Evolving Global Information Society

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These slides complement my notes for lectures at the 2002 School on Radio Use for Digital and Multimedia Communications, the Abdus Salam International Centre for Theoretical Physics (www.ictp.trieste.it). If you have comments or suggestions, please contact the author, at ryszard.struzak@ties.itu.int. If you cite or link to this material, please credit the author.

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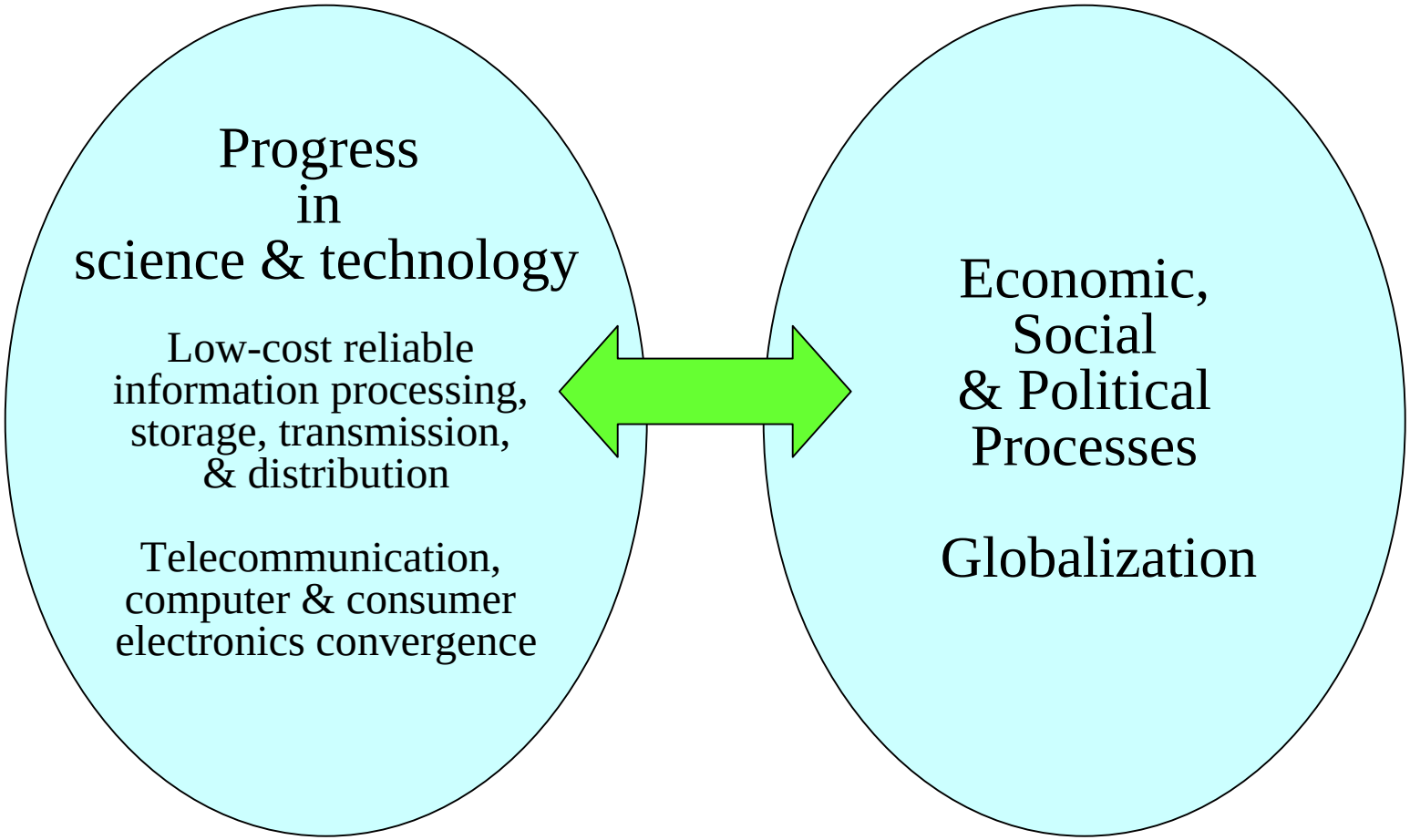
Outline

- Introduction
- Technology and Information
- Types of Information
- Intellectual Property
- Information Produced
- Information Consumed
- Accessing Information
- Intercepting Information
- Concluding Remarks
- Film: “Internet-on-the-Sky”

Towards Information Society



What is Global Information Society?

- A new era when knowledge and ICT would be used for the benefit of all people of the world
- Global Information Society "*enables people to fulfil their potential and realize their aspirations*“.

  » Documents of the G-8 Summit on Global Information Society, Okinawa 21-23 July 2000.

What Are Benefits of ICTs?

