A digital world

Web Marketing & Digital Advertising
4 principles for an open world

Don Tapscott, 2012
https://www.ted.com/talks/don_tapscott_four_principles_for_the_open_world?language=it
Digitization, digitalization, binary codes ...

01 What is digital?
Digitization, digitalization, binary codes ...

02 Digital technologies
Characteristics, how changes the world

03 The Long Tail
Not only Amazon ...
Digital data is also called binary data because it is encoded by combinations of only two symbols, called binary digits, which form strings of 0 and 1.

A series of 8 bits forms one byte.

Instead, analog data and the systems that encode, store, process or transmit it, change continuously.

A bit is the minimum unit of information.

Digital data and the systems that encode it change discretely between different states, such as on/off.
Watches for example...

Traditional watches
A watch with hands is analog because the position of each of its 3 hands (hours, minutes and seconds) can indicate any of the infinite points that form the circumference of the watch face itself, points that are therefore not numerable.

Modern watches
In contrast, in a digital clock, the digits of the hour, minutes and seconds indicate only and only the 86,400 possible moments in which it can be divided one day into seconds (24 hours x 60 minutes x 60 seconds).
Digitization

• An object is digitized, i.e. turned into digital format, if its original (analog) state is "translated" and represented by a **numerable set of elements**.

• For example, a photo, normally formed by an **infinite number** of dots, each one of which is formed by an infinite range of colors, is scanned, and therefore translated into a digital photo,

• When its surface is represented by a **discrete number** of "points" (usually small squares or rectangles called pixels) each of which is a format of a colour of the possible **16 777 216**
Characteristics of digital technologies

- High productivity
- High diffusive potential
- High information complexity
- Interactivity

- Overcoming trade-off reach/richness
- Long tail phenomenon
- Convergence
IBM computers
High productivity

Improvements in technology (hardware)

Reduction of costs

Increased speed in elaboration

<table>
<thead>
<tr>
<th>Decade</th>
<th>Description</th>
<th>Transistors</th>
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<td>1960s</td>
<td>TTL Quad Gate</td>
<td>16 Transistors</td>
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<tr>
<td>1970s</td>
<td>8-bit Microprocessor</td>
<td>4500 Transistors</td>
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<tr>
<td>1980s</td>
<td>32-bit Microprocessor</td>
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<td>1990s</td>
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<td>64-bit Microprocessor</td>
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<td>2010s</td>
<td>3072-Core GPU</td>
<td>8,000,000,000 Transistors</td>
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High diffusion potential

Utility of user i

Number of users
A few questions…

How many of you have ever sent an MMS?

How many of you still send SMS?

WHAT DO YOU USE?
WHY??
Reasons

To benefit from the positive externalities linked to digital technology, we need to achieve a CRITICAL MASS, which is a function of two factors:

- Scale economies on the demand side
- Technology lock-in
Economies of scale on the demand side determine the reduction of the average unit price to access the technology as the diffusion of technology increases.
Lock-in effect

The presence of a lock-in situation implies the existence of *switching costs* (monetary or cognitive) that users of a technology have to bear to change, in fact if the user is faced with high costs of change, the probability of affirming a technology as standard increases.

An example from the past …
Qwerty vs. Dvorak

- The QWERTY design (patented by Christopher Sholes in 1868 and sold to Remington in 1873) aimed to solve a mechanical problem of early typewriters.
- When certain combinations of keys were struck quickly, the type bars often jammed.
- To avoid this, the QWERTY layout put the keys most likely to be hit in rapid succession on opposite sides.
- This made the keyboard slow.
Qwerty vs. Dvorak

• A different layout, which had been patented by August Dvorak in 1936, was shown to be much faster.

• Yet the Dvorak layout has never been widely adopted, even though (with electric typewriters and then PCs) the anti-jamming rationale for QWERTY has been defunct for years.
• Bandwidth grows fast.
Putting petabyte in its place

<table>
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<th>Unit</th>
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<tr>
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<td>Gigabyte</td>
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<td>Terabyte</td>
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<td>Petabyte</td>
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<td>Zettabyte</td>
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</tr>
<tr>
<td>Yottabyte</td>
<td>1,000,000,000,000,000,000,000,000</td>
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</tbody>
</table>
A petabyte is a lot of data:

- 1 Petabyte = 20 million four-drawer filing cabinets filled with text.
- 1 Petabyte = 13.3 years of HD-TV video.
- 1.5 Petabytes = size of the 10 billion photos on Facebook.
- 20 Petabytes = the amount of data processed by Google per day.
- 20 Petabytes = total hard drive space manufactured in 1995.
- 50 Petabytes = the entire written works of mankind, from the beginning of recorded history, in all languages.

