



Know This: Today's Most Interesting and Important Scientific Ideas, Discoveries, and Developments

John Brockman

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Today's most visionary thinkers reveal the cutting-edge scientific ideas and breakthroughs you *must* understand.

Scientific developments radically change and enlighten our understanding of the world -- whether it's advances in technology and medical research or the latest revelations of neuroscience, psychology, physics, economics, anthropology, climatology, or genetics. And yet amid the flood of information today, it's often difficult to recognize the truly revolutionary ideas that will have lasting impact. In the spirit of identifying the most significant new theories and discoveries, John Brockman, publisher of Edge.org ("The world's smartest website" -- *The Guardian*), asked 198 of the finest minds *What do you consider the most interesting recent scientific news? What makes it important?*

Pulitzer Prize-winning author of *Guns, Germs, and Steel* **Jared Diamond** on the best way to understand complex problems * author of *Seven Brief Lessons on Physics* **Carlo Rovelli** on the mystery of black holes * Harvard psychologist **Steven Pinker** on the quantification of human progress * TED Talks curator **Chris J. Anderson** on the growth of the global brain * Harvard cosmologist **Lisa Randall** on the true measure of breakthrough discoveries * Nobel Prize-winning physicist **Frank Wilczek** on why the twenty-first century will be shaped by our mastery of the laws of matter * philosopher **Rebecca Newberger Goldstein** on the underestimation of female genius * music legend **Peter Gabriel** on tearing down the barriers between imagination and reality * Princeton physicist **Freeman Dyson** on the surprising ability of small (and cheap) upstarts to compete with billion-dollar projects. Plus Nobel laureate **John C. Mather**, Sun Microsystems cofounder **Bill Joy**, *Wired* founding editor **Kevin Kelly**, psychologist **Alison Gopnik**, *Genome* author **Matt Ridley**, Harvard geneticist **George Church**, *Why Does the World Exist?* author **Jim Holt**, anthropologist **Helen Fisher**, and more.

Know This: Today's Most Interesting and Important Scientific Ideas, Discoveries, and Developments Details

Date : Published February 7th 2017 by Harper Perennial (first published 2017)

ISBN :

Author : John Brockman

Format : Kindle Edition 608 pages

Genre : Science, Nonfiction, Technology, Philosophy, Biology

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Elizabeth says

Know This: Today's Most Interesting and Important Scientific Ideas, Discoveries, and Developments
(Paperback)

by John Brockman

trying to get the audio edition

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Christian Pedersen says

Know this is only a couple of years old and yet, in some areas, it's outdated. This small fact shows the importance of reading books like Know this in an attempt to keep up with a world moving at the speed of stupidity. A collection of more than 200 short essays from scientists, artists and the like, Know this tries to illuminate important issues like the environment, AI, Big Data and so on. Some of the essays are hard, some are very easy, some are poignant, some are flamboyant but the constant change in voices left me with a sensation of things being connected. What we glimpse in Know this is the future coming at us with a 100 mph, and we better embrace ourselves for the impact. A very good read.

????????? says

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Sophia says

This book was a bad idea. I read another of these Edge books, and I really liked it, I liked how it was getting opinions and ideas from all over the place, without filtering anything out. The premise of these books is that every year the editor asks a question to leading scientists and thinkers, and they answer in a few pages. This book's question was "what is the biggest recent news in science" and the problem with this is:

- 1) you get a lot of redundant answers. When you ask an opinion on something controversial, lots of answers are great, because everyone sees things differently. Like this, you get the same ideas rehashed over and over.
- 2) the question was asked at the end of 2015, but this book was published in 2017. That means I read this and already a lot of it was outdated! For example, one author briefly mentioned that there might be something interesting coming out of the LIGO experiment, and I know very well that they did find something.
- 3) big science news is NEWS, so we the general public already know most of these things. And it really doesn't matter that it's famous people telling us
- 4) some fields have more breaking news than others, and so it's quite frustrating to read about news that is actually just a trend

Other problems include:

-the editor really did no editing, even when contributors were completely off topic or not really in the field.