- New opportunities, wealth, freedom, and quality of life that were unthinkable earlier
- New ways the governments interact with citizens
- New ways people live, learn and work because of increased productivity in all sectors

Growth Due to ICT (Examples)

- Costa Rica 1999:
  - The highest growth in Latin America (+ 8.3%) due to microchips export (38%) of all exports (after Intel investments)
- India 2000:
  - Software export (~$4 billion) = 9% of total export. Indian companies have become world leaders in Internet-based applications

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Examples

- Show colour picture series:
  - New way of organizing election campaign
  - New ICT displays
  - New wearable ICT equipment at work
  - New kind of stratospheric radio stations
  - New way of mapping the earth from space
  - New way of producing electrical power from space

Support

- G8
  - Okinawa Charter on Global Information Society (2000)
- Kofi Annan, UN Secretary General
  - We, The Peoples: The Role of the UN in the 21-st Century. Millennium Report (2000)
- Main discussion: (UN) World Summit on the Information Society (2003, 2005)

Warning

- Due to ICT progress, the role of humans in the production process will diminish

"*…in the same way that the role of horses in agricultural production was first diminished and then eliminated by the introduction of tractors*"

» Wassily Leontief, The Nobel laureate economist

Criticism

- Rifkin J: *The End of Work: The Decline of the Global Labour Force and the Dawn of the Post-Market Era* (1996)
- Fukuyama F: *The Great Disruption* (1999)
- Chomsky N: *Profit Over People: Neoliberalism and Global Order* (1999)
- Public demonstrations & protests

Science & Technology Are Neutral

- Science and technology are neutral: they can be used for good or for bad purposes (intentionally or unintentionally)
- ICT technology has been deployed in response to market needs
- Markets are created by the affluent sections of society, and not by the needs of the poor

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Types of Information

- Free information
  - Marketing, elections
  - May be dangerous: viruses, manipulations of public opinion
- Commercial information
  - Private property, copyright
- Strategic information
  - Could be terror-targeted
  - Intelligence, counter-intelligence

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Intellectual Property

- Those who consume information should compensate the production/ distribution costs.
- Copyright encourages creativity (which serves a common benefit) - illegal copying discourages creativity.
- In 1996 alone, software developers suffered over US $11 billion in lost revenues due to software piracy

  » The Business Software Alliance

Dilemma: Private or Public

- A reasonable balance is needed between the copyrighted and publicly available information
  - Keeping information freely available also serves the common benefit
  - Copying enables low-cost technology transfer
- Kofi Annan Appeal
  - *"…we must ensure that free access is provided to the information compiled by researchers deciphering the genetic code… [that] belongs to all humanity"*
    - » We, The Peoples: The Role of the UN in the 21-st Century. Report of the UN Secretary General (2000)

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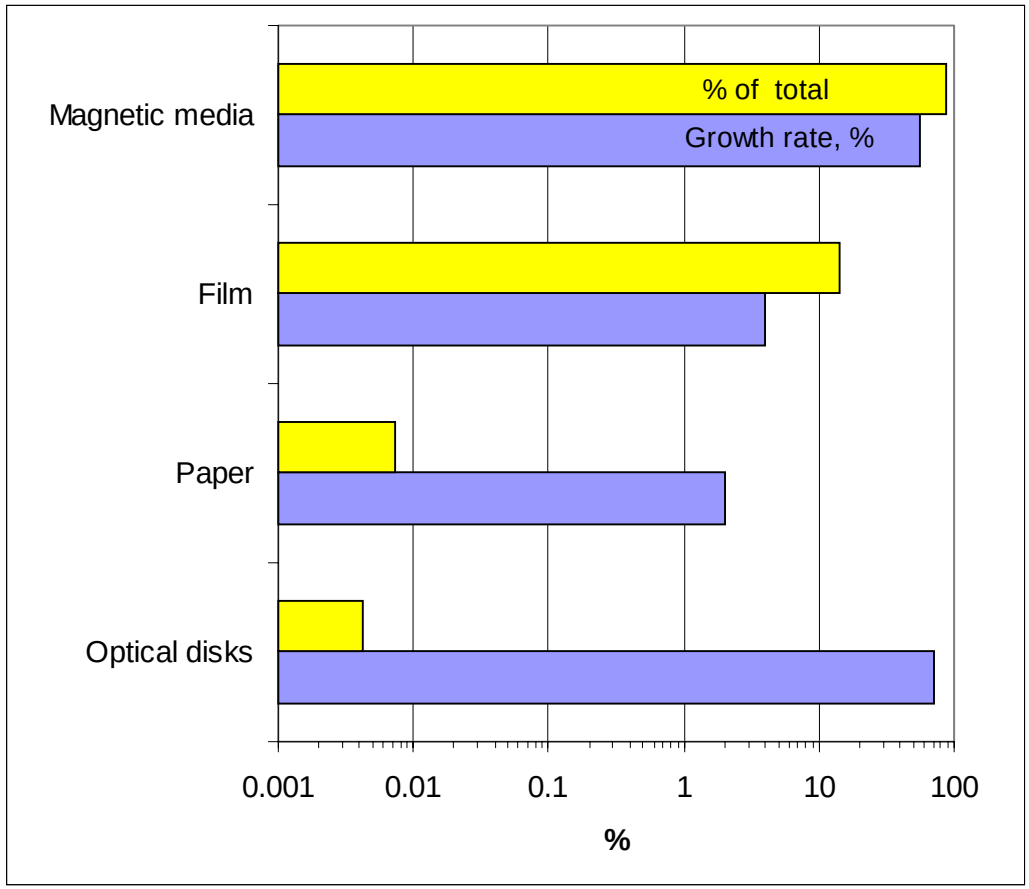
Information Produced

