My family is proud of me, of course, but that has nothing to do with any sort of job title. That has kept me grounded.

*Adrian Lenardic
is a professor of
geophysics in the
Earth Science
Department.*

I've heard that you skateboard. What's it like to be a part of the Houston skating community? Have you made future scientists out of any younger skaters yet?

Being a skater is integral to my sense of identity within Houston. That may sound all hoity-toity but it's the most honest answer I can give you short of taking you out skating with me for a year or two so you can experience it for yourself. I do it because it is what I love to do. I have talked to plenty of kids in the skate parks and they all know I'm a scientist. I don't know about making science-disciples, but they do but they do like to ask me questions about the earth or other planets or about the physics of skating and I'm always happy to tell them what I know. The interest is genuine and the questions are great. I don't know the answer to a lot of them so we talk about them and see if we can work out an answer or maybe an experiment we can do to address the question - to me, that's education at its best (and by that I also mean education for me).

Is there anything else you think we should know about you? Favorite equation?

Favorite equation? I like that. I recently ran across a book called *Formulas for Now* (edited by Hans Ulrich Obrist). The book asks a range of Scientists and Artists to present "equations". The first contribution that got stuck in my head is from Gregory Chaitin (a mathematician) and is related to the halting problem (in short, the probability that a computer program will stop versus continuing to calculate - you can write an equation for the probability but it turns out the precise numerical value of the probability is incomputable and irreducibly complex). He gives the equation and then provides an interpretation: "The probability can be interpreted pessimistically, as indicating that there are limits to human knowledge. The optimistic interpretation, which I prefer, is that the probability shows that one cannot do mathematics mechanically and that intuition and creativity are essential". The other is from Gino Serge (a physicist and author of some great popular science books).

Art = Beauty

Science = Beauty

Art/Sci* is the limit

***indeed the Sci's the
limit**

by Gino Segre