

Chapter 1 : Why Time Flies (ebook) by Alan Burdick |

This item: Why Time Flies: A Mostly Scientific Investigation by Alan Burdick Hardcover \$ Only 1 left in stock - order soon. Ships from and sold by BOOK- LAND.

About this product Synopsis " Why Time Flies] captures us. Because it opens up a well of fascinating queries and gives us a glimpse of what has become an ever more deepening mystery for humans: But what is time, exactly? Do children experience it the same way adults do? How and why does time fly? In this witty and meditative exploration, award-winning author and New Yorker staff writer Alan Burdick takes readers on a personal quest to understand how time gets in us and why we perceive it the way we do. Why Time Flies is an instant classic, a vivid and intimate examination of the clocks that tick inside us all. But what is time exactly? Do children experience it in the same way as adults do? In this witty, graceful, and intimate exploration, award-winning author Alan Burdick takes readers along on a quest to understand the clocks that tick inside us all. For the better part of a decade, Burdick, a New Yorker staff writer and National Book Award finalist, journeyed among scientists studying the most vexing questions about our perceptions of time. The result is an instant classic, a vivid and deeply moving examination of the stuff that makes us human. Why Time Flies is not a book about space-time although, Burdick learns, scientists have figured out how to add an extra hour to our day in case we someday live on Mars. Why Time Flies will forever change your relationship with time. A brilliant, witty, and thought-provoking trip by "The New Yorker" s science and tech editor and National Book Award finalist as he attempts to understand his interior clock, what we know about time, and why we are all so fascinated by its passing. Why does time slow down when we re bored, speed up in the summer, and fly by as we get older? From the very beginning of time, we have wondered about it. Time creeps, crawls, flies, flees, flows, and stands still; it is abundant or scarce; it weighs on us. Bells toll for a long or a short time, as if their sound could be measured with a ruler. Childhood recedes, deadlines loom. Would time still be time for us if we could not "waste" or "budget" it? Now, in a stunning blend of science reportage, contemplation, and bemused personal pursuit Burdick spends time with scientists who study time and the time-keepers who keep it straight today. He jumps free fall among other experiments to see if that makes time go faster or slower and observes his young twins as they discern the difference among yesterday, today, and tomorrow. He interviews the woman in Paris who is in charge of the world s clocks, participates in experiments with renowned scientists, relates experiences of months long stays in a dark cave, travels to the Arctic to spend weeks in constant light, jumps from a foot tower to test gravity and stress-related time perception, reveals how time became a measurement, and when at one time he had refused to wear a watch or look at his nightstand clock. Elegant, entertaining, and discerning first-rate science, "Why Time Flies" is for anyone who lies awake at night listening to the clock tick, wonders what time is, worries about where it s going and whether they re making the most of it. Why does it seem to slow down when we re bored and fly by as we get older? In the company of scientists, he visits the most accurate clock in the world which exists only on paper ; discovers that now actually happened a split-second ago; finds a twenty-fifth hour in the day; lives in the Arctic to lose all sense of time; and, for one fleeting moment in a neuroscientist s lab, even makes time go backward. Why does it slow down when we re bored and fly by as we get older? Along the way he visits the most accurate clock in the world which exists only on paper; he discovers that now actually happened a split-second ago; he lived in the Arctic, in a bid to lose all sense of time; and, for one fleeting moment in a neuroscientist s lab, he even made time go backward. But make no mistake, you ll never look at a clock the same way again.

Chapter 2 : WHY TIME FLIES by Alan Burdick | Kirkus Reviews

Alan Burdick. Alan Burdick is a staff writer and former senior editor at The New Yorker and a frequent contributor to Elements, the magazine's science-and-tech calendrierdela.com writing has also appeared in The New York Times Magazine, Harper's, GQ, Discover, Best American Science and Nature Writing, and elsewhere.

