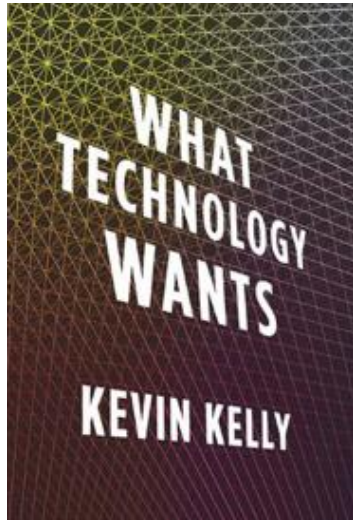


Tech Talks: Tech for Seniors

What Technology Wants (2010)

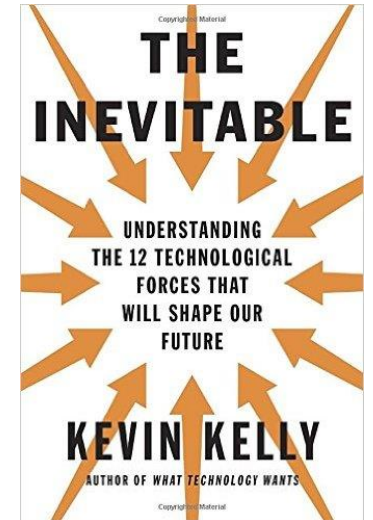
by Kevin Kelly



Center for Learning in Retirement - Fall 2017

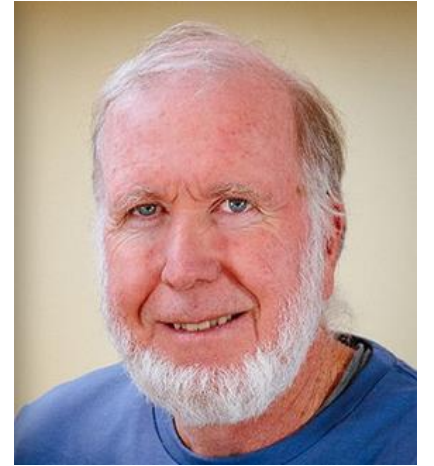
Glen Maxson

seniortechadvisor.com

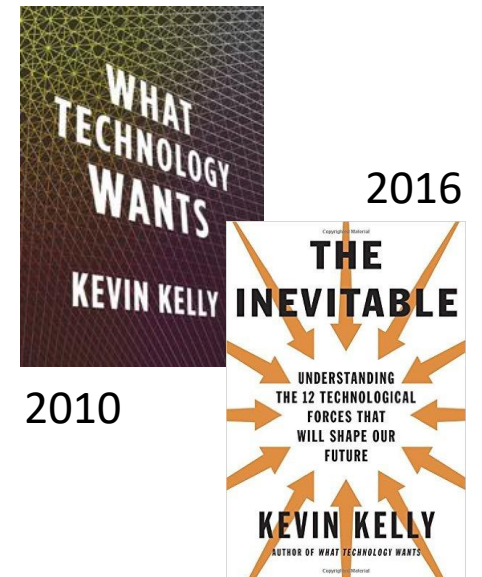


Introduction

[Kevin Kelly](#) (born August 14, 1952) is the founding executive editor of Wired magazine, and a former editor/publisher of the Whole Earth Review. He has also been a writer, photographer, conservationist, and student of Asian and digital culture.



- [Out of Control: The New Biology of Machines, Social Systems and the Economic World](#) '95
- [New Rules for the New Economy: 10 Radical Strategies for a Connected World](#) – Wired '97
- [What Technology Wants](#) '10
- [Cool Tools: A Catalog of Possibilities](#) '13
- [The Inevitable](#) '16
 - [The Next Fifty Years of Science](#) – Google Talks '06
 - TED Talks: [How technology evolves](#) '05, [The next 5,000 days of the web](#) '08, [Technology's epic story](#) '10, [How AI can bring on a second Industrial Revolution](#) '16
 - [Technium Unbound](#) - [Long Now Foundation](#) '14 (start at 10 min – 63 min)
 - [People Are Not Ready for the Future](#), [Observer](#) '16
 - [The Future of Tech](#) – [Commonwealth Club](#) '16 (start at 2 min – 34 min)
 - [The Inevitable: The Next 30 Years in Tech with Kevin Kelly](#) '16 (start 9:35 -
 - [12 Inevitable Tech Forces That Will Shape Our Future](#) - [SXSW Interactive](#) '16
 - [The Future According To 'Wired' Editor Kevin Kelly](#) - [Forbes](#) '17



Topic

- What Technology Wants
 - [Technium](#) defined: "the greater, global, massively interconnected system of technology"
 - The Technium is not God; it is too small. It is not utopia. It is not even an entity. It is the becoming that is only beginning...
 - It will take the whole Technium, and that includes us, to discover the tools that are needed to surprise the world. Along the way we generate more options, more opportunities, more connection, more diversity, more unity, more thought, more beauty, and more problems. Those add up to more good, an infinite game worth playing.
 - That's what technology wants.