- In 2000, the world produced roughly 250 Mb of information per person i.e. for every man, woman and child on the earth
- Most of that information was produced in a few rich countries by a minor part of the society

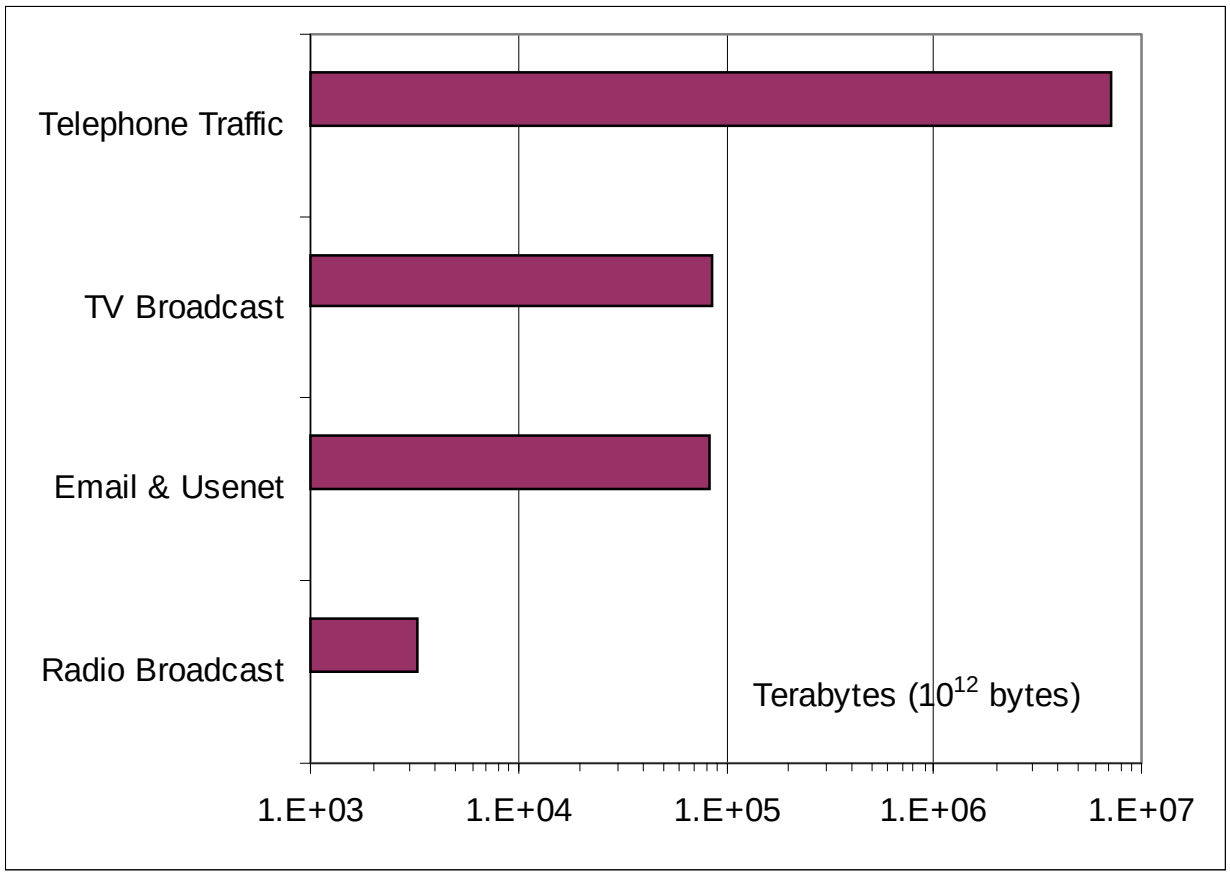
Information Stored Worldwide

Printed documents of all kinds comprise <0.01% of the total volume of information



Source: Lyman P, Varian HR: How Much Information?, SIMS, University of California at Berkeley, 2000)

E-Information Transmitted (World)



