



How the World Was One

Arthur C. Clarke

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Clarke, the 50 million-copy bestselling science fiction visionary who wrote *2001: A Space Odyssey*, addresses the rapid transformation of our society spurred by great leaps in communication technology. From submarine cables to fiber optics to neutrino and tachyon (faster than light) communications, he traces the global changes these innovations left or will leave in their wake.

How the World Was One Details

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Ron says

This would have easily been a five star book, but the historical adventure of the first 2/3 leads into a lot of speculation that seems dated in 2011 (the book was written in 1991). Fortunately, he reprints some of his excellent speeches from the era that contain a few charming motes of wisdom that definitely apply to today's culture of hyper-information.

J.D. says

The first part of this book, which documents the laying of submarine cable, is very suspenseful and interesting. The section on satellites, markedly less so. But all in all a good history of the communications industry.

Kimberly says

This book is a fascinating look into the physical realities of communication: from the first undersea cables for telegraphs to geosynchronous satellites (which Mr. Clarke posited in a SF story many years before they became reality). I found this book through a fabulous article by Neal Stephenson on the difficulties of laying new fiber-optic cable through the world that appeared in Wired in the late 90s.

Jim says

I read the book based on references in Cryptonomicon (Cryptonomicon). The sections about the history of the undersea cables was very interesting and informative. I may have learned a little more that I wanted to know but Clarke does his usual great job of holding the reader's interest. The rest of the book was (to me a least) not very compelling. COMSAT history is fascinating but the the book basically (if pretend modestly) gives most of the credit to Clarke. Still, if there is interest in the history of long distance communication this is a good primer.

Tom Lee says

An interesting and pleasantly conversational nonfiction account of how global networks were first achieved. The book has two parts, and their quality differs.

First is the story of undersea cables and the incredible feats of Victorian era engineering that made them possible. As Clarke observes, this was the last era of intelligent amateurs making okay guesses about scientific problems, then achieving success through trial and error. That this approach could deliver achievements as awe-inspiring as instantaneous transatlantic communication is amazing. Clarke tells the

story succinctly and in surprisingly entertaining fashion, particularly when one considers that the story boils down to a series of mostly-indistinguishable business ventures (some of which eventually worked).

There were interesting problems related to making the cable strong, conductive, properly insulated, and deploying it efficiently. When they began, the engineers didn't even realize that signals propagate through a submerged cable differently than they do when it's suspended in air! A number of scientific luminaries like Lord Kelvin drop in to play major parts in achieving eventual success.

The second part of the story involves communication satellites -- comsats -- and Clarke is very close to these events. Arguably too close.

The problem is this: the earth is curved. A radio signal won't naturally bend around that curve, putting a limit on how far it can reach. Shortwave signals can bounce off the ionosphere, ping-ponging their way around the world. But the ionosphere is an unreliable partner, and shortwave signals can't easily cover a large area. Different radio frequencies can pass through the ionosphere and into space, but from there they normally keep on going.

Clarke himself authored the canonical four-page paper proposing the use of satellites in geosynchronous orbit for radio relaying: parking a satellite along the equator at just the right orbital height and speed such that it remains stationary relative to a spot on the ground. His paper (included in the appendix) doesn't seem hugely rigorous, but he does run the numbers to show that the transmission power levels and necessary rocket specifications are plausible.

The paper became the original reference for an extremely important idea, even as huge amounts of work remained to be done in implementing it. Clarke had worked as a radar operator during WWII, but it seems to have been his position in the science fiction firmament that let his ideas freely diffuse into engineering circles. That paper was the end of his engineering contributions to comsats, but he spent many years giving honorary speeches about satellite communication and sitting on the corporate boards of various satellite industry players. And though he evinces a consistent humility in his writing, much of the content of the comsat portion of the book consists of reproductions of those speeches. These are not perfectly suited to book form, and sometimes they even include repeated anecdotes. A fresh approach to the material would have worked better. But one can forgive an old man for not mustering the will to tell these stories -- which he had been telling for decades -- yet again.

There is one interesting aspect to this, though, which is the degree to which Clarke and other comsat originators anticipated the media trends they would jump-start: specifically, the coarsening of media that its democratization would produce (he reprints an amusingly dour short story about the Soviets winning the propaganda war with satellite-broadcast pornography); and the trade-offs between alleviating human suffering and global cultural homogenization.

Incidentally, John Pierce of Bell Labs makes frequent appearances in the book -- both as one of the driving forces behind the earliest comsats and as a friend and amateur science fiction author -- and his *Signals* (cowritten with A. Michael Noll) is an excellent companion book, diving into many of the relevant technical questions while remaining accessible and basically coffee-table compatible.

Obed M. Parlapiano says

This is a magnificent history book. It's surprising how little you think of things that work all around you but you never see.

In "How the world Was One" Arthur C. Clarke, one of the "Big 3" sci-fy writers of his time, explains how the world went from sending messages via messenger boys and horses and waiting for days, months or even years for a reply, to sending messages via telegraphs that took minutes.

The book is very well formulated, and even though it's composed of Clarke's many different writings put together, they all make a sense together and feel continuous, there's no abrupt change from one chapter to the next. The story flows through history, mentioning each of the remarkable people that had an influence in the communication history, giving minute details and dates and really good trivia here and then.

The book is a bit too specific for my liking, I'm not good with dates or names, and most of the people mentioned will fade (or have already faded) soon enough, but the teachings of the book, the understanding of how the world telecommunication industry and it's pioneers came to be, will never leave me.

From the laying of the submarine telegraph cables protected by Gutta Percha, to the discovery and invention of short and long wave radio, up to the skies with the satellite industry boom, back down into the seas with the comeback of submarine fiberglass cables that eventually gave us The Internet! It's all here.

