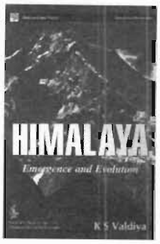
Himalaya: Emergence and Evolution

Rasoul Sorkhabi



Himalaya: Emergence and Evolution
K S Valdiya
Universities Press, Hyderabad
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The majesty and mystery of the Himalaya is as valid today as it was centuries ago when the famed poet Kalidasa described the Himalaya as 'Nagadhiraj', the King of Mountains. Mountaineers, surveyors, geographers, and geologists have all been baffled and mystified as well as educated and feel elevated by the Himalaya. But the significance of and the interest in these high mountains go beyond the dominion of any particular group. A great service that Himalayan scientists, mystics, and sportsmen can do is to share their findings and stories of the Himalaya and make the Himalayan experience a human experience. Those who have been to the mountains know that sharing is the Way of Mountains.

K S Valdiya is an eminent geologist who has studied the Himalaya for more than four decades. He cares about the Himalaya so much so that he has always attempted to share the passion of his profession with others. This book is his latest effort.

In 1987, Valdiya wrote *Dynamic Himalaya* (also published by the Universities Press). I was glad to read and review that book for the journal *Mountain Research and Development*. And now I am equally delighted to read and review this new book, aimed at readers with no prior education in geology. The author has used non-technical language and the book is abundantly illustrated (about 85 figures, some of which have two or three parts).

Through ten chapters, the author has successfully managed to describe the complex geologic history of the Himalaya. The Himalayan story spans from its pre-birth origin on the northern margin of India and in the womb of the Tethys Ocean through its birth some 55 million years ago as a result of the closure of the Tethys and the collision of India with Asia, to its emergence in the snows of yesteryears. But the Himalayan story has not come to an end. These mountains are the highest because they are also the youngest, and still continue to evolve and emerge.

The figures and numerical data in the book have been given without reference to the original sources (including the published works of the author himself). The citation below the figures and tables or the inclusion of the sources in a reference list at the end of the book would have conveyed to readers that much research work is invested to obtain a little bit of information in natural science. Nonetheless, the general books on the geology and geography of the Himalaya listed at the end provide the interested reader a portal of entry into this fascinating field and life.

This book will be quite useful for undergraduate students to learn about geology, in general, and about the Himalaya, in particular. This book should also be on the shelf of every geology teacher in the Himalayan countries. Others interested in geology or the Himalaya will also have their share of delight in reading this book.

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Please Note

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Page 22: Note the changes in Example 1.

Example 1: Consider the evaluation of the integral

$$J = \int_0^1 \cos(\frac{\pi x}{2}) dx.$$

Actually this is easily evaluated to be $2/\pi \approx 7/11 \approx 0.63636$. Suppose we wish to evaluate the integral by Monte Carlo methods. Following the above discussion, we can use the estimate

$$J_n = \frac{1}{n} \sum_{i=1}^{n} \cos(\frac{\pi X_i}{2})$$

where X_i are drawn from the uniform distribution on [0, 1]. We did that and the results and statistics are in Table 1 and in Figure 1. (See page 23, *Resonance*, April, 2003.)

To enhance the appeal of Monte Carlo integration methods, various techniques are used for making J_n more accurate. As remarked in Section 3, one such technique is choosing $g(x)$ to be approximately proportional to $f(x)m(x)$ for all x in the set D. In our example since $\cos(\pi x/2)$ is approximately $1-(\pi^2 x^2/8)$ (two-term Taylor expansion) and $(\pi^2/8)$ being nearly one, a reasonable $g(x)$ is a probability density proportional to $(1-x^2)$, i.e., $3(1-x^2)/2$. Results of such a simulation are given in Table 2 and Figure 2. (See page 24, *Resonance*, April, 2003.) This method is often called **Importance Sampling**, the function $g(x)$ being called the **Importance Function**. Here sampling is made efficient by drawing from regions of higher density using the importance function.

Page 37: Box 1. Unit of wavelength is micrometer (μm).

Page 49: Figure 4. The constellation 'Muscae' was erroneously mentioned.

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Page 2: 04 - In the title James Clear Maxwell should read as James Clerk Maxwell.
page number 67 - should read as 57; page number 64 - should read as 82.