

THE FUTURE OF MULTIMEDIA COMMUNICATION

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In this lecture I will attempt to answer two questions:

1. Is it possible to say anything useful at all about the future of multimedia communication?
2. Given the answer to 1, what strategy will lead to a maximum return on investment in this area?

I plan to do the following:

- To recount briefly my experiences as a member of the UK Technology Foresight Panel in Communications.
- To look at the past growth patterns of some selected telecommunication services, to see whether we can learn any lessons about the growth process itself.

TECHNOLOGY FORESIGHT 1994-95

Origins: 1993 White Paper *Realising our Potential*,

Sir William Stewart
Chief Scientific Adviser, Office of Science and Technology

Aims:

The UK has 1% of world's population, 5% of the world's GDP and supports 5% of the world's research. Was it possible to come to a consensus about technology developments to 2015, so that the country's R&D resources are effectively deployed for the benefit of the wealth and quality of life of its citizens?

Panels

Agriculture, Natural Resources and Environment
Chemicals
Communications
Construction
Defence and Aerospace
Energy
Financial Services
Food and Drink
Health and Life Sciences
Information Technology and Electronics
Leisure and Learning
Manufacturing, Production and Business Processes
Materials
Retail and Distribution
Transport

TECHNOLOGY FORESIGHT

METHODOLOGY

I. Formulation of questions and scenarios by panels

- How will society develop out to 2015? What trends, issues, or driving causes are likely to shape technology development?
- What new market opportunities will arise from these trends?
- What new products, processes or services are likely to meet these opportunities?
- What are the technologies and innovations needed to support such products?

II. Consultation

10,000 individuals

Institutions

60 Regional workshops

III. Conclusions

Report

1997 REFLECTIONS ON TF IN COMMUNICATIONS

- I. Many sensible conclusions were reached, which are now being acted upon, e.g.

“Digital superhighways can only be justified by the demand for services which will be provided over them. Insufficient attention is being given to the content of such services, because there is too much emphasis on technological questions, such as whether all homes and businesses in the UK should be connected to an optical fibre network.”

[Communications Panel Report]

- II. It was very difficult to see more than a couple of years ahead, let alone to 2015.
- III. There was not enough time for the panel to develop views on what factors contribute to the success of some services and the failure of others:

Successes

Telephony

Entertainment Radio and Television

Failures

Early videotex services

Videophone

DRIVING FORCES IN MULTIMEDIA COMMUNICATION

What is interesting historically about the current scene in telecommunications is that networks are being designed well in advance of the services they are intended to carry.

Historically:

The train was invented before the railway network

The motor car was invented before the road network

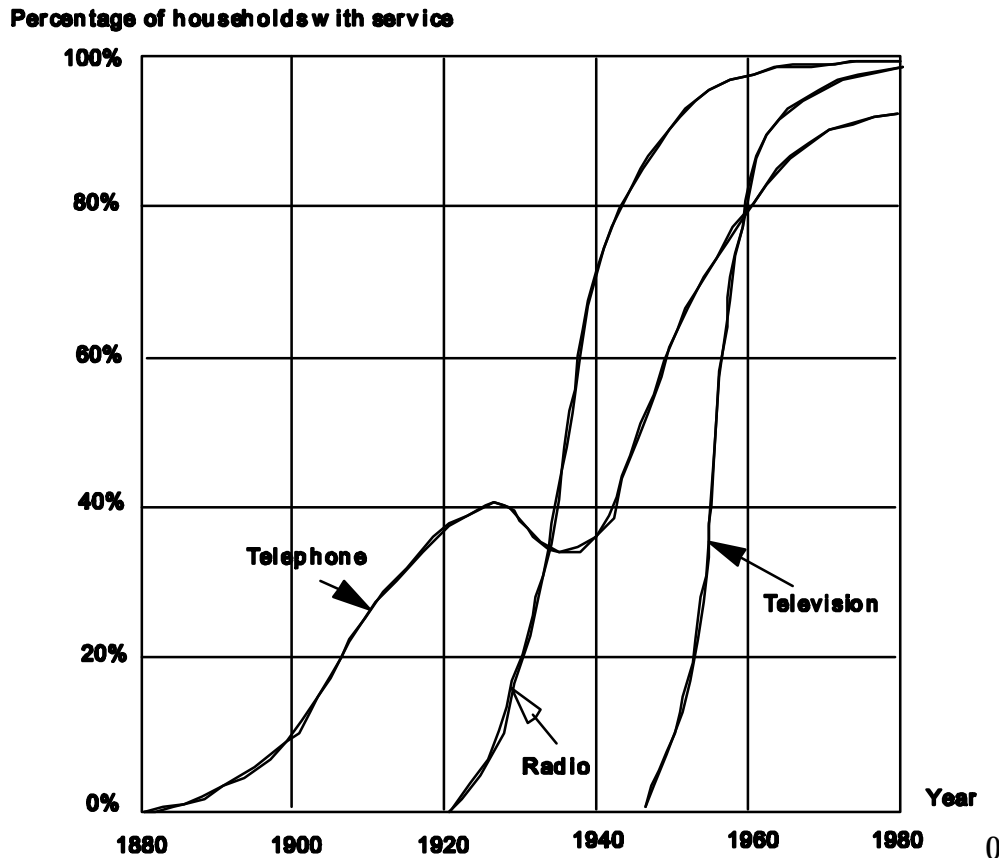
The telephone was invented before the telephone network

Television was invented before the television distribution network

The computer was invented before the computer network

- Each of these networks has different characteristics, matched to the traffic it carries.
- Efforts to build networks to cater to unknown and unspecifiable future traffic risk being superseded by more specific and cost-effective ones tailored to the requirements of the dominant form of traffic (e.g. ADSL).
- There are of course economies of scale in one universal network, but economies of specialisation have proved to be very powerful in the past.

GROWTH OF TELEPHONY, RADIO AND TELEVISION IN THE USA*