This is my second book of Clarke, and so far he seems to be one of those authors you enjoy more and more as you read more of his works.

Totally recommended book for anyone that loves history, science, or has any curiosity to understand How the World Was One.

William says

Interesantisimo libro de A. C. Clarke en el que repasa los grandes hitos que marcaron el inicio de la comunicación global.

Betawolf says

The mad bastards actually did it. It took four tries, and staggering sums of money, but they did it. Two ships -- one of them *wooden* -- rendezvoused in the middle of the Atlantic, took hold of two ends of a giant copper cable, and with a single escort each, daring the hazards of storm, shipping, and simple snags, spooled it out between them from Ireland to Newfoundland. They barely even understood how the telegraph cables worked (and this line wouldn't last long) but they bridged the New and Old Worlds.

This is Arthur C. Clarke's history of global communications, from the Victorian pioneers watching the flickering light of the early telegraph stations, right up to mobile telephony and fibreoptic transmission. It is a history written by an incredibly suitable author, as Clarke is not only a supremely talented writer, but was also involved in a great deal of the development of telecommunications in the latter half of the 20th century -

- Clarke's own short article on the possibility of communications satellites, *written in 1945*, was motivatingly prescient of the modern world.

The book is an excellent example of the nonfiction genre. Every chapter develops and communicates a critical element of technological history, being just short enough to keep you focused and just detailed enough that you really do learn something. Clarke has no allergy to changing his stride, and masterfully incorporates quotations from aged newspapers (and boy, those Victorian journalists could really *write*), his own speeches, and even particularly pointed examples of his science-fiction. Through it all, he carries a narrative, a story of a world growing closer together, and of the continual surprise that technology poses even to the most forward-thinking and well-grounded men of the day.

Diego González says

Breve historia de cómo las redes de comunicaciones envolvieron el mundo y cualquier parte del planeta pasó a estar a minutos de cualquier otro lugar gracias a los cables. El libro consta de dos partes de calidad desigual. La primera, la prodigiosa historia de los primeros cables telegráficos trasatlánticos, es formidable. Es cierto que la historia en sí es tan maravillosa que a poco que un narrador sepa juntar un par de frases le sale un relato fabuloso, pero Clarke además lo hace genial (no así su traductor, que es capaz de confundir *billions* con billones sin que se le caiga la cara de vergüenza).

La segunda parte es básicamente una sucesión de anécdotas, muchas de ellas protagonizadas por el propio Clarke, acerca del nacimiento y la expansión de los satélites de comunicaciones, precedidas todas ellas por unos breves apuntes acerca de los cables telefónicos transoceánicos. Hay también mucha épica en estas historias, pero a Clarke o no supo o no le apetecía encontrarla, y le resultaba más cómodo copypastear alegremente fragmentos de otros libros suyos, discursos en sociedades científicas y artículos de prensa.

Zac says

This is really five short books sandwiched together into one medium-length book. The first book is about the laying of the transatlantic cable in the 19th century. The second book is about telephony and radio. Books three, four, and five are a grab-bag of essays about satellite technology, fiber-optic cable

The first book is as good as historical engineering nonfiction gets. I read the entire thing in a night and a day, carrying it with me from place to place. I read it on my couch, I read it at the train station, I read it at the dentist's office (in the waiting room). If I had been mugged on the street while I was reading this book, I would have absentmindedly handed over my wallet while continuing to read. The first book explains the conception of the idea of submarine telegraphy to connect the Old World to the New and its execution. This is the story of the Atlantic Telegraph company, and comprehends the rivalry between Wildman Whitehouse and William Thompson (Lord Kelvin), Kelvin's invention of the mirror galvanometer, Kelvin's coinage of the term "data rate" to describe the rate at which a message could be transmitted down the length of the cable, two failed attempts to lay cable and one success that included the rescue and repair of one of the earlier, failed cables. I urge anyone interested in the early history of computer networking to read this book.

Books three, four, and five are a grab-bag of essays (and one unwelcome, longueur-filled short story) in which Clarke writes about his contributions to the field of satellite communications and speculates about the

future of communications technology. In it, Clarke displays his worst writerly side: by attempting to be cool, he becomes obsequious. He committed the same offense in 3001, when Frank Poole makes a dreadful, unfunny reference to Batman, clearly thinks that it is a terribly witty joke, and then behaves dismissively toward a confused 31st-century man for not understanding it.

The last three parts of this book (books three, four, and five, as I have called them) are filled to bursting with information, despite their cloying tone and disorganized presentation.

Capri Caviedes says

Para los amantes de las telecomunicaciones, una historia (sin detalle) de la evolución de los sistemas de telecomunicaciones desde el telégrafo hasta el satélite; toma el tema de fibra óptica pero sin entrar en profundidad. Es interesante lo que se menciona sobre la capacidad de elaborar sistemas de comunicación basados en neutrinos u ondas gravitacionales.

Esteban Parraos says

Muy emocionantes, el principio histórico y el final visionario.

Caolan McMahon says

Hard to rate this one. The first parts about laying the transatlantic telegraph cables are really great and worth the price alone, after that I quickly got bored and stopped reading. Looking at the other reviews on here I'm justified in not suffering to the end.

Duffy says

Echoing what a lot of people have already said, the first two parts are really good, the last part is quite a slog by comparison. 4 stars for parts 1 and 2, 2 stars for the 3rd part.

Luke says

A curious history of transatlantic communications, from telegraph to satellite, by the sci-fi author who is given some credit for the idea of communication by satellite. A little disjointed and dated.