(all approximate)
Trade-off reach/reachness

MARKET REACH

INFORMATION RICHNESS

Internet & ICT
Trade-off reach/reachness

MARKET REACH

Quantitative market researches

Tracking, profiling, chat, online community

Qualitative market researches

INFORMATION RICHNESS
98 personal data points that Facebook uses to target ads to you

1. Location
2. Age
3. Gender
4. Gender
5. Language
6. Education level
7. Field of study
8. School
9. Ethnic affinity
10. Income and net worth
11. Home ownership and type
12. Home value
13. Property size
14. Square footage of home
15. Year home was built
16. Household composition
17. Users who have an anniversary within 30 days
18. Users who are away from family or hometown
19. Users who are friends with someone who has an anniversary, is newly married or engaged, recently moved, or has an upcoming birthday
20. Users in long-distance relationships
21. Users in new relationships
22. Users who have new jobs
23. Users who are newly engaged
24. Users who are newly married
25. Users who have recently moved
26. Users who have birthdays soon
27. Parents
28. Expectant parents
29. Matters, divided by “type” (course, trendy, etc.)
30. Users who are likely to engage in politics
31. Conservatives and liberals
32. Relationship status
33. Employer
34. Industry
35. Job title
36. Office type
37. Interests
38. Users who own motorcycles
39. Users who plan to buy a car (and what kind/brand of car, and how soon)
40. Users who bought auto parts or accessories recently
41. Users who are likely to need auto parts or services
42. Style and brand of car you drive
43. Year car was bought
44. Age of car
45. How much money user is likely to spend on next car
46. Where user is likely to buy next car
47. How many employees your company has
48. Users who own small businesses
49. Users who work in management or are executives
50. Users who have donated to charity (divided by type)
51. Operating system
52. Users who play canvas games
53. Users who own a gaming console
54. Users who have created a Facebook event
55. Users who have used Facebook Payments
56. Users who have spent more than average on Facebook Payments
57. Users who administer a Facebook page
58. Users who have recently uploaded photos to Facebook
59. Internet browser
60. Email service
61. Early/late adopters of technology
62. Expats (divided by what country they are from originally)
63. Users who belong to a credit union, national bank or regional bank
64. Users who invest (divided by investment type)
65. Number of credit lines
66. Users who are active credit card users
67. Credit card type
68. Users who have a debit card
69. Users who carry a balance on their credit card
70. Users who listen to the radio
71. Performance in TV shows
72. Users who own a mobile device (divided by what brand they use)
73. Internet connection type
74. Users who recently acquired a smartphone or tablet
75. Users who access the Internet through a smartphone or tablet
76. Users who use coupons
77. Types of clothing user’s household buys
78. Time of year user’s household shops most
79. Users who are “heavy” buyers of beer, wine or spirits
80. Users who buy groceries (and what kinds)
81. Users who buy beauty products
82. Users who buy allergy medications, cough/cold medications, pain relief products, and over-the-counter meds
83. Users who spend money on household products
84. Users who spend money on products for kids or pets, and what kinds of pets
85. Users whose household makes more purchases than is average
86. Users who tend to shop online (or off)
87. Types of restaurants user eats at
88. Kinds of stores user shops at
89. Users who are “receptive” to offers from companies offering online auto insurance, higher education or mortgages, and prepaid debit cards/satellite TV
90. Length of time user has lived in house
91. Users who are likely to move soon
92. Users who are interested in the Olympics, full football, cricket or Ramadan
93. Users who travel frequently, for work or pleasure
94. Users who commute to work
95. Types of vacations user tends to go on
96. Users who recently returned from a trip
97. Users who recently used a travel app
98. Users who participate in a timeshare
Technological convergence

Linked to the similarity between technological and production processes (once considered separate and distant). It means that:

The **same technology** is at the basis of a **growing number of products**

An increasing number of **different technologies** is **embodied in a same product**
Georeferentiation
Smart TV
The long tail

Forget squeezing millions from a few megahits at the top of the charts. The future of entertainment is in the millions of niche markets at the shallow end of the bitstream.

