via the turnover of inositol lipids, bring the sequence-specific photomorphogenetic effects to regulate the gene expression and subsequently the growth of plant.

The biological molecules transduce diverse signals with remarkable specificity. The interaction between hormone receptor, enzyme and substrate or antigen and antibody, molecular recognition involves complementarity of shape and charge at the interface. Molecular mimicry is now in the initial stages of being understood and can certainly play a pivotal role in the rationale drug design. Therefore, understanding the structural principle governing molecular mimicry could be important in its successful exploitation.

The more complex and sophisticated the regulation mechanisms of the biological system, the more they are able to adopt it. In order to get a better understanding of the adaptive and the survival strategies that the system can enjoy, it is thus necessary to gain an access into the phenomena that reveal the existence and performance of the regulation mechanisms of the system. Chapter sixteen deals with the biophysical approach to understanding the structure–function relationship in the photosynthetic approach.

The last three chapters basically deal with neuroscience. The neural control of arterial pulse measurement of oscillating arterial contractions should be in phase with, but uncomplicated by, the hydrostatic pressure change. Such measurements were observed by bypassing the flow of blood around arterial segments from which contractile activity was recorded. The rhythmic contraction was in phase with the cardiac cycle and was found to be of neurogenic origin that was triggered from a pacemaker region located in the right atrium. Behavioural expressions of living beings are complex phenomena and the use of biophysical properties in understanding the physiological mechanisms and phenomena is quite interesting. The last chapter deals with the modelling of neurons and the biological neural system which explains the functioning of the network of neurons at a system-level.

The authors of the various chapters are fairly experienced in their respective fields and have done a good job by giving an insight into the various aspects of biophysical processes in living systems, while the main author has to be complimented for trying to compile all these in the form of a book. I am sure this book will be an asset to any library or individual in the concerned subject.

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Earthshaking Science – What We Know (and Don't Know) about Earthquakes. Susan Elizabeth Hough, Princeton University Press, 41 William Street, Princeton, NJ 08540, USA. 2002. 230 pp. Price: US$ 24.95.

Perhaps no other branch of earth sciences commands so much public attention, as the science of earthquakes does. Why do earthquakes occur where they do? Can they be predicted? How much will the ground shake during an earthquake of a given size and how should the building be designed? These are some of the questions that are frequently asked by the public as well as the policy makers. In a more practical sense, the issue is about using the knowledge of earthquakes to quantify and thereby mitigate future seismic hazards. Even as the scientific community is struggling to fully address these and many other issues on the mechanism of earthquakes, there is a definite need to translate the scientific knowledge into formats that can be understood, by the public as well as the builders, policy makers and scores of others interested in disaster mitigation. Translating scientific knowledge to jargon-free and simple prose is not always easy, especially when the topic being dealt with is complex. *Earthshaking Science* by Susan Hough is one of the rare books that puts together almost everything that we know (and do not know) about earthquakes, in a remarkably simple and attractive style. Hough states in her preface that *Earthshaking Science* was 'born of a perceived need for clearly presenting basic information'. The second goal, she states, is to 'communicate the passion and excitement associated with earthquake science'. This book meets these dual goals marvellously well. It deals with issues in seismology in a way that most readers can understand, and leaves the more involved reader infected by the author's passion for the science of earthquakes.

Earthshaking Science is organized in eight chapters. The first chapter deals with the plate tectonics revolution. Although most books on earthquakes carry a chapter on plate tectonics, there are a few modern ones that deal with the history of development of this great idea that laid the foundations of modern-day understanding of earthquake processes. Hough succinctly summarizes the contributions of Alfred Wegener, Hammond Hess, Tuzo Wilson, Dan McKenzie and many others, leading the way to the modern-day GPS revolution. She sets a perfect stage to understand why earthquakes occur where they do; for example, in the San Andreas fault, in the US, North Anatolian Fault, in Turkey, Mainland China and the Rann of Kachchh, India.

The second chapter on 'sizing up earthquakes' deals with some of the basic concepts and terminology starting with the nature of *P*- and *S*-waves, epicentre and hypocentre. Concepts of elastic rebound theory, seismic moment, moment magnitude as well as earthquake nucleation models are explained with ease and simplicity. A good part of this chapter is devoted to the confusion over reporting earthquake magnitude. With half a dozen values and many conversion formulae to go from one scale to another, there is enough confusion over magnitude of an earthquake, as evident from the early reports on large earthquakes filed by the media. Hough gives a useful analysis and explains in simple terms why this confusion is bound to be there. This will be a useful reading for many, science reporters in particular.

The third chapter on earthquake interactions opens with a quote from Charles Richter, 'An earthquake of consequence is never an isolated event'. An observation penned in 1957, this idea has now reborn in the theories on stress shadows, triggering and fault interactions. The classic case of the 1992 Landers sequence of earthquakes is elaborated in some detail, leaving the reader a bit too perplexed with the complexity of earthquake interactions. Perhaps this is a bit

complicated for an average reader, but Hough admits that we are dealing with a problem too complex to be explained by the existing theories.