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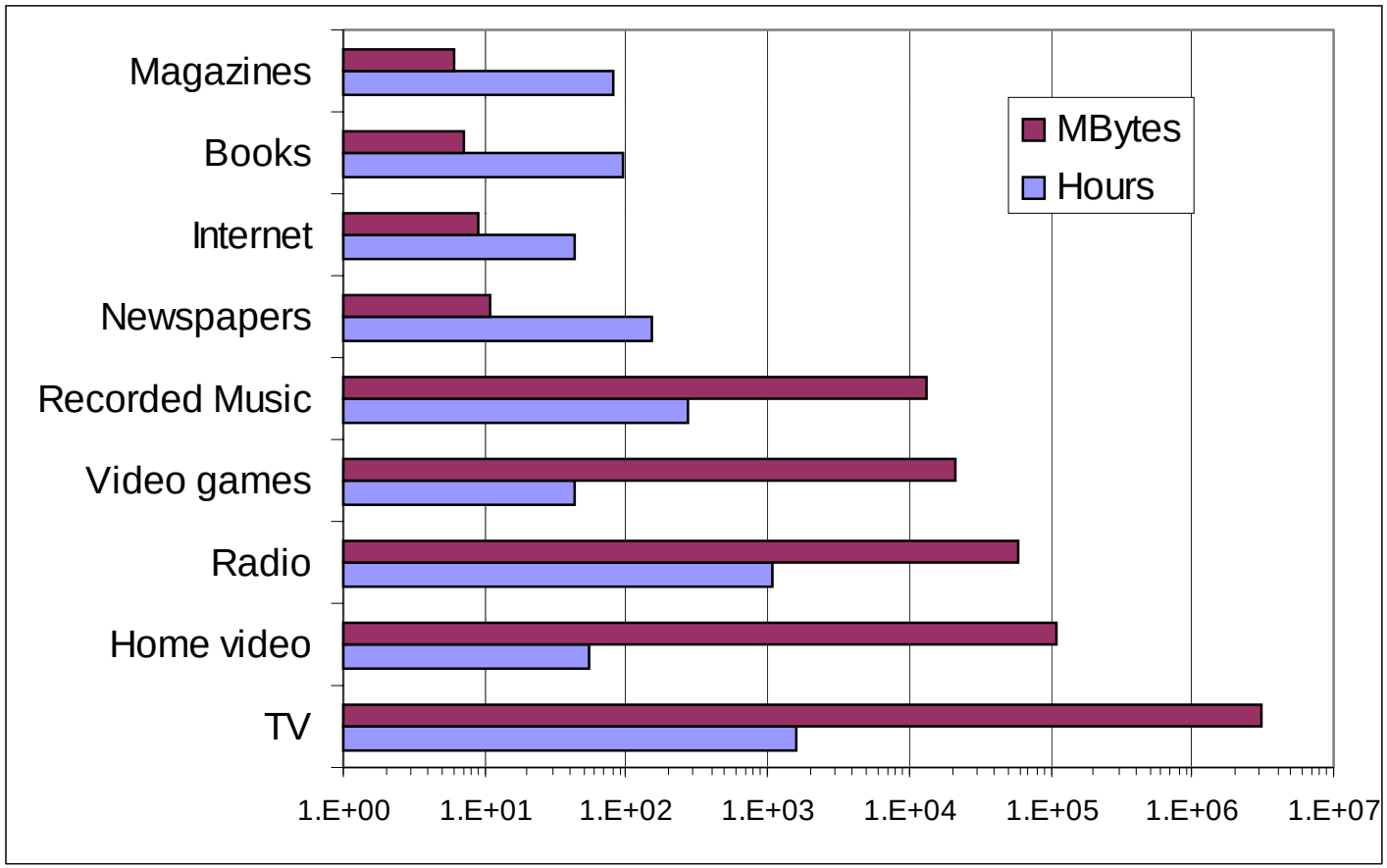
Information Consumed

(Yearly Average, USA Household, 1999)



