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BOOK REVIEW:

Abundance by Steven Kotler, Peter H. Diamandis

Review by Dave Snell

We are the actuaries of the future, and as such, we have a special interest in the future. Most books and articles lately seem to be predicting gloom and doom: we will run out of fossil fuels (or energy in general); we'll run out of clean water; we'll run out of food; the earth cannot sustain our burgeoning population growth; diseases will run rampant; etc., ad nauseum.

So it was a real pleasure to read *Abundance*, a book that presents credible arguments that we are likely to have an abundance (hence the book title) of energy, clean water, food and good health.

The authors are not naïve Pollyanna types. Peter Diamandis is the founder of the X Prize, and that has sponsored some imposing challenges with incredible results. Previous X Prize challenges have resulted in privately sponsored sub orbital space travel, cars that get over 100 miles per gallon and synthetically created organisms to clean up oil spills. Steven Kotler is an award-winning science writer, and he and Diamandis collaborated on this excellent book.

The basic idea in *Abundance* is that technological advances emerge to solve problems of scarcity, and that the rate of these advances is proceeding at an ever-increasing pace.

The authors discuss historical shortages such as aluminum. Whoa! Did I just say aluminum? Yes, as it turns out, even though aluminum is the third-most abundant element in the earth's crust, it was very difficult to extract it from the bauxite clay in which it is naturally embedded. A technological breakthrough in 1886 caused aluminum to switch from one of the most expensive metals to one of the least expensive.

Progressively, they work through other shortages or predicted shortages and show how recent or emerging technology breakthroughs can turn these into similar success stories for humankind: turning salt water or even sew-

age to pure drinking water, vertically farming to save acreage and nutrients and eliminate the need for pesticides, growing beef from cells instead of raising and killing cattle (very wasteful and cruel—it takes 2,500 gallons of water to raise and deliver one pound of beef, and billions of animals are killed for food each year), harnessing the immense potential of the solar energy coming into our atmosphere each year—more than 5,000 times our current energy needs.

A driving force behind these advances is not the governments of the world, which the authors feel are hampered by bureaucracy and inertia, but by a new breed of technophilanthropists who make their fortunes at a much younger age and then decide to use their money and expertise to change the world for the better. Bill Gates is making progress fighting diseases such as malaria. Greg Ventnor is providing affordable genome analysis, and others are contributing in similar ways that were unimaginable just a decade or two ago.

They cite the explosive growth of cellular phone usage in Africa and state that a Masai warrior with a smartphone now has better access to information than that available to the President of the United States just 15 years ago. Another reason I liked this book so much was the extensive research references. This is not the type of book where the author quotes an ambiguous research study, or even worse, justifies his statement by a quote from



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CONTINUED ON PAGE 8

another one of his own books or a tabloid headline. All of the references were amply described and many of them had links to websites for further information. This is a book where I recommend the Kindle version over the print one to more easily navigate from the text to the references.

Abundance is a welcome read, and an inspiration for all of us. It shows that a single person, thinking more creatively, can make a big difference in helping to solve problems difficult for entire countries. We are each responsible for the future. Let's make it one of Abundance! ☆