Summary

- What Technology Wants
 - We humans are obliged to obey nature, except that sometimes we are forced to thwart it. While we bow to nature's beauty, we also frequently take out a machete and temporarily hack it back.
 - The Technium is now as great a force in our world as nature, and our response to the Technium should be similar to our response to nature. We can't demand that technology obey us any more than we can demand that life obey us.
 - We don't have to do everything that the Technium demands, but we can learn to work with this force rather than against it.
 - We first need to understand technology's behavior... to decide how to respond to technology, we have to figure out what technology wants.

Overview

- Origins p
- Technium p46
- Exotropy p57
- Convergence
- Moore's Law (and other Laws) p159
- Choice p191
- Precautionary Principle p246
- Tech wants – 10 tendencies p270

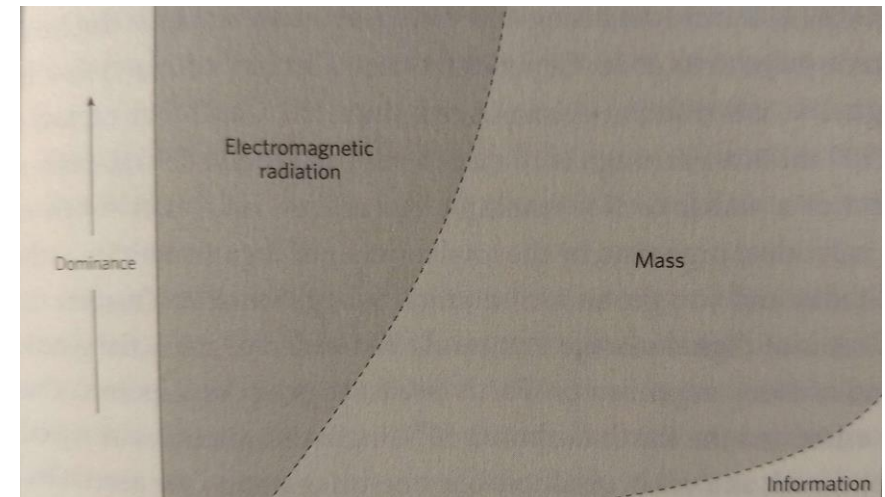
Technium

- Borrowing from major transitions in Smith & Szathmary's 'biological organization', the author proposes 'major transitions in the Technium':

Primate communication	->	Language
Oral lore	->	Writing / mathematical notation
Scripts	->	Printing
Book knowledge	->	Scientific method
Artisan production	->	Mass production
Industrial culture	->	Ubiquitous global communication
- No transition in technology has affected our species more than the creation of language. Language was the last major transformation in the natural world and the first in the 'manufactured' world.

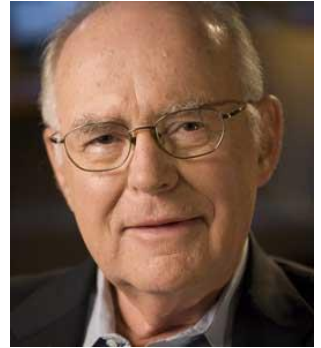
Exotropy

- The origin of the Technium can be retold in concentric creation stories – each retelling illuminates a deeper set of influences.
- Exotropy (aka negentropy) – the rising flow of sustainable difference – the inversion of entropy – a “turning outward”, and by definition, an increase in order.
- The rise of Exotropy over time – from stable molecules, to solar systems, to planetary atmosphere, to life, mind, and the Technium – restated as the slow accumulation of ordered information.

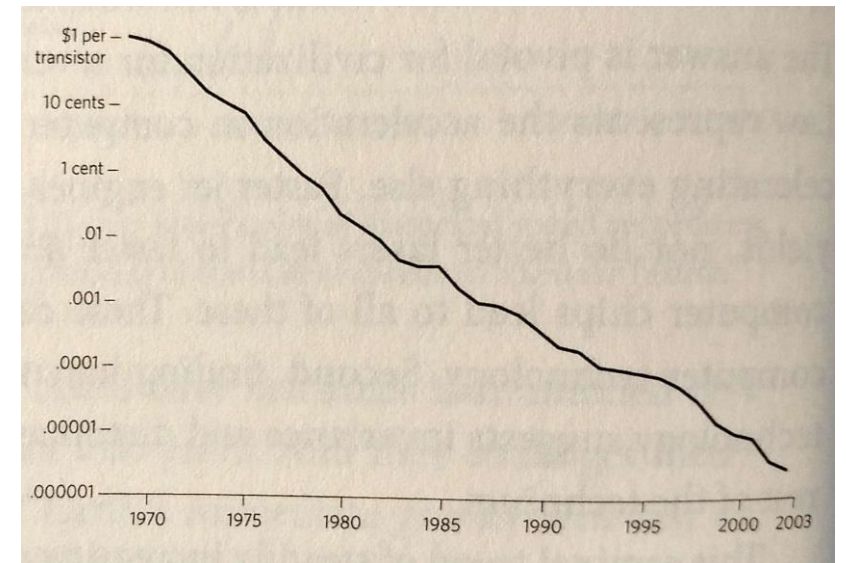


Moore's Law, etc.