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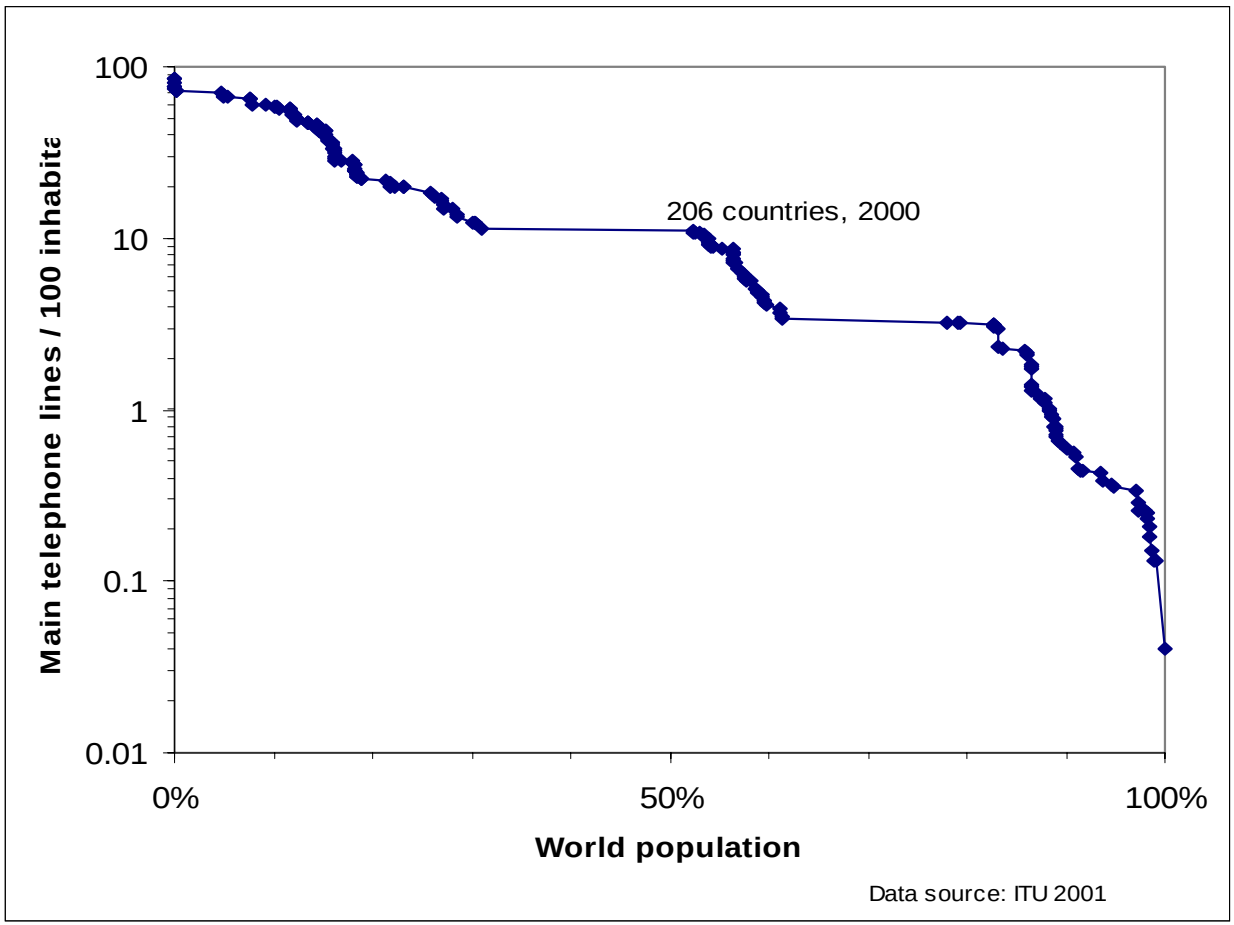
Accessing WWW

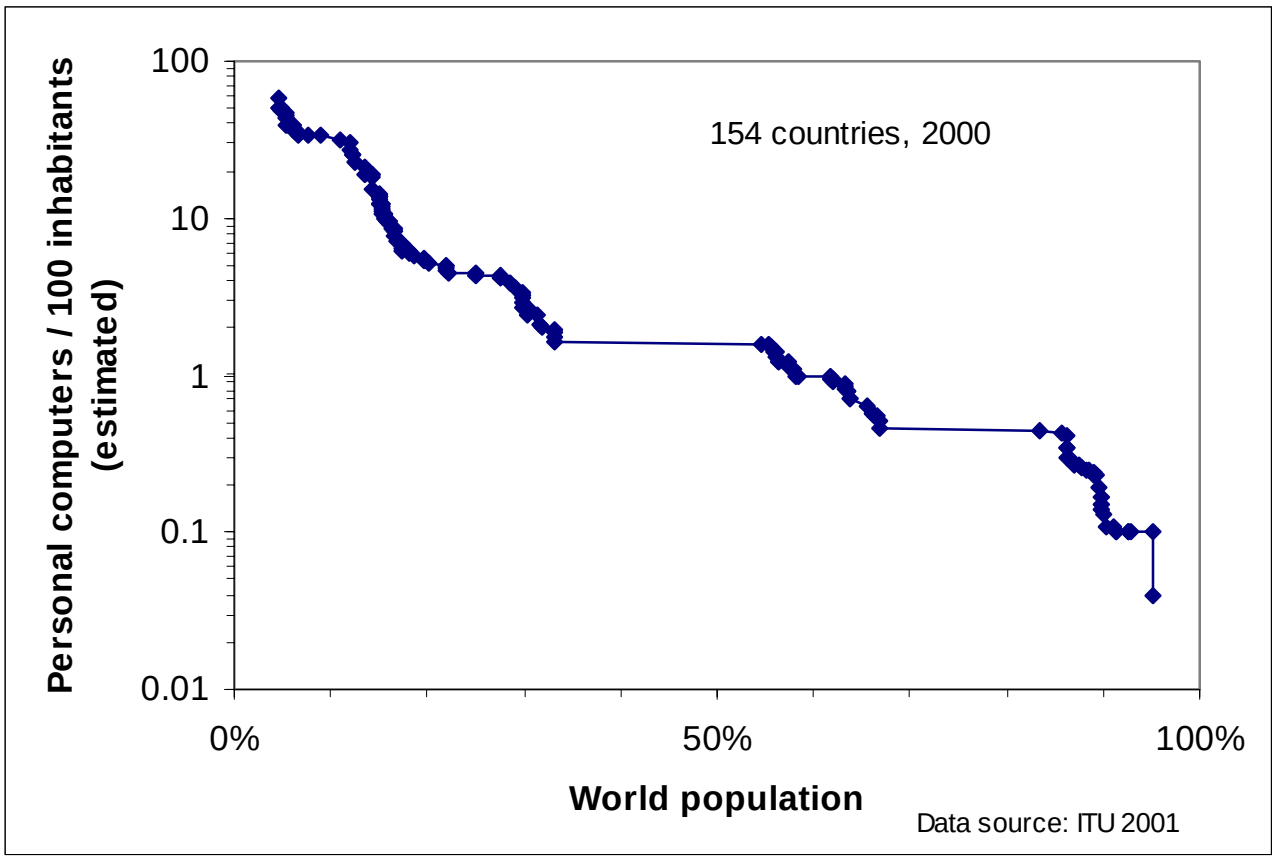
- The majority of the world population has no access
  - >96% of computers connected to Internet are used by 15% of the world's population
- Kofi Annan's appeal
  - "*The content of the Internet must be available …*
  - *All nations must have the requisite infrastructure…*
  - *The price of Internet access must be brought within the reach of people*"

