

# Drinking from a Firehose

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## SCIENCE

### Tracking the Flow of Information

Ithiel de Sola Pool

Identification of social indicators that track changes in the human condition have been prerequisite to much of the progress of the social sciences. Early economics focused extensively on foreign trade because of the data that existed in the form of customs records. More recently cost-of-living and unemployment indexes have played a large role in policy analyses. Now indexes of cultural

and nine industrialized countries shows parallel trends in all of them. In Japan the information sector grew from 18 percent of the work force in 1960 to 30 percent in 1975, and in the United Kingdom, it grew from 27 percent in 1951 to 36 percent in 1971.

While white-collar employment is a useful index of information activity, additional insights can be obtained from

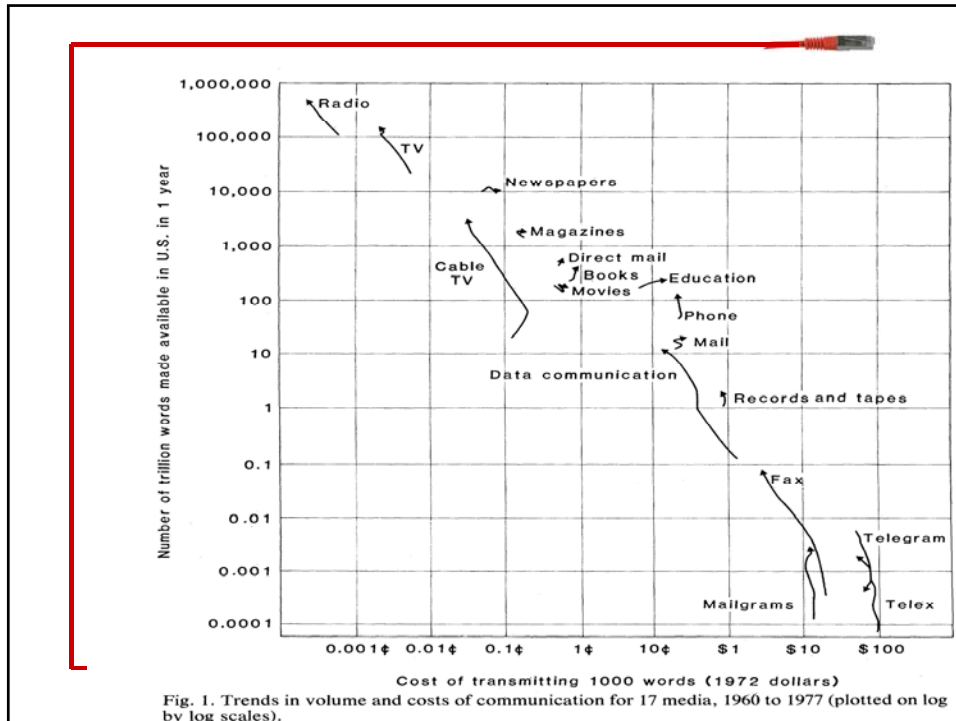
**Summary.** By using words transmitted and words attended to as common denominators, novel indexes were constructed of growth trends in 17 major communications media from 1960 to 1977. There have been extraordinary rates of growth in the transmission of electronic communications, but much lower rates of growth in the material that people actually consume, representing the phenomenon often labeled information overload. Growth in print media has sharply decelerated, and a close relationship is found between the cheapness of a medium and its rate of growth.

media that provide information to individuals, that is, point-to-point media. The growth in both mass and point-to-point media has been greatest in the electronic ones. Print media are becoming increasingly expensive per word delivered while electronic media are becoming cheaper, and costs seem to predict well what is used. The implications of this finding for the continued health of various media are considerable.

By compiling data on trends in the circulation and in the use of 17 public media of communication, we found that from 1960 to 1977, words made available to Americans (over the age of 10) through these media grew at the rate of 8.9 percent per year, or more than double the 3.7 percent growth rate for the gross domestic product in constant dollars. However, the words actually attended to from those media grew at just 2.9 percent per year. Per capita consumption of words from those media (allowing for population growth) grew at but 1.2 percent per year.