Merits:

-I still really like the premise of these books

-nothing is deeply wrong with the book

I mainly resist giving it 2 stars because I was so looking forward to reading it...

Joel says

This collection of short essays is like a box of chocolates: gives you a sampling of the best scientific news of 2015 from the point of view of the experts. But like a box of chocolates or samplers, they are teasers and you may not like everything in the box. There are a few gems though, and you wish those really interesting stories were elaborated further. The book gives a nice overview on everything, but lacks depth of insight on anything. I would have liked it more if the stories were tied together in a single flowing narrative. That would have made for a great read.

Tonstant Weader says

Know This is a collection of short essays that answer the 2016 question from Edge, "What do you consider the most interesting recent (scientific) news? What makes it important." The question is different every year.

For 2017, the question is “What scientific term or concept out to be more widely known?” What makes the Edge annual questions so interesting is they are answered by leaders in many fields, mostly in science, but also artists, mathematicians, historians, software developers, musicians, and philosophers. Who is not answering? Anonymous blowhards and conspiracy theorists are mercifully absent.

So what do people consider the most interesting recent news? A lot of people are rightly concerned about rising sea levels, global warming, and other environmental issues. Around 4,400 people die from air pollution every single day in China. As the author wrote, “Every time I hear of some tragedy that makes headlines, such as a landslide in Shenzhen that killed 200 people, I think to myself, “Yes — and today 4,400 people died of air pollution and it didn’t make the news.” He also pointed out that China posts environmental data updates hourly. This struck me as particularly poignant with this week’s silencing of several federal agencies for unknown reasons, on the environment at least, China is now a more open and transparent country than the U.S.

There were a number who focused on the rejection of science while others mentioned the declining standards of scientific research publications. One of my favorite essays is “We Fear the Wrong Things,” something that drives me nuts. This is because of the availability heuristic, we fear what we remember, what’s available to our thoughts. So, because it is not news when someone dies of something ordinary but common, we don’t worry about it. Instead we worry about unlikely disasters that make the news precisely because they are unlikely. Which is why “we spend an estimated \$500 million per U.S. terrorist death but only \$10,000 per cancer death.”

There are answers that talk about math, physics, amazing new technology, psychology and health. The variety is as broad as the 198 respondents who participated last year.

I loved Know This and know I will read it again. It is one of those books that insist on being read more than once and read slowly. Doctor’s offices should have copies in their waiting rooms. People should think of it as a coffee table book for readers. The short essays are the perfect length for someone to read while you make a cup of tea or do the last minute assembly before dinner. It’s better to read just one or two or, at most, three answers at a time so you have a chance to synthesize them, to consider each answer distinctly from other answers. Just reading straight through will never do the book justice because it will all run together.

This book deserves the justice of being read so that each answer can be a separate, considered reading. Topics are so disparate and varied that they only work if you don’t try to absorb them all at once. I rate this book so highly because it both fascinating and important. These are things we should know, things that deserve our attention. I am glad Edge makes a point of trying to get us to do so.

Know This will be released on February 7, 2017. I was provided an advance e-galley by the publisher through Edelweiss.

★★★★★

<http://tonstantweaderreviews.wordpress...>

Pegi Ferrell says

Interesting concept and fascinating information. This would be a four except it is dated already -- and,

seriously, Alan Alda?

Teo 2050 says

[Brockman J (ed.) (2017) (14:40) Know This - Today's Most Interesting and Important Scientific Ideas, Discoveries, and Developments

Dedication

Preface: The Edge Question

001. Steven Pinker :: Human Progress Quantified

002. Freeman Dyson :: Doing More with Less

003. Kurt Gray :: The “Specialness” of Humanity

004. Stuart Pimm :: J. M. Bergoglio’s 2015 Review of Global Ecology

005. Laurence C. Smith :: Leaking, Thinning, Sliding Ice

006. Robert Trivers :: Glaciers

007.