The fourth chapter is on ground motions. As most other chapters in this book, this one also starts with a little bit of history of ground motion seismology and goes through concepts of seismic wave propagation and attenuation. Site response is dealt with in detail, with excellent illustrations of how seismic waves are modified in a valley or due to a low-velocity sediment layer. Damage in Mexico City, located about 300 km away from the source of the 1985 earthquake, is presented as a classic case, among other examples.

Recent years have seen many debates about earthquake prediction – a topic that cannot be ignored by any popular book on earthquakes. *Earthshaking Science* devotes a chapter to earthquake prediction, touching on various types of precursors and the physical basis for their occurrence. Of course, understanding earthquake processes and the physics of precursors form the basis of any meaningful prediction programme. A couple of pages each are devoted to the much talked about Parkfield prediction experiment, and also to the VAN prediction method. Although there are no immediate hopes of successfully catching an earthquake alive, there are many seismologists who see prediction in the horizon. Of course, there is an equal or more number of people who think otherwise. Hough presents the basis for both these views, but the prevalent tone is that of hope and optimism – perhaps a reflection of her own faith in science.

Earthquake prediction being a rather elusive goal, the emphasis in the recent years has been higher on predicting and mapping seismic hazards. The chapter on mapping seismic hazard, the one that I liked most in this book, is an excellent summary of what is done in a seismic hazard assessment programme. The important inputs – information on seismic sources, effects of attenuation and prediction of ground motion, frequency-dependent response of buildings and role of site response – are explained in simple language. The illustrations and boxes are useful in communicating these ideas. This chapter ends on a philosophical note that once in a while we should question ourselves about what we do not know. Perhaps, it is good practice to follow, not only in dealing with earthquakes, but also in all other aspects of science and life. That there is a lot that we do not know about earthquakes is stated aloud, right in the cover page by adding a tailpiece to the caption: *What We Know (and Don't Know) about Earthquakes*. Those who attempt to predict hazard from future earthquakes would be the first to appreciate this confession, because they know that the list of unknowns is by no means small. But science has a way of getting there and this book brims with that hope. That hope and stimulus is what makes *Earthshaking Science* so special.

Chapter 7 is a journey back in time, dealing with the issue of how to extend our knowledge of past earthquakes beyond the instrumental and historic records. Reconstructing a region's past seismic history is no easy task, as evident from her narrations on the studies at New Madrid, southeastern United States, famous for the series of earthquakes of early 1800s. Perhaps there is no other site in the world that has been studied so extensively, and Hough gives an excellent summary of these efforts, including the inconsistencies in magnitude estimates. From New Madrid, Hough takes us to California, and to Pallet Creek where the science of palaeoseismology was born; she tells us how geologists work on imprints of past earthquakes to string together their story, sometimes with many links missing.

The last chapter on 'bringing the science home' essentially deals with translating knowledge on earthquake processes towards risk mitigation. Using examples of earthquakes from almost all over the United States, this chapter summarizes the general hazard scenario in that country. Seismicity in the stable continental regions, where earthquakes may occur much more infrequently, like that at Killari, also find place in this chapter. *Earthshaking Science* ends with a strong message that societal commitment to mitigate earthquake risk must be driven by public awareness and concern. Hough's definition of 'home' is North America, where she expects to find most readers. Understandably, most of the discussions in this book are on earthquakes and hazards in North America, but readers from other parts of the globe should also find it equally enjoyable. Hough's strength is not science alone; she is also gifted with a narrative style and craft that makes her science more palatable to a wide spectrum of audience.

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Data Mining Techniques. Arun K. Pujari. Universities Press (India) Ltd, 3-5-819 Hyderguda. Hyderabad 500 029. 2001. 288 pp. Price: Rs 325.

The field of data mining is attracting the attention of engineers, scientists and business people due to its application potential in a variety of important areas, including medical sciences, bio-informatics, forecasting, large-scale pattern recognition, and knowledge discovery in databases. It can have a positive impact on every large-scale decision-making endeavour. There are not many good books on data mining. This is because the area is still in a state of infancy. In this context, a comprehensive book on data mining is highly welcome.

This book offers a wealth of information on data mining. It deals with topics that are of interest to both the database management systems community and machine-learning community. Also, parts of the book form authoritative sources for researchers and practitioners in the area of statistical pattern recognition. It can be used as a textbook for teaching senior undergraduate and junior graduate level courses on data mining and pattern recognition.

The material in the book is well-structured into nine chapters dealing with various aspects of data mining, and an excellent collection of references to relevant literature is provided at the end of each chapter. Chapters 1–3 in the book deal with fundamental aspects of data mining, to provide an excellent platform for describing and analysing statistical data mining components, tasks and algorithms in the rest of the book. The third chapter, dealing with an introduction to data mining is written in an authoritative and a reasonably thorough manner.

One of the most important activities under data mining is mining for association rules. Chapter 4 deals with association