The modesty of that growth in consumption of information, despite the presence of large growth in the information available, is often described as information overload. More and more material exists, but limitations on time and





## New Communication Flow Study

- 1980-2005
- Twelve traditional media & Internet
- Focus on minutes
- Focus on household/per day metrics
- Track transition of communication to digital domain



## New Communication Flow Study

1. Television (Broadcast, Cable, Satellite)
2. Radio (Broadcast, Satellite)
3. Newspaper
4. Books
5. Magazines
6. Theatrical Motion Picture



## New Communication Flow Study

7. Recordings (Records, Cassettes, CD)
8. Video (VCR, DVD, DVR)
9. Portable Audio
10. Video Games
11. Postal (First Class Mail, Direct Mail)
12. Telephone (Wireline, Cellular, IM)



## Data Sources

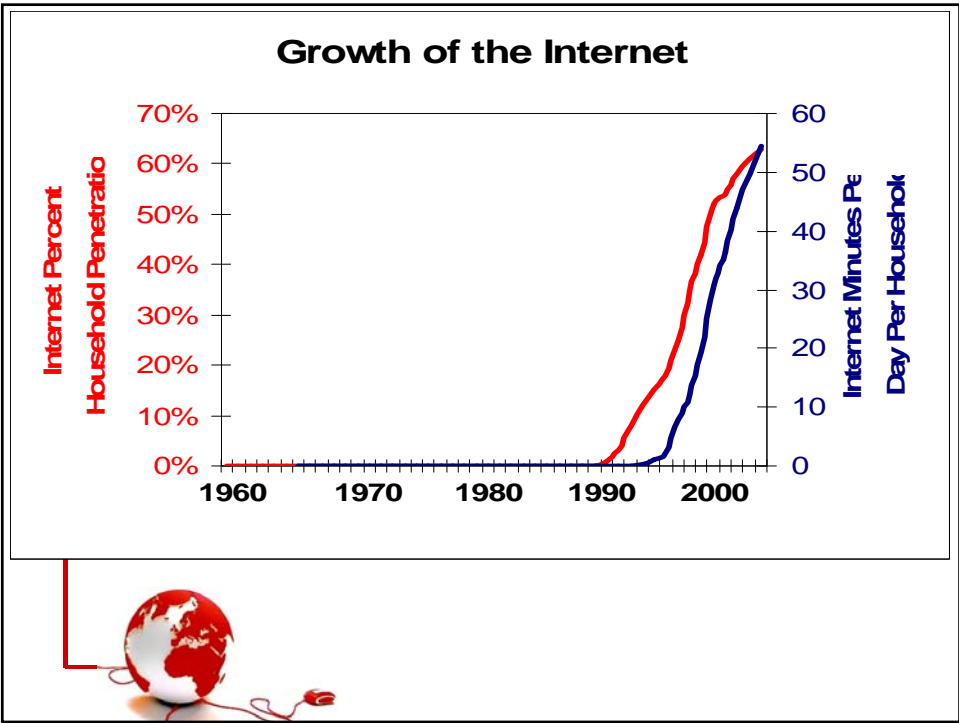
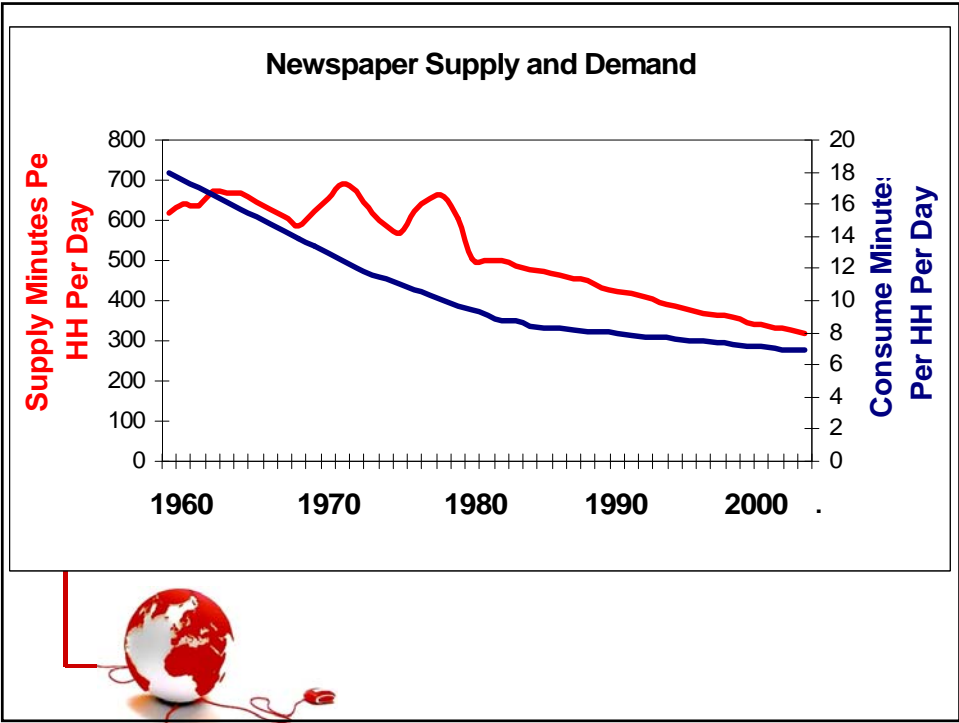
- Nielsen
- Arbitron
- Consumer Electronics Association
- Robinson Time Budget Studies
- US Census Bureau
- Ball State Media Studies
- Veronis Suhler Stevenson
- Pew Internet Project
- Motion Picture Association of America