Mysteryfan says

Another entry in his Edge series where brilliant people answer a question. In 2015, the question was "What do you consider the most interesting recent scientific news?" Physicists, neuroscientists, economists, environmentalists and others responded. Answers from some respondents grouped naturally - the Large Hadron Collider, CRISPr technology (gene manipulation), cancer treatments, the use of Big Data - but some stood alone. My favorite was the essay by Max Tegman, who discussed the race between the growing power of technology and the wisdom with which we manage it. Another essay discussed why Trump's support from non-college-educated voters is so strong. Still another evaluated the way we choose our online news sources. The Platinum Rule - do unto others as they would have us do unto them - was interesting. It's a book to be dipped in and out of, rather than read straight through. It's also interesting to see how some essays have dated. The essays were written before Trump was elected

Megan says

If you like to keep up to date with scientific thought, if you like to dip in and out of a book, and if you like to think that one day you'll totally read Science, Nature and all the other sciencey journals out there (but really know you won't) then this is the perfect book for you.

John Brockton asked 100s of scientists the question: "What do you consider the most interesting recent [scientific] news? What makes it important?"

The result is a 600+ page tome with each scientist having 1-3 pages to answer the question. I read most of them and skipped the ones that just didn't float my boat. Overall it was a great book to dip into and I read some fabulous things that have caused me to do a lot of googling.

Of course a question like this ages the book so read it soon before it all becomes history, rather than a prediction of the future.

Marco Gallardo says

Un editor de Edge le preguntó a 198 autores de textos científicos cuál consideraban la noticia científica más importante que habían leído recientemente y cuál era su importancia. Esto da resultados mixtos, algunos escriben muy bien y comparten datos interesantes, algunos contradicen a los otros, algunos son muy breves, algunos son poco interesantes, algunos repiten lo que otros ya habían dicho agregando poco. Eso hace que sea un poco cansado avanzar por los 198 textos, aunque en el camino haya algunas cosas interesantes.

Tadas Talaikis says

Life without problems make more idiots, here's how it will be in the future in the vision of Idiocracy.

“This isn't tolerable for the democracy in the increasing technological world. The most significant example is climate change, it turns out, for instance, that many basic terms are unintelligible for newspaper readers.

Or as this quote from the book:

"Recently I encountered a statement that theory is just a guess, and that includes evolution, not mentioning what was reconstructed by cosmologists about formation of the universe

When new data is published that includes the correction or expansion of the previous work this is taken to indicate weakness rather than great strength of scientific work as an open system, always subject to correction by the new information.

When the winter temperature dips below freezing, you hear - this proves that the Earth is not warming. Most Americans are not clear on the difference between weather and climate."

This was really good book, why not 5? Just because I like one subject per book more. This book is in no way related to what I've just wrote, it actually covers many recent developments in science.

Elly Stroo Cloeck says

Een kilo van ons lichaamsgewicht is beestjes: virussen, bacteriën, parasieten. Die houden ons gezond, trainen ons immuunsysteem. Een poeptransplantatie van een gezond mens, kan een zieke genezen als antibiotica niet helpt. Maar niet alleen in de darmen, ook tussen de oren zitten de beestjes. Toxoplasma bijvoorbeeld. Deze bacterie kan zich alleen in katten vermenigvuldigen. Maar ja, hoe kom je daar? Die bacterie zorgt dat het in dat deel van de gastheer's hersenen terecht komt waar seksuele aantrekkingskracht wordt geregeld. Zit het in de hersenen van een muis, dan gaat die muis naar de kat toe, in plaats dat hij vlucht. Hap, slik, en de bacterie

zit in de kat. Wij hebben die bacterie ook, en hebben een voorkeur voor de geur van kattenferomoon, wat in veel parfums zit, zoals Chanel 5. Menselijke dragers (30% van de wereldbevolking) krijgen sneller een auto-ongeluk, en vrouwelijke dragers kopen meer designerkleding. Wetenschappelijk bewezen!

Ik citeer uit 1 van de 195 korte bijdragen in Wetenschappelijke Parels van wetenschappers uit de hele wereld, aan wie is gevraagd: wat is het belangrijkste recente (wetenschappelijke) nieuws? De nieuwsfeiten komen uit 2015 en 2016 en betreffen allerlei onderwerpen: ruimtevaart, DNA, psychologie, natuurkunde, klimaat, wiskunde, geneeskunde.....