- Moore's Law predicts that computing chips will shrink by half in size and cost every 18 to 24 months (and they have, for 50 years...) [until now](#)
- Moore's Law represents the acceleration of computer technology, which is accelerating everything else.
- Moore factored into his prediction the concept of 'similitude' – reduce chip size to increase performance, decrease cost.
- Gordon Moore: "By making things smaller, everything gets better simultaneously. There is little need for tradeoffs."

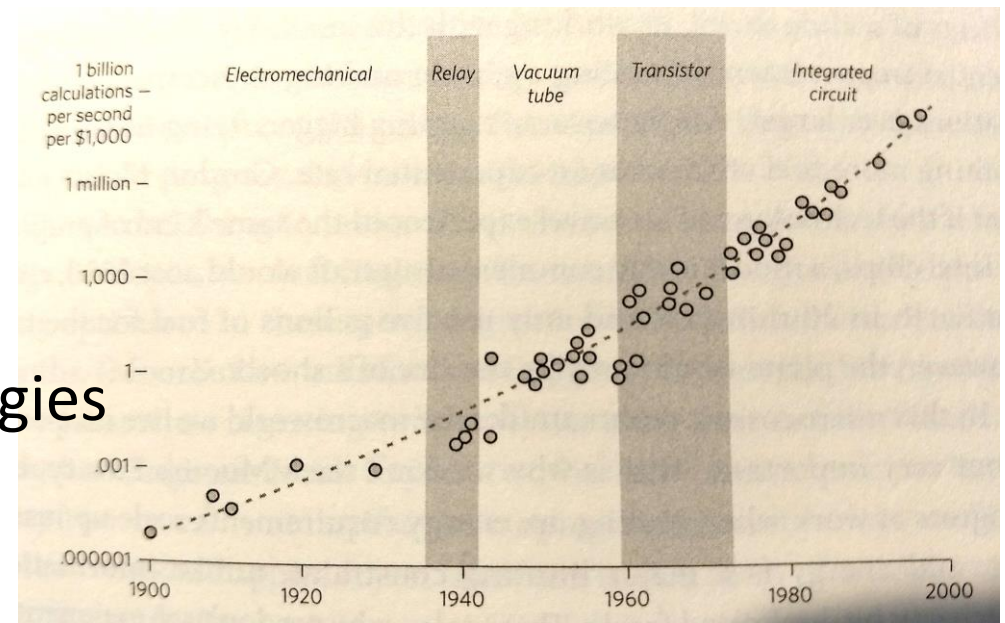


Gordon Moore

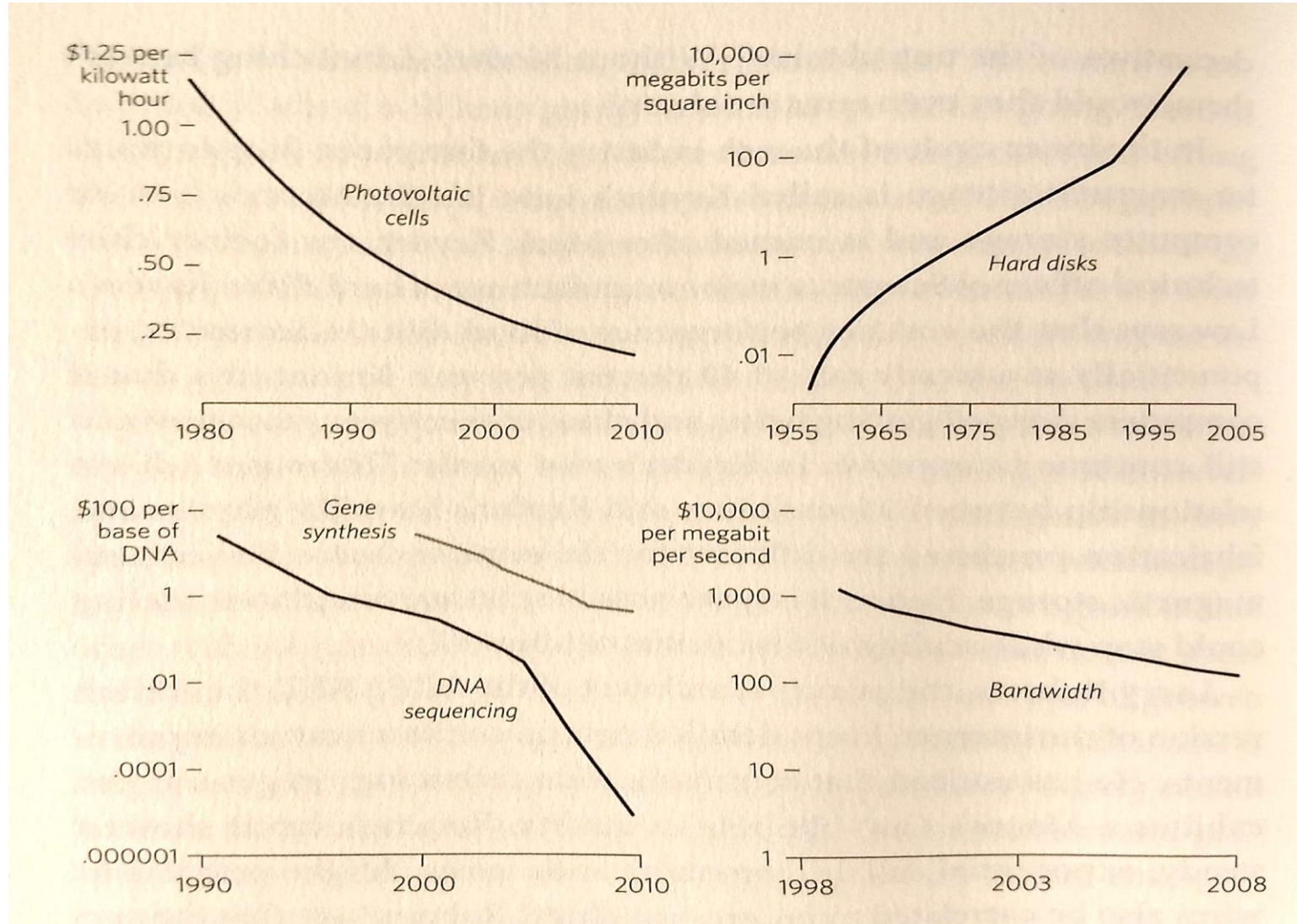


Other Laws

- Kryder's Law – the cost per performance of hard disks is decreasing exponentially at a steady rate of 40%/year. (Mark Kryder – Seagate)
- Roberts – a steady, exponential fall in communication costs. (Larry Roberts – ARPANET)
- Carlson – DNA sequencing costs falling exponentially (Rob Carlson – Biophysicist)
- Kurzweil's Law – tracks the 'number of calculations per second per \$1000' of electromechanical, relay, vacuum tube, transistor, and integrated circuit technologies over 109 years! Exponential increase...



Four Other Laws



A Matter of Choice

- Langdon Winner: “Insofar as men pour their own life into the apparatus, their own vitality is that much diminished. The transference of human energy and character leaves men empty, although they may never acknowledge the void.”
- Eric Brende (after spending time with the Amish): “Duplicating vital human capacities can have only one of two consequences: atrophying the capacities or creating competition between Homo sapiens and machine. Neither of these is savory to self-respecting members of the former.”
