CHAOS, COMPLEXITY & CHRISTIANITY

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Welcome to Chaos, Complexity & Christianity, a class about love and peace based on modern science.

This class is the outgrowth of my teaching and research as a Professor of Hydrology at the University of California, Davis.

Before briefly describing the class, I would like to say a few words about myself.

I was born in Cartagena de Indias, in lovely Colombia, South America, and have been in the United States since 1980.

After finishing a couple of undergraduate degrees in Mathematics and Civil Engineering at Universidad de los Andes in Bogotá, the capital of Colombia, I came to Boston to pursue my graduate work at MIT.

There, I got a couple of Master’s degrees, in Civil Engineering and Operations Research, and my Doctorate in Hydrology, the science of water.

My original plan was to return to my home country, but destiny conspired against it and I have been blessed having a second home at beautiful Davis since 1986.
• So that you better appreciate the material before you, I ought to say that when I came to Davis I was not much of a believer.

• I was baptized by my parents as a Catholic, but unfortunately my family did not practice much of their religion.

• Although I believed then in the existence of a God, I thought of Him as an unapproachable and remote being and, as such, I just went ahead with my life, “like everybody else.”

• As I came to Davis, the scientific field of Chaos Theory was in full bloom and those beautiful and simple ideas had a deep impact on my approach to hydrologic research.

• I immersed myself into the physics literature and little by little I gained understanding about the emerging field of complexity and about its fascinating universality.

• By 1989, and when I was a starting Assistant Professor, some beautiful ideas came to me and, rather quickly, such resulted in an unforeseen bridge between disorder and order.

• With my collaborators we found, and in truth not searching for it, that there was a mapping capable of transforming the ever-present spikes and violence of turbulence into the smooth and harmonious bell curve, a universal icon of freedom and independence.
• These findings, providing a *universal* antidote to disorder, inspired the question: Where can I find such transformation?

• Naturally, I searched first for a physical explanation, but there I could not find it.

• Despite my inherent resistance, only a metaphysical interpretation appeared sensible, for the ideas hinted to a topic that us scientists should not talk about, and that is **Love**.

• Few weeks after and following the sound advice of a good scientist and friend, I experienced the *flame of God* for the first time, in a *mystical* night of conversion that confirmed to my core the essence of my analytical findings.

• Additional details of my conversion may be read in my correspondence with Nobel Prize winner in Literature José Saramago. Just look at the bottom of the web page: [http://puente.lawr.ucdavis.edu/chaos_complexity_christianity.htm](http://puente.lawr.ucdavis.edu/chaos_complexity_christianity.htm).

• Soon after my unexpected and beautiful experience, I started to read the Holy Scripture that I have never read before.

• As I read and read, I wondered how could I have missed such beauty, for the word of God made lovely sense as it spoke directly to me.
• As time passed, and no doubt aided by the clarity brought by life’s trials and tribulations, I started to notice a consistent language linking the words of the Bible with the deep metaphors and symbols of modern science.

• As I spent my first sabbatical year at the world renown Santa Fe Institute, specialized in complexity research, I just decided to study in earnest trying to write down the connections I could see before me. This is how the manuscript “The Fig Tree and the Bell. God’s Love via Modern Science,” soon to emerge and the basis of this class, came to be.

• This class, given for the first time in 2001, is divided into eight lessons:
  
  – An introduction to fractals and complexity
  – The hypotenuse: the pathway of peace
  – Turbulence and Scripture
  – The essence of chaos
  – A lesson from a fig tree?
  – The eloquence of transformation
  – The bell’s central plea, and
  – The splendor of peace
• The first lesson provides an introduction to some key topics making up “complexity,” including themes such as fractals, power-laws, chaos, and self-organized criticality.

• The second and third lessons pertain to the dynamics of natural turbulence. First, it is explained how such happens in nature and how the same ideas provide suitable imagery to understand also our own division, including the pervasive inequalities in the world.

• Then, it is shown, consistently with Scripture, that there is indeed a single solution that, by avoiding turbulence, guarantees peace. Such happens to be Jesus Christ himself, potently symbolized by a straight hypotenuse.

• The fourth and fifth lessons are concerned with what I believe may be drawn from chaos. The explicit math of the theory and its many applications are explained first and then some unexpected and far reaching relations with Holy Scripture, including delicate eschatological topics, are advanced, pointing us to avoid all chaos to instead surrender to love.

• The sixth and seventh lessons pertain to our own discoveries of a transformation capable of reversing disorder. The ideas are explained in detail first and then connections of such with God’s invitation to faith and the cross are emphasized, together with other “theological vistas” that include even the Holy Trinity.
• The final lecture weaves yet additional symbols from power-laws and criticality that further summons us to God’s way in order to find peace.

• The last seven lessons end with a poem-song (or two) that summarize the main themes covered. I include the songs herein hoping that such would make the ideas yet more understandable. More poems-songs may be found on my web site under “Songs” in English, or “Canciones” in Spanish. Please visit (http://puente.lawr.ucdavis.edu).

• Finally, I like to add that I share these ideas in the spirit of friendship hoping that they may contribute to mend our broken world. I also offer them as an attempt to heed the call from former Pope John Paul II for a new evangelization.