Buy from another retailer: The calendar says late winter but outside my window the day is warm and fair, the leaf buds gleam, the city is resplendent. I arrived from New York yesterday and stayed out past midnight with friends; today my head is still in the dark, glued in a season and a time zone several hours behind me. I glance at my watch: As usual, I am late. The watch is a recent gift from my father-in-law, Jerry, who wore it himself for many years. When Susan and I became engaged, her parents offered to buy me a new watch. What sort of son-in-law ignores the time? So when Jerry subsequently offered me his old wristwatch I said yes right away. It has a golden dial set on a wide silver wristband; a black face bearing the brand name Concord and the word quartz in bold letters; and the hours denoted by unnumbered lines. I liked the new weight on my wrist, which made me feel important. I thanked him and remarked, more accurately than I could understand at that moment, that it would be a helpful addition to my research on time. But the fact was that I knew as little about the former as I did about the latter. I could not say how a particular clock or watch worked nor how it managed to agree so closely with the other watches and clocks that I occasionally noticed. If there was a real difference between external and internal time—“as real as the difference between physics and biology”—I had no idea what it was. So my new, used watch would be a kind of experiment. What better way to plumb my relationship to time than to physically attach it to me for a while? Almost immediately I saw results. For the first few hours of wearing the watch I could think about nothing else. It made my wrist sweat and tugged at my whole arm. Time dragged literally and, because my mind dwelt on the dragging, figuratively. Soon enough I forgot about the watch. But on the evening of the second day I suddenly remembered it again when, while bathing one of our infant sons in the tub, I noticed it on my wrist, underwater. Secretly I hoped that the watch might confer some degree of punctuality. The Bureau is an organization of scientists devoted to perfecting, calibrating, and standardizing the basic units of measurement used around the world. As our economies globalize, it becomes ever more imperative that we all be on precisely the same metrological page: The Bureau is the United Nations of units, the world standardizer of standards. The organization was formed in through the Convention of the Metre, a treaty meant to ensure that the basic units of measurement are uniform and equivalent across national borders. The first act of the Convention was for the Bureau to hand out rulers: Seventeen nation members joined the original Bureau; fifty-eight now belong, including all the major industrialized nations. The suite of standard units it oversees has grown to seven: Among its many duties, the Bureau maintains a single, official worldwide time for all of Earth, called Coordinated Universal Time, or U. Every timepiece in the world, from the hyperaccurate clocks in orbiting global-positioning satellites to the cog-bound wristwatch, is synchronized directly or eventually to U. Wherever you live or go, whenever you ask what time it is, the answer ultimately is mediated by the timekeepers at the Bureau. To be late, then, is to be late according to the agreed-on time. This meant, as I glanced at my watch yet again, that I was not merely late: I was as late as I have ever been and as late as it is possible to be. Soon enough I would learn just how far behind the time I truly was. The clepsydra was in use at least three thousand years ago, and Roman senators used them to keep their colleagues from talking for too long. Water ticked and added up to time. For most of history, though, in most clocks, what ticked was Earth. As the planet rotates on its axis, the sun crosses the sky and casts a moving shadow; cast on a sundial, the shadow indicates where you are in the day. In practice, what ticked was the day, the rotational interval from one sunrise to the next. Everything in between—the hours and minutes—was contrived, a man-made way to break up the day into manageable units for us to enjoy, employ, and trade. Increasingly our days are governed by seconds. They are the currency of modern life, the pennies of our time: For centuries, the second existed only in the abstract. It was a mathematical subdivision, defined by relation: Seconds pendulums appeared on some German clocks in the fifteenth century. The second fully arrived in the twentieth century, with the rise of the quartz clock. Scientists had found that a crystal of quartz