Ik vond het een geweldig boek! Sommige, maar zeker niet alle nieuwtjes kende ik, maar de blik die de wetenschappers (en anderen) erop werpen is steeds anders: soms technisch, soms filosofisch en soms ronduit grappig!

Zo'n grappig stukje gaat over hoe uniek wij mensen, als levende wezens zijn. Op het MIT stelt men nu dat 'leven' betekent dat je door energie gaat metaboliseren, bewegen en zelfs repliceren. Wij mensen, maar ook kevers en bacteriën doen dat met zonlicht. Nu blijkt dat alle moleculen dit doen, soms duurt het een paar miljard jaar, maar toch. Maar duinen bewegen ook, door de wind, en draaikolken bewegen door de zwaartekracht. Leven zij dan ook? Gelukkig zijn we in één opzicht wel uniek: geen enkele soort verbruikt zoveel energie als wij.....

Een aantal bijdragen gaat over de toegevoegde waarde van de wetenschap. Zijn oudere onderzoeken wel betrouwbaar? Wat doe je met uitkomsten als er een kans is dat de data onbetrouwbaar zijn?

Gelukkig is er op dat vlak ook goed nieuws:

In september 2015 wordt voor het eerst een door Albert Einstein (in 1915!) voorspelde zwaartekrachtgolf gemeten. Hij dacht dat ze te klein waren om ooit gemeten te kunnen worden, maar nu is het dan toch gelukt: op die dag veranderde de afstand tussen Parijs en Berlijn 0,2 seconden lang opeens 10 tot de MIN 12-de millimeter! Dit is niet alleen nieuws, maar ook bijzonder nieuws: alle onderzoekers ter wereld zijn het hierover eens, ongeacht hun nationaliteit, religie of cultuur. Het is een feit! En geen 'mening, zoals klimaatverandering'.

Nog een kleine bloemlezing om een indruk te geven van de onderwerpen:

Stel je eens voor wat een vliegticket zou kosten als we elk vliegtuig na 1x vliegen naar de schroothoop zouden brengen. Zo was het altijd met de ruimtevaart: de boosterraket kan maar 1x gebruikt worden en kost een paar honderd miljoen dollar. Maar eind 2015 lukt het SpaceX en Blue Origin om hun draagraketten weer te laten landen en te hergebruiken. We kunnen weer gaan dromen over de ruimte!

Dan het algoritme van Babai, een technisch stukje over isomorfie van netwerken en quasipolynomialiteit. Abracadabra voor mij, maar de conclusie was zelfs voor leken duidelijk: computers worden door dit algoritme zo krachtig dat onze encryptiesleutels bij het grofvuil kunnen. Dat is slecht nieuws, in deze tijd van Ransomware!

Bij sommige mensen denk je dat het allang gebeurd is maar nee, pas sinds een paar jaar is het mogelijk Neanderthalers te klonen. En allerlei uitgestorven dieren zoals mammoeten en sabelandtijgers. De-extinctie heet het. Maar moet je dat willen, moreel en ethisch? Kunnen we de gevolgen wel overzien? Jurassic Park is er niets bij!

Peter Gabriel (de musicus ja) schreef een bijdrage naar aanleiding van het nieuws dat een hersenscanner

beschikbaar komt voor consumenten, tegen schappelijke prijzen dus. Gedachten kunnen vertaald worden in beelden. Dahaaag, privacy!

Bijzonder grappig is een idee van Jaewon Cho, hoogleraar milieutechniek, die voorstelt om twee problemen in 1 klap op te lossen. Geld als ruilmiddel is virtueel geworden, er is eigenlijk geen relatie meer tussen de mens en geld. De WC doorspoelen heeft allerlei milieubelastende effecten. Laten we voortaan betalen met FSG: Feces Standaard Geld. Onze ontlasting wordt omgezet in geurloos poeder, en dat is in te ruilen voor FRG-credits. Omdat ieder mens een bepaalde dagelijkse hoeveelheid ontlasting heeft, kan het goed gebruikt worden als een soort basis-inkomen. Het poeder zelf is waarschijnlijk best om te zetten tot brandstof, zoals bio-diesel.....