Chris Anderson
In 1988, a British mountain climber named Joe Simpson wrote a book called *Touching the Void*, a harrowing account of near death in the Peruvian Andes. It got good reviews but, only a modest success, it was soon forgotten.
Jon Krakauer wrote *Into Thin Air*, another book about a mountain-climbing tragedy, which became a publishing sensation. Suddenly Touching the Void starts to sell again.
Then…

1. Random House rushed out a new edition to keep up with demand.
2. Booksellers began to promote it next to their Into Thin Air displays, and sales rose further.
4. That same month, IFC Films released a docudrama of the story to critical acclaim.
5. In 2006, Touching the Void outsells Into Thin Air more than two to one.

WHAT HAPPENED???????
Amazon.com has new recommendations for you based on items you purchased or told us you own.

- The Little Big Things: 162 Ways to Pursue Excellence
- Fascinate: Your 7 Triggers to Persuasion and Captivation
- Sherlock Holmes (Blu-ray)
- Alice in Wonderland (Blu-ray)
It was the era of hits and blockbusters
Traditional markets: find a local audience

- An average movie theater will not show a film unless it can attract **at least 1,500 people** over a two-week run; that's the rent for a screen.

- An average record store needs to sell **at least two copies** of a CD per year to make it worth carrying; that's the rent for a half inch of shelf space.

- And so on for DVD rental shops, videogame stores, booksellers, etc.
Different inventories, different players

**TOTAL INVENTORY**

*inventory in a typical store*

- **Rhapsody**: 735,000 songs
- **Wal-Mart**: 39,000 songs*
- **Amazon**: 2.3 mil books
- **Barnes & Noble**: 130,000 books*
- **Netflix**: 25,000 DVDs
- **Blockbuster**: 3,000 DVDs*
Product availability

**THE NEW GROWTH MARKET**

Obscure products you can’t get anywhere but online

- product not available in offline retail stores
  (% total sales)

- **Rhapsody**: 22%
- **Amazon**: 25%
- **Netflix**: 20%
Anderson finds out this
Traditional markets: physical constraints

Hit-driven economics is a creation of an age without enough room to carry everything for everybody.

- Not enough shelf space for all the CDs, DVDs, and games produced.
- Not enough screens to show all the available movies.
- Not enough channels to broadcast all the TV programs.
- Not enough radio waves to play all the music created
- …
Traditional markets: rule

- Traditional Market: 20% of the most popular products generates 80% of the total sale, and 100% of the total profit.

- The retailer makes the majority of the profit by selling more from a minority of popular products.
No long tail in traditional markets

CULTURAL ISSUES??

Lower demand leads to larger marginal cost.

Stop to produce the products with low demand.
Before the long tail

- It was the era of **hits and blockbusters**
- **One-size-fits-all** products
- Limits posed by physical space
- **World of scarcity**
- **Need for selection** of mainstream products by sellers or distributors
What happens?

- From a mass market to a mass of (niche) markets

- Niche markets have always existed but before there was no possibility to satisfy them
Online everything changes

- Amazon is the precursor, along with eBay
- No more physical spatial constraints
- Amazon relies on countless shops that provide it with materials when needed
- Distributed inventory
- **We move on to the world of abundance** (vs. the world of scarcity)
NOT A STORE FOR 30 MILLION CUSTOMERS, BUT 30 MILLION STORES
With relation to books for example …

The top 100,000 most popular books (sold on the traditional stores) account for 43% of the total sale. 57% of the sale comes from the long tail.

43% of Amazon's Sales
Books carried by traditional stores

57% of Amazon's Sales
Books only carried by Amazon
Impacted products?

- Virtually universal validity
- **All** product sectors
- Concerns online resources
- A first step is the possibility to sell products online
- A further boost is the possibility of selling products online in digital format
The sum of niche markets

- It is important from an economic point of view because the sum of these niche markets is as large as (if not bigger) the market of the hits.

- Once storage costs and distribution costs have been eliminated, the sum of the niches brings the same profit to online sellers as the hits.
Again the Pareto rule (80/20)