resonates like a tuning fork, vibrating at tens of thousands of times per second when placed in an oscillating electrical field; the exact frequency depends on the size and shape of the crystal. Modern quartz clocks and wristwatches typically use a crystal that has been laser-engineered to vibrate at exactly 32,768 times per second, or 32,768 Hz. This provided a handy definition of the second: By the nineteen-sixties, when scientists managed to measure an atom of cesium naturally undergoing 9,192,631,770 quantum vibrations per second, the second had been officially redefined to several more decimal places of accuracy. The atomic second was born, and time was upended. The old temporal scheme, known as Universal Time, was top-down: Now, instead, the day would be measured from the ground up, as an accumulation of seconds. But there was a bigger problem: In the old days, anyone could make his or her own seconds through simple division. The cesium clocks, in turn, are checked against a frequency standard generated by a device called a cesium fountain—a dozen or so exist—which uses a laser to toss cesium atoms around in a vacuum. These realizations are then added up to reveal the time of day. Experts at its two laboratories, in Gaithersburg, Maryland, and Boulder, Colorado, keep a dozen or more cesium clocks running at any given time. As precise as these clocks are, they disagree with one another on a scale of nanoseconds, so every twelve minutes they are compared to one another tick by tick to see which are running fast and which are running slow and by exactly how much. How this time reaches you depends on your timekeeping device and where you happen to be at the moment. The clock in your laptop or computer regularly checks in with other clocks across the Internet and calibrates itself to them; some or all of these clocks eventually pass through a server run by N. If you are in Tokyo, you might be linked to a time server in Tsukuba that is run by the National Metrology Institute of Japan; in Germany, the source is the Physikalisch-Technische Bundesanstalt. Naval Observatory, near Washington, D. Many other clocks—wall clocks, desk clocks, wristwatches, travel alarms, car-dashboard clocks—contain a tiny radio receiver that, in the United States, is permanently tuned to pick up a signal from N. The signal is very low frequency—60 Hz—and the bandwidth so narrow that a good minute is needed for the complete time code to come through. These clocks can generate the time on their own, but for the most part they act as middlemen, serving you the time that is disseminated by more refined clocks somewhere higher up in the temporal chain of command. To synchronize with the wider world I need to look at an accurate clock and then turn the stem of my watch and set the time accordingly. To achieve even greater accuracy I could regularly take my watch to a shop and have its mechanism calibrated to a device called a quartz oscillator, which gains its precision from a frequency standard monitored by N. I had assumed that putting on a watch meant strapping established time to my wrist. But, in fact, unless I take the measure of the clocks around me, I am still a rogue. This situation was good for the world but quickly became a problem for the Astronomer Royal. Beginning around 1675, he increasingly found himself interrupted from his work by a knock on the door from a townsman. Pardon me, he was asked. Would you tell me the time? So many people came knocking that eventually the town petitioned the astronomer for a proper time service; in he assigned his assistant, John Henry Belville, to the task. The invention of the telegraph, which enabled remote clocks to synchronize with Greenwich time almost immediately and at lower cost, eventually rendered Miss Belville almost but not quite obsolete. When she retired around 1850, in her mideighties, she still served some fifty clients. I had come to Paris to meet with the Greenwich time lady of the modern era, the Miss Belville for all of Earth: Elisa Felicitas Arias, the director of the B. Arias is slender, with long brown hair and the air of a kindly aristocrat. An astronomer by training, Arias worked for twenty-five years at observatories in Argentina, her native country, the last ten of them with the Naval Observatory; her specialty is astrometry, the correct measuring of distances in outer space. I met her in her office, and she offered me a cup of coffee. But the clocks on different navigation systems—such as G. Universal Coordinated Time is derived by comparing all the member clocks as they tick their seconds simultaneously, and noting the discrepancies. It is a tremendous technical challenge. For one thing, the clocks are hundreds or thousands of miles apart. The satellites all have known positions and carry clocks synchronized to the U. Naval Observatory; with this information, the B. Even then, uncertainties loom. And the equipment harbors electronic noise that can obscure precise measurement. Offering an analogy, Arias motioned to the door of her office. The process is not purely computational. A human is needed to consider small yet critical factors: Wielding the algorithm also involves a certain amount of individual, mathematical

artistry. By definition and by universal agreement, or at least by agreement of the fifty-eight signatory countries, its time is perfect.

Alan Burdick, a staff writer and a former senior editor at The New Yorker, is the author of Why Time Flies: A Mostly Scientific calendrierdelascience.com first book, Out of Eden: An Odyssey of Ecological Invasion (FSG,), was a National Book Award finalist and won the Overseas Press Club award for environmental reporting.