Alle stukjes zijn door de wetenschappers zelf geschreven en door diverse mensen vertaald, wat het boek heel afwisselend maakt. Natuurlijk kan Alex Pentland (die ik nog ken van zijn boek Social Data) het niet laten op zijn bekende wijze op te scheppen over zijn betrokkenheid bij de 'datarevolutie', maar zijn passie voor het uitbannen van armoede en ziekte door big data blijft fascinerend.

Het is een inspirerend boek, vol 'food for thought' en uitzonderingen daargelaten, heel toegankelijk geschreven. Een dikke pil (525 pagina's), die je heel wat avonden bezighoudt!

Mijn waardering: 4*** (Inhoud 5* schrijfstijl 4*)

Elly Stroo Cloeck is specialist op het gebied van GRC en Internal Audit. Daarnaast schrijft ze samenvattingen van managementboeken en recensies. Voor deze recensie ontving zij het boek 'Wetenschappelijke parels' van Maven Publishing

Book says

Know This: Today's Most Interesting and Important Scientific Ideas, Discoveries, and Developments (Edge Question) by John Brockman

"Know This" is a thought-provoking book of essays brought to you by The Edge that provides readers with better tools to think about the world. The Edge is an organization that presents original ideas by today's leading thinkers from a wide spectrum of scientific fields. The 2017 Edge question is, "What do you consider the most interesting recent (scientific) news? What makes it important?" This interesting thorough 608-page book includes 198 essays from the brightest minds.

For my sake, I created a spreadsheet of all the essays and graded them from zero to five stars based on quality. Five star essays are those that provide a great description of the author's favorite scientific concept. On the other hand, those receiving a one or even a zero represent essays that were not worthy of this book. Of course, this is just one reviewer's personal opinion. I basically reprised the same formula I used to review, "This Explains Everything" and "This Will Make You Smarter".

Positives:

1. This series by "The Edge" always deliver a high-quality product.
2. A great topic, "What do you consider the most interesting recent (scientific) news? What makes it important?"
3. A great range of scientific essays provided by subject matter experts.

4. There were a number of outstanding essays deserving of five stars for me. I will list my favorites as positives in this review. In order of appearance, the first by Steven Pinker, “Human Progress Quantified”. Makes the compelling case that the world is actually getting better. “Human intuition is a notoriously poor guide to reality.”
5. Richard Muller’s “The Greatest Environmental Disaster”. “Someday global warming may become the primary threat. But it is air pollution that is killing people now. Air pollution is the greatest environmental disaster in the world today.”
6. Donald D. Hoffman’s “The Abdication of Spacetime”. “Nathan Seiberg, of the Institute for Advanced Study at Princeton, said, “I am almost certain that space and time are illusions. These are primitive notions that will be replaced by something more sophisticated.”
7. Seth Lloyd’s “One Hundred Years of Failure”. “Encouragingly, the advances in quantum gravity supplied by quantum-information theory do not yet seem to be counterbalanced by backsliding elsewhere.”
8. Brian G. Keating’s “Looking Where the Light Isn’t”. Excellent essay. “The next century of general relativity promises to be as exciting as the first. “Spacetime tells matter how to move; matter tells spacetime how to curve,” said John Archibald Wheeler. We’ve seen what the curvature is. Now we just need to find out what’s the matter. And where better to look for lost matter than where the dark is.”
9. Neil Turok’s “Simplicity”. “Such a theory won’t be concerned with kilograms, meters, or seconds, only with information and its relations. It will be a unified theory not only of all the forces and particles but also of the universe as a whole.”
10. Steve Giddings’s “New Probes of Einstein’s Curved Spacetime—and Beyond?”. “The community has been abuzz about the possible discovery of a new particle at the LHC, seen by its disintegration into pairs of photons. If this is real and not just a fluctuation, there’s a slim chance it is a graviton in extra dimensions, which, if true, could well be the discovery of the century.”
11. Rudy Rucker’s “The Universe Is Infinite”. “Many cosmologists now think our spatial universe is infinite.”
12. Gregory Benford’s “Pluto Now, Then on to 550 AU”. “New Horizons is important not just for completing our first look at every major world in the solar system. It points outward, to a great theater in the sky, where the worlds of the galaxy itself are on display.”
13. “Scott Aaronson’s “How Widely Should We Draw The Circle?” “By letting us simulate quantum physics and chemistry, quantum computers might spark a renaissance in materials science, and allow (for example) the design of higher-efficiency solar panels.”
14. John Tooby’s “The Race Between Genetic Meltdown and Germline Engineering” “Natural selection is the only physical process that pushes species’ designs uphill—against entropy, toward greater order (positive selection)—or maintains our favorable genes against the downward pull exerted by mutation pressure (purifying selection).”
15. Eric Topol’s “The 6 Billion Letters of Our Genome”. “So the biggest breakthrough in genomics—Science’s 2015 Breakthrough of the Year—is the ability to edit a genome, via so-called CRISPR technology, with remarkable precision and efficiency.”
16. Juan Enriquez’s “Life Diverging”. “Thus the biggest story of the next few centuries will be how we begin to redesign life-forms, spread new ones, develop approaches and knowledge to further push the boundaries of what lives where.”
17. Thalia Wheatley’s “Biology Versus Choice”. “the emergence of perhaps the greatest developing news story: the widespread understanding that human thought and behavior are the products of biological processes.”
18. Gino Segre’s “Diversity in Science”. “Science has become increasingly collaborative in a way that makes diversity a paramount necessity.”
19. David G. Myers’s “We Fear the Wrong Things”. “The hijacking of our rationality by fears of terrorist guns highlights an important and enduring piece of scientific news: We often fear the wrong things.”
20. Oliver Scott Curry’s “Morality Is Made of Meat”. “Morality is natural, not supernatural. We are good