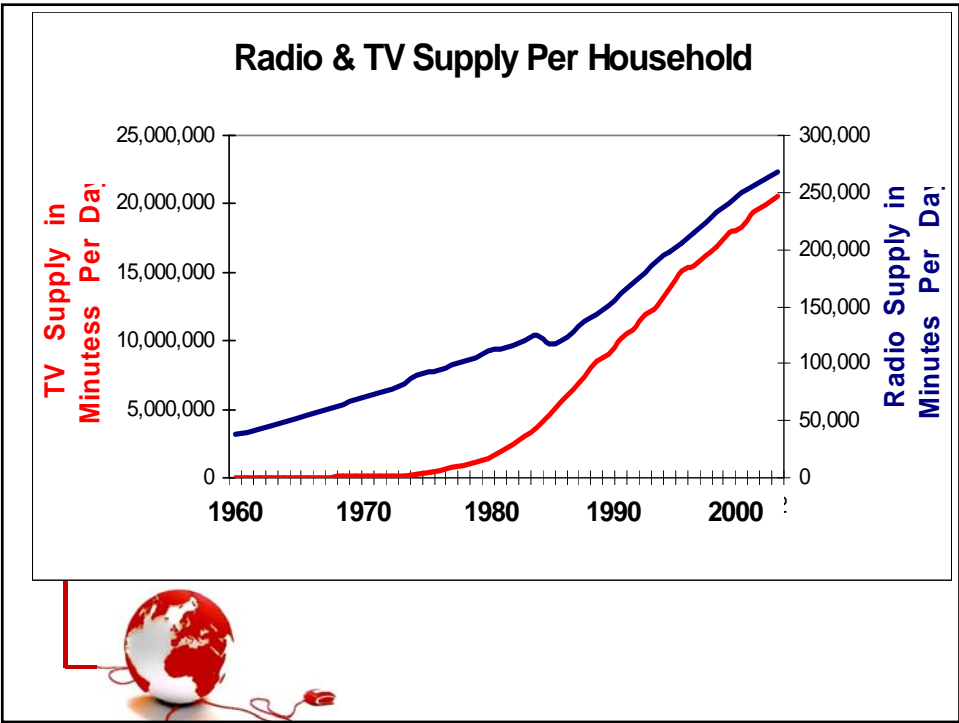
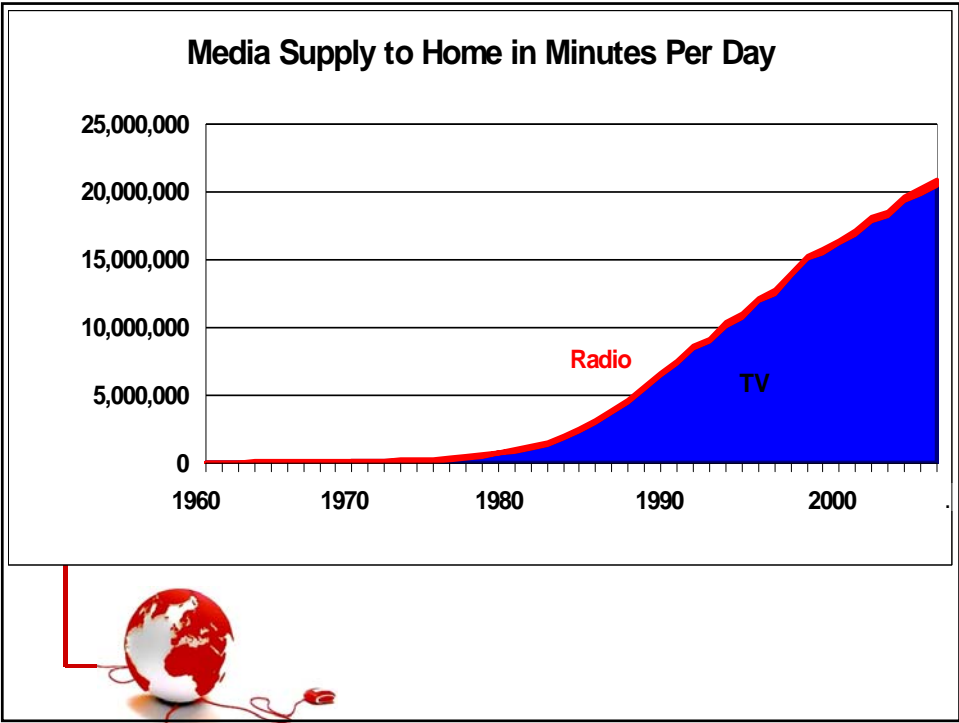