Because it opens up a well of fascinating queries and gives us a glimpse of what has become an ever more deepening mystery for humans: But what is time, exactly? Do children experience it the same way adults do? How and why does time fly? In this witty and meditative exploration, award-winning author and New Yorker staff writer Alan Burdick takes readers on a personal quest to understand how time gets in us and why we perceive it the way we do. Why Time Flies is an instant classic, a vivid and intimate examination of the clocks that tick inside us all. But what is time exactly? Do children experience it in the same way as adults do? In this witty, graceful, and intimate exploration, award-winning author Alan Burdick takes readers along on a quest to understand the clocks that tick inside us all. For the better part of a decade, Burdick, a New Yorker staff writer and National Book Award finalist, journeyed among scientists studying the most vexing questions about our perceptions of time. The result is an instant classic, a vivid and deeply moving examination of the stuff that makes us human. Why Time Flies is not a book about space-time although, Burdick learns, scientists have figured out how to add an extra hour to our day in case we someday live on Mars. Why Time Flies will forever change your relationship with time. A brilliant, witty, and thought-provoking trip by "The New Yorker" science and tech editor and National Book Award finalist as he attempts to understand his interior clock, what we know about time, and why we are all so fascinated by its passing. Why does time slow down when we're bored, speed up in the summer, and fly by as we get older? From the very beginning of time, we have wondered about it. Time creeps, crawls, flies, flees, flows, and stands still; it is abundant or scarce; it weighs on us. Bells toll for a long or a short time, as if their sound could be measured with a ruler. Childhood recedes, deadlines loom. Would time still be time for us if we could not "waste" or "budget" it? Now, in a stunning blend of science reportage, contemplation, and bemused personal pursuit Burdick spends time with scientists who study time and the time-keepers who keep it straight today. He jumps free fall among other experiments to see if that makes time go faster or slower and observes his young twins as they discern the difference among yesterday, today, and tomorrow. He interviews the woman in Paris who is in charge of the world's clocks, participates in experiments with renowned scientists, relates experiences of months long stays in a dark cave, travels to the Arctic to spend weeks in constant light, jumps from a foot tower to test gravity and stress-related time perception, reveals how time became a measurement, and when at one time he had refused to wear a watch or look at his nightstand clock. Elegant, entertaining, and discerning first-rate science, "Why Time Flies" is for anyone who lies awake at night listening to the clock tick, wonders what time is, worries about where it's going and whether they're making the most of it. Why does it seem to slow down when we're bored and fly by as we get older? In the company of scientists, he visits the most accurate clock in the world which exists only on paper; discovers that now actually happened a split-second ago; finds a twenty-fifth hour in the day; lives in the Arctic to lose all sense of time; and, for one fleeting moment in a neuroscientist's lab, even makes time go backward. Why does it slow down when we're bored and fly by as we get older? Along the way he visits the most accurate clock in the world which exists only on paper; he discovers that now actually happened a split-second ago; he lived in the Arctic, in a bid to lose all sense of time; and, for one fleeting moment in a neuroscientist's lab, he even made time go backward. But make no mistake, you'll never look at a clock the same way again.

Chapter 4 : NPR Choice page

WHY TIME FLIES A Mostly Scientific Investigation By Alan Burdick pp. Simon & Schuster. \$ Alan Burdick's "Why Time Flies" certainly does not answer our every question. And precisely.