because we want to be, and because we are sensitive to the opinions—the praise and the punishment—of others. We can work out for ourselves how best to promote the common good, and with the help of science make the world a better place.”

21. Christian Keysers’s “Optogenetics”. “For the first time, we can selectively re-create arbitrary states in the brain—and hence the mind.”

Negatives:

1. At over 600 pages, it will require an investment of your time.
2. Some essays were not worthy of this book. That said, the series has improved and there were very few lemons.
3. Lacks visual material to complement the excellent narrative.

In summary, I’m a big fan of The Edge. I enjoy essays from great minds covering a wide variety of topics and this one doesn’t disappoint. This has close to 200 essays and it never fails to be provocative and inspirational. The search for knowledge is a fun and satisfying pursuit. Pick up this book and enjoy the ride.

Further recommendations: “This Explains Everything: Deep, Beautiful, and Elegant Theories of How the World Works” and “This Will Make You Smarter” by John Brockman, “A Universe from Nothing: Why There Is Something Rather than Nothing” by Lawrence Krauss, “The Greatest Show on Earth: The Evidence for Evolution” by Richard Dawkins, “The Disappearing Spoon: And Other True Tales of Madness, Love, and the History of the World from the Periodic Table of the Elements” by Sam Kean, “The Tell-Tale Brain: A Neuroscientist’s Quest for What Makes Us Human” by V.S. Ramachandran, “The Believing Brain: From Ghosts and Gods to Politics and Conspiracies” by Michael Shermer, “How to Create a Mind: The Secret of Human Thought Revealed” by Ray Kurzweil, “The Blank Slate: The Modern Denial of Human Nature” by Steven Pinker, “Guns, Germs, and Steel: The Fates of Human Societies” by Jared Diamond, “Why Evolution Is True” by Jerry A. Coyne, and “Subliminal: How Your Unconscious Mind Rules Your Behavior” by Leonard Mlodinow.

Christopher Willey says

This book was like an 18 hour long TED conference. I was initially skeptical about Edge.org but now I realize that my ignorance was massive, and will forever be threatened (my ignorance that is) by the curiosities books like this will lead me towards.

Not every single essay was perspective altering, but there were many that were. Which is saying something.

If you like Radiolab, if you like TED, you’ll love these anthologies of thought written by some of the most inquisitive among us.

In a rush right now so I won’t go into specifics... let’s just say that there were many quotes that I will take with me into my next phase. Whatever that is.