Kofi Annan, at the occasion of International Day of Telecommunications, [ITU News 4/2001]

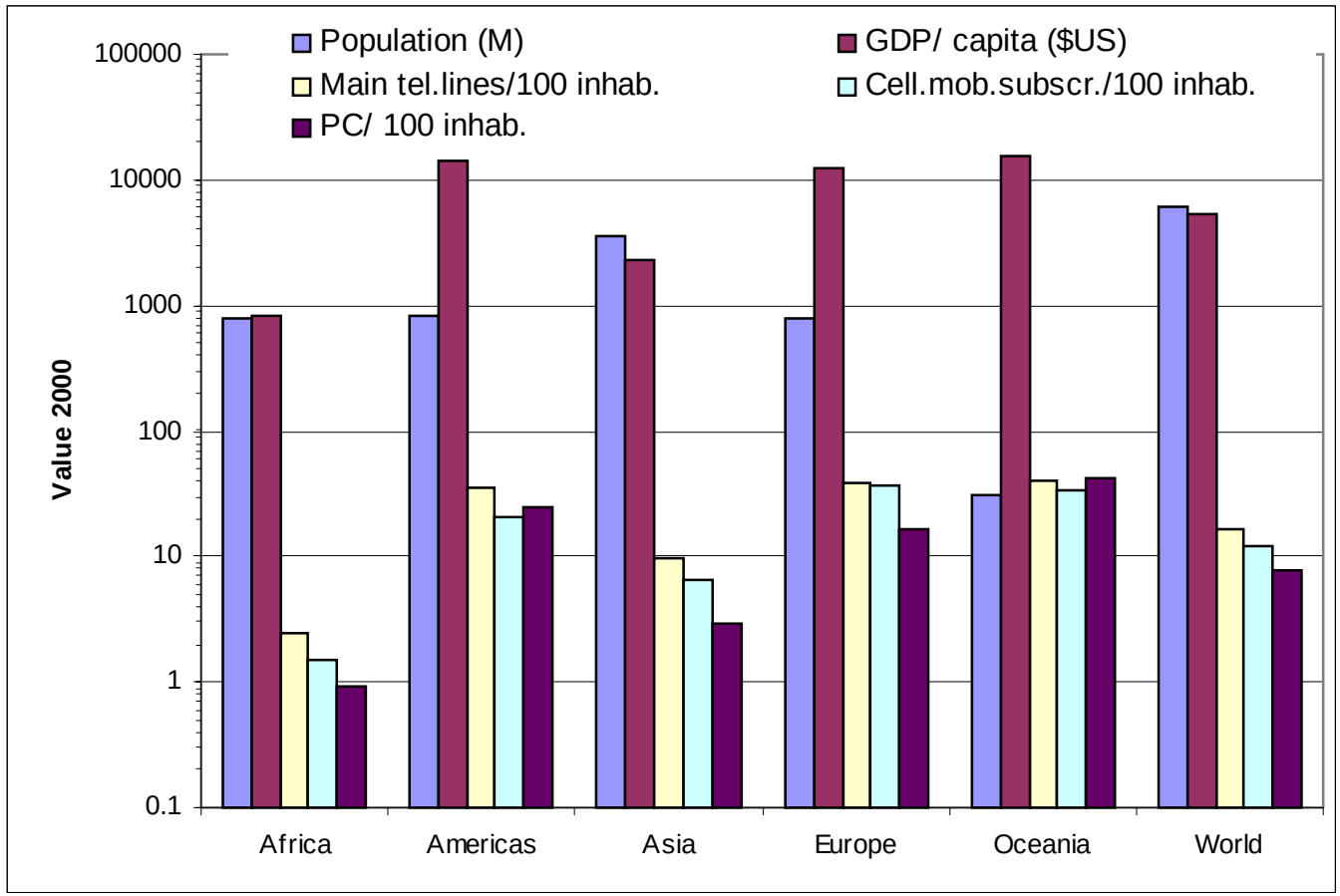
Telephone Distribution



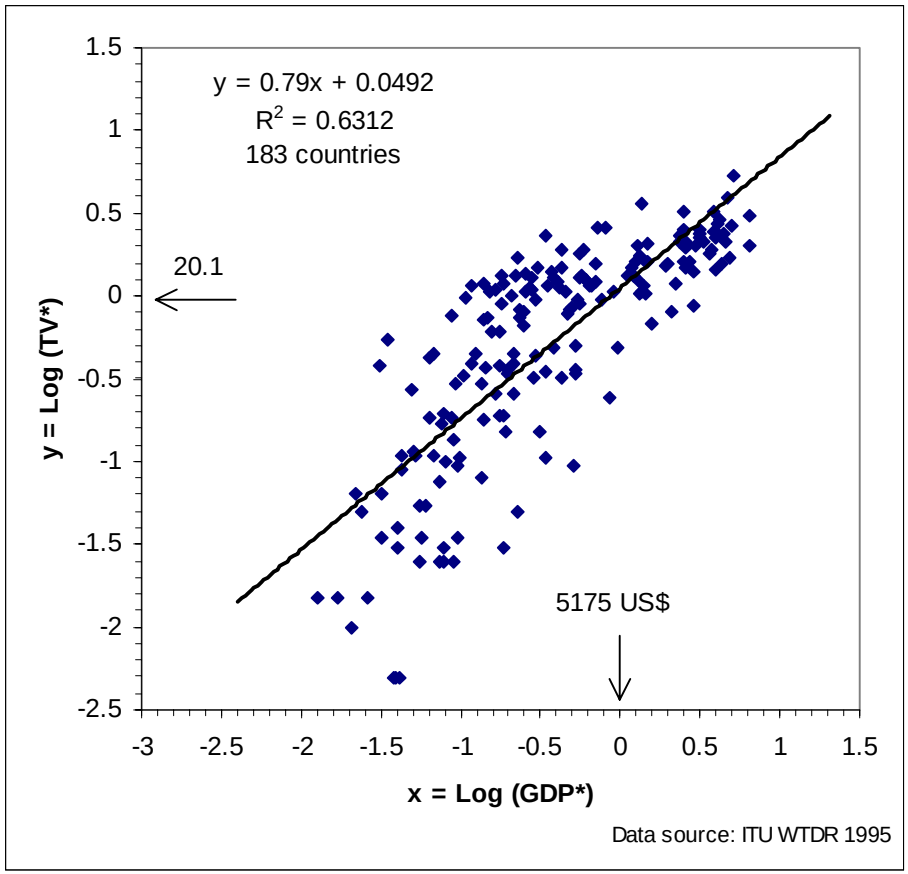
Personal Computer Distribution



Disparities - Continents



Correlation example: TV vs. GDP



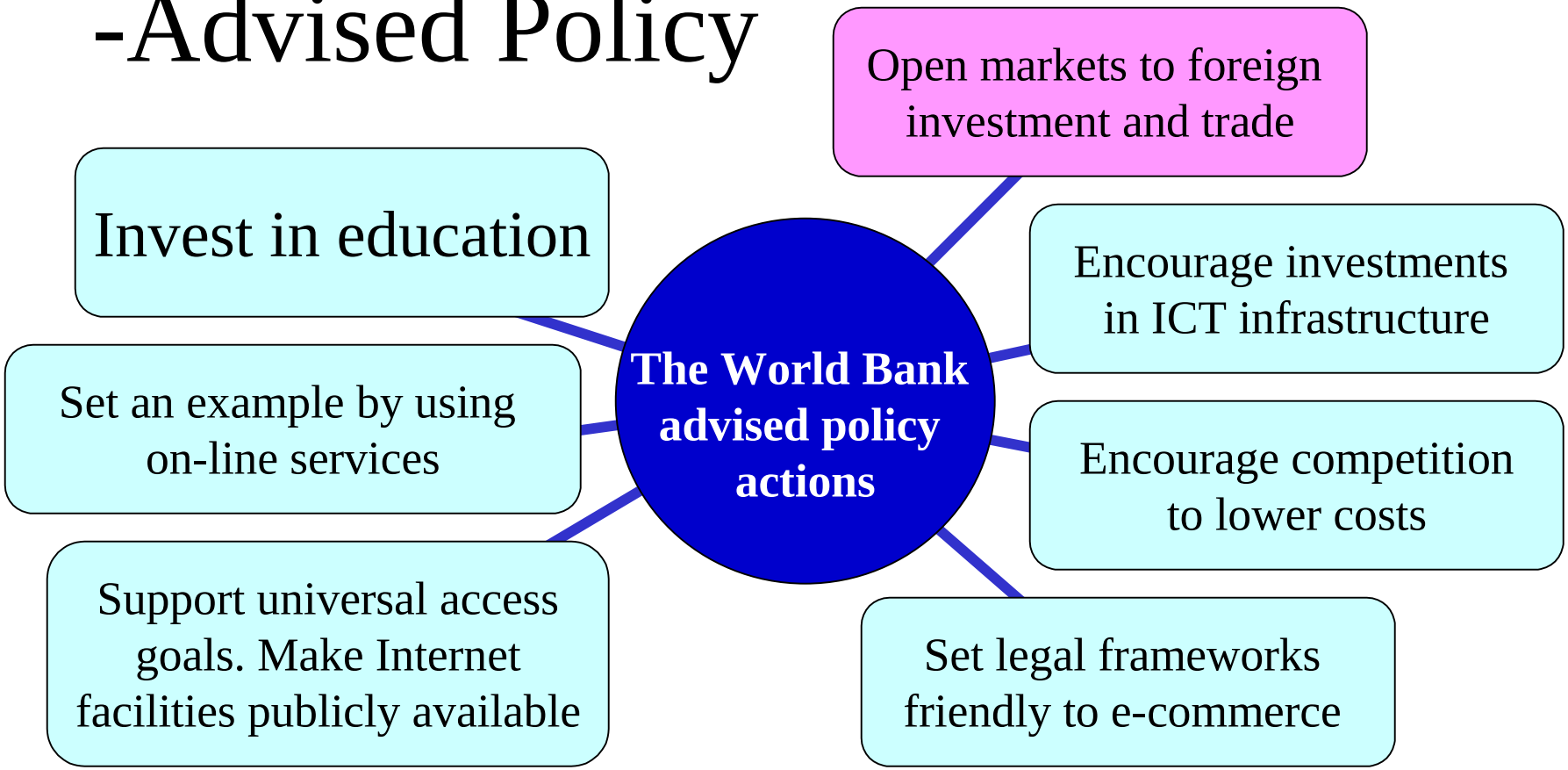
TV*: national average number of TV receivers (per 100 inhabitants) divided by the world average

GDP*: national GDP (per capita) divided by the world average

Digital Divide

- Digital divide is a manifestation of poverty – ICTs are meaningless for those who lack essentials: safe water, adequate nutrition, basic education…
- The social order and not technology decides how the wealth is created and shared
- Technology alone does not eradicate poverty. The 1970-2000 technological boom in USA
  - Did not change the poverty rate (>10%)
  - Increased the income gap between the rich and the poor by ~50% (K. Venkat: Delving into the Digital Divide; IEEE Spectrum Feb 2002, p.16)