It might also be of some interest to those who, like me, are amateur cosmologists with an abiding interest in time. For everybody else, this book is likely to be a snoozer. Most studies of time today presuppose that time is merely an artifact of human consciousness. Burdick attributes this idea to St. Augustine and maybe even earlier philosophers pp. I suppose this book will be of interest to those with a scientific bent, particularly in biology, physiology, neuron-science, and also philosophy. Philosophers were the first to tackle seriously the nature of consciousness and, therefore, time. When timepieces were improved, anomalies arose, because no two clocks consistently agreed with each other. They accepted that time was essentially nothing more than a form of human perception. Eventually, the neuro-scientists got involved, and even more anomalies presented themselves. Even the DNA in living cells appear to have a hour circadian rhythm! This is scientifically proven. DNA molecules cannot "think" of course, much less "perceive" the passage of time, as humans allegedly do. So something is going on here apart from human perception. Nevertheless, humans are easy test subjects and so science has fixated on time as an artifact of human consciousness, not something that is otherwise real or measurable, except by the use of clocks. Humans experience time in terms of the duration of an event, the temporal order of events, tense past and future , and now p. Unfortunately, different humans perceive these things differently from one another for many reasons. Lucidity, context, and common variations in human intellect account for some of these differences, but more important is the physiology of the brain and the physics of light and sound. Different experiences light and sound, for instance , reach the brain at different times perhaps imperceptibly quickly and travel different paths of neurons in the brain before these signals are somehow integrated into a perception called "now. As best as I understand, things that occur within 80 milliseconds of each other are perceived as simultaneous "now". Things that occur at an interval longer than 80 milliseconds are perceived as tense "before and after". Things that occur at a shorter interval than 80 milliseconds might be perceived as reverse causality "after" happened before "before" pp. Additionally, the idea of "now" as something that everybody around the entire world experiences at the same time is disputable p. Each human has her own "now," which perhaps helps explain the unreliability of eyewitness testimonies. But as an amateur cosmologist, I suspect the claim that time is only an artifact of human perception. I tend to believe that time is a real thing that exists irrespective of our perception of it. First, there is no grand clock that measures time across the entirety of the universe. Second, time is relative to motion and mass, it is bent and distorted by the presence of gravity and relative motion thanks, Einstein! Third, the arrow of time is unidirectional. The past always gives way to the future. Cause always precedes effect. Every person experiences time flowing at the same rate as every other person, subject to the physiological and contextual variables noted above. Theoretically, time passes at the speed of light. However, two different observers traveling in different directions or at different speeds or in the presence of different masses will notice that time is flowing differently for the other person. Space-time behaves according to well established laws of physics and exists everywhere in the universe, irrespective of whether or not there is some human to perceive it. Then again, what the hell do I know.

Chapter 5 : Why Time Flies: A Mostly Scientific Investigation by Alan Burdick

Alan Burdick, a staff writer and a former senior editor at The New Yorker, is the author of Why Time Flies: A Mostly Scientific Investigation. His first book, Out of Eden: An Odyssey of Ecological Invasion (FSG,), was a National Book Award finalist and won the Overseas Press Club award for environmental reporting.

Chapter 6 : Why Time Flies : A Mostly Scientific Investigation by Alan Burdick (, Hardcover) | eBay

DOWNLOAD PDF WHY TIME FLIES ALAN BURDICK

Accessible and highly readable, Why Time Flies will appeal to fans of Norman Doidge, Jon Ronson, Malcolm Gladwell and Daniel Pink???. Alan Burdick is a National Book Award finalist and science staff writer at the New Yorker.

Chapter 7 : Why Time Flies : A Mostly Scientific Investigation by Alan Burdick | eBay

Alan Burdick is a staff writer and former senior editor at The New Yorker and a frequent contributor to Elements, the magazine's science-and-tech calendrierdelascience.com writing has also appeared in The New York Times Magazine, Harper's, GQ, Discover, Best American Science and Nature Writing, and elsewhere.

Chapter 8 : Alan Burdick (Author of Why Time Flies)

In this wide-ranging, often personal essay, journalist Alan Burdick, whose previous book was a National Book Award finalist, delves into the philosophical roots of time.

Chapter 9 : Why Time Flies (Audiobook) by Alan Burdick | calendrierdelascience.com

Why Time Flies: A Mostly Scientific Investigation - Kindle edition by Alan Burdick. Download it once and read it on your Kindle device, PC, phones or tablets. Use features like bookmarks, note taking and highlighting while reading Why Time Flies: A Mostly Scientific Investigation.