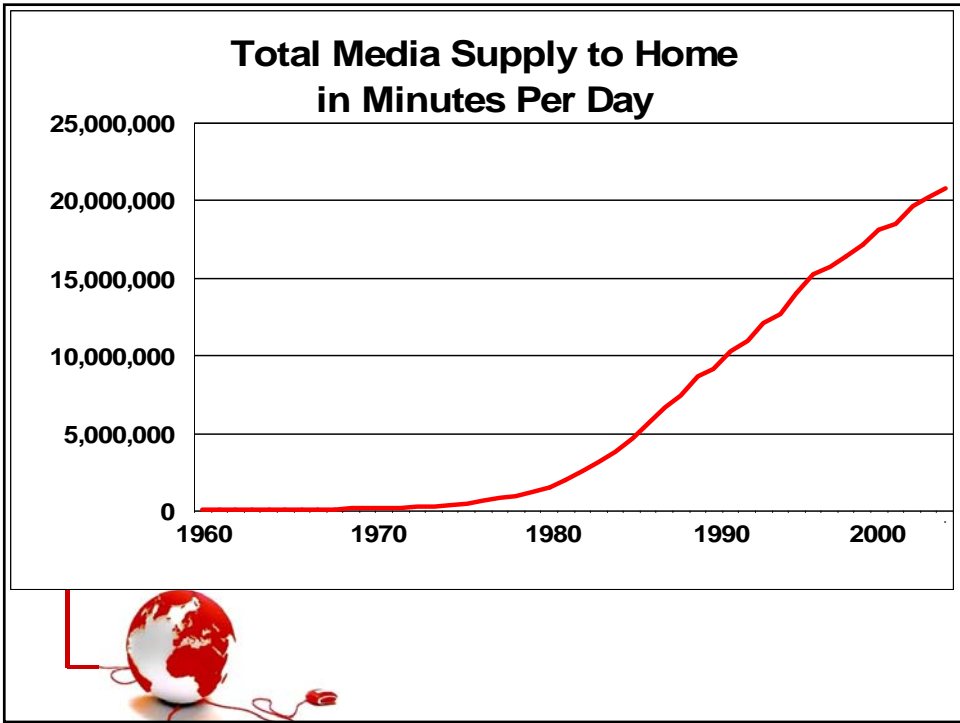
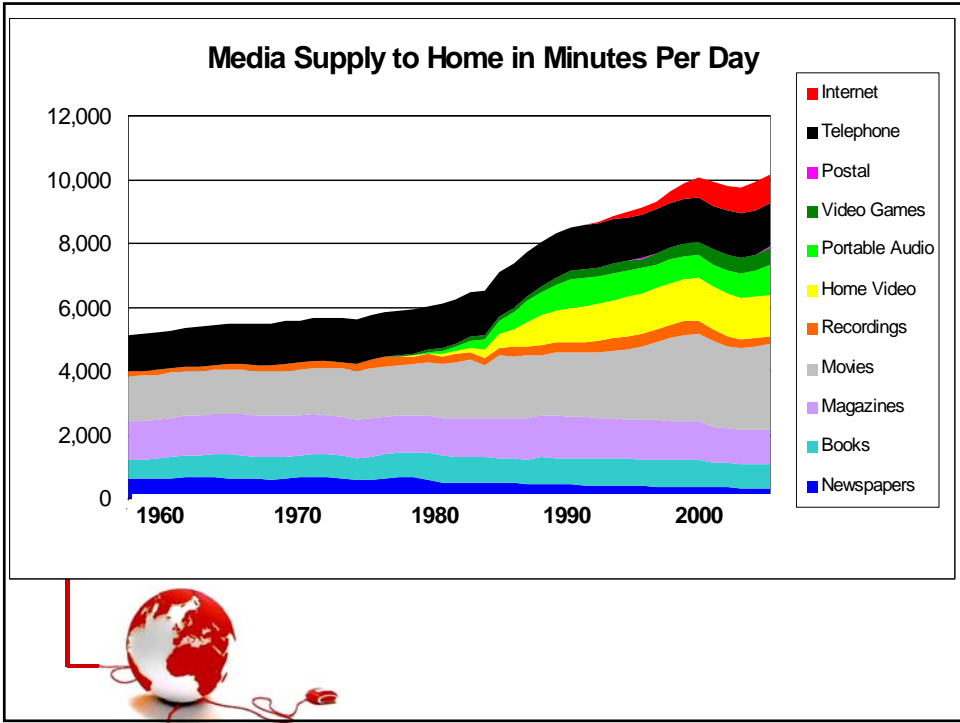
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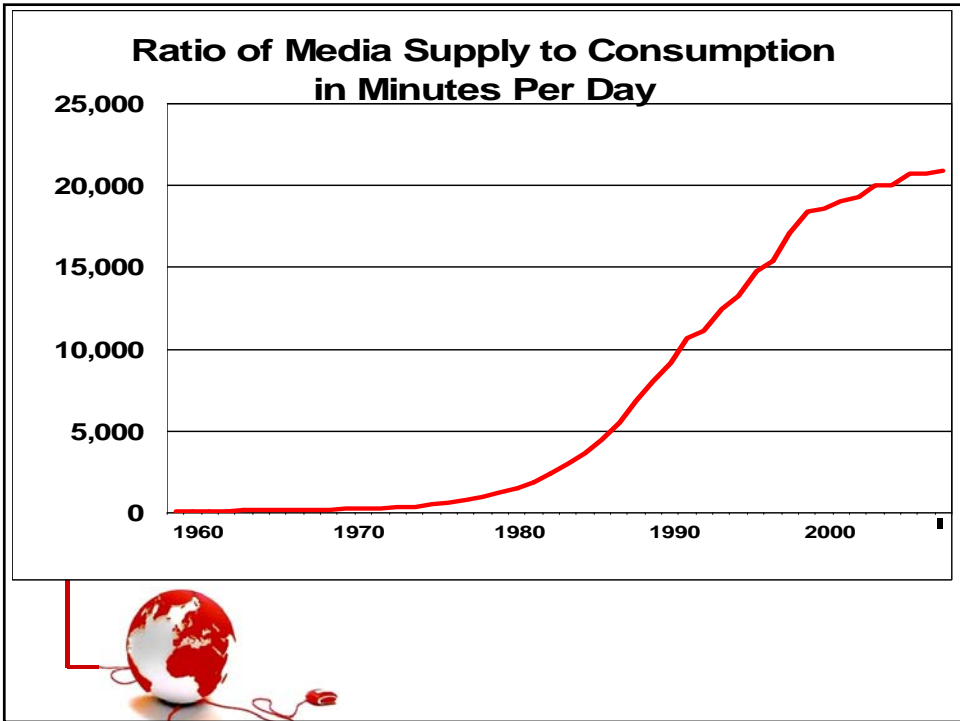
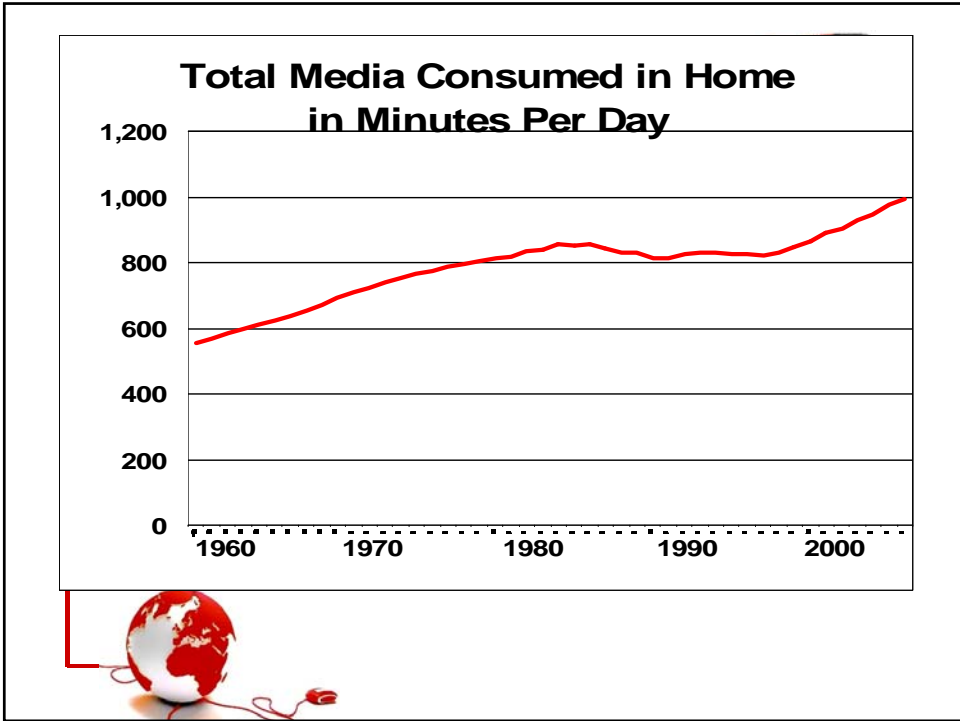
- US Postal Service
- Magazine Publishers of America
- National Cable and Telecommunications Association
- Newspaper Association of America
- R. R. Bowker
- Recording Industry Association of America
- University of Southern California
- Federal Communications Commission
- CTIA The Wireless Association













## Bottom Line of Communication Flow Analysis

- Media abundance
- 1960 supply-demand ratio = 98
- 2005 supply-demand ratio = 20,943
- Not yet including multiple 'channels' of Internet-based text and video
- Abundance fundamentally changes media choice dynamics