The World Bank--Advised Policy



Connecting computers is only the first step toward a networked society

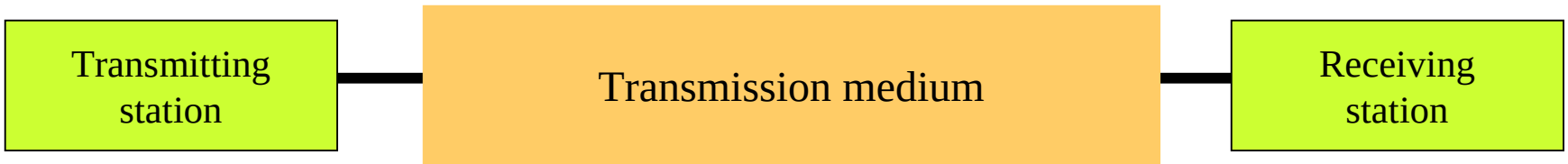
Source: 2001 World Development Indicators

Investments

- Investments necessary to create infrastructure
- Radio is the best technology to invest in, if wired/cabled infrastructure does not exist
- Private direct foreign investment was the largest single source of external development finance for developing countries in Commonwealth (1990-1998)
- Major barriers in developing counties:
  - Corruption
  - Instability

Radio link

Radio waves carry energy and information
300’000 km/s to fixed & mobile users



Transmission medium (radio wave)

- Is ubiquitous: ready to use at any place, any time
- Needs no deployment or right-of-way
- Is indestructible No theft, snow, wind, flood, earthquake, tornado, tsunami, falling trees... (except nuclear explosion)
- Is free: no production/ transport/ warehousing/ installation/ maintenance costs

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Threats

- Information can be corrupted by viruses, disturbed and/or blocked, intercepted by criminals, terrorists and by governments
- Information can be intercepted from satellites, from terrestrial links and from undersea cables
- Almost every nation has practised covert interception of telecommunications.
- COMINT - a large-scale activity providing clients with intelligence on diplomatic, economic scientific and military developments

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Nelson Mandela's Appeal

"The young people of the world must be empowered to participate in the building of the information age.

They must become the citizens of the global information society.

And we must create the best conditions for their participation."

Thank you for your attention

Film: “Internet-on-the-Sky”