- A true articulation of each technology’s vices will allow us to see that our embrace of the Technium is done willingly, and is neither an addiction nor a spell.

Precautionary Principle

- Crafted at the 1992 Earth Summit [Rio Declaration](#)

“Lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”

Since revised, but all versions hold this axiom in common: A technology must be shown to do no harm before it is embraced.

- The Proactionary Principle is a guide to assess new technologies:
 - Anticipation
 - Continual Assessment
 - Prioritization of Risks, including natural ones
 - Rapid Correction of Harm
 - Not Prohibition, but Redirection

Technology Wants What We Want

- Increasing (exotropic trends)
 - Efficiency – the chip
 - Opportunity – expanded by the Technium
 - Emergence – ‘higher’ levels of organization, emerge from ‘lower’ parts
 - Complexity – lineages of technology reconstructed to yield more complex artifacts
 - Diversity – through personal choice toward smaller, increasing selection of stuff
 - Specialization – technology born in generality grows toward specificity
 - Ubiquity – the consequence of self-production in life is the drive toward ever-presence
 - Freedom – more powerful technology opens up new, greater freedoms
 - Mutualism – each time we reinvent something, we make it more mutualistic
 - Beauty – year by year, technology increase in beauty, sometimes rivaling the natural world
 - Sentience – the Technium assembles brain-like networks at scales way beyond individuals
 - Structure – with technological innovation, the structure of our knowledge evolves
 - Evolvability – the expanding Technium is an open-ended beginning, an infinite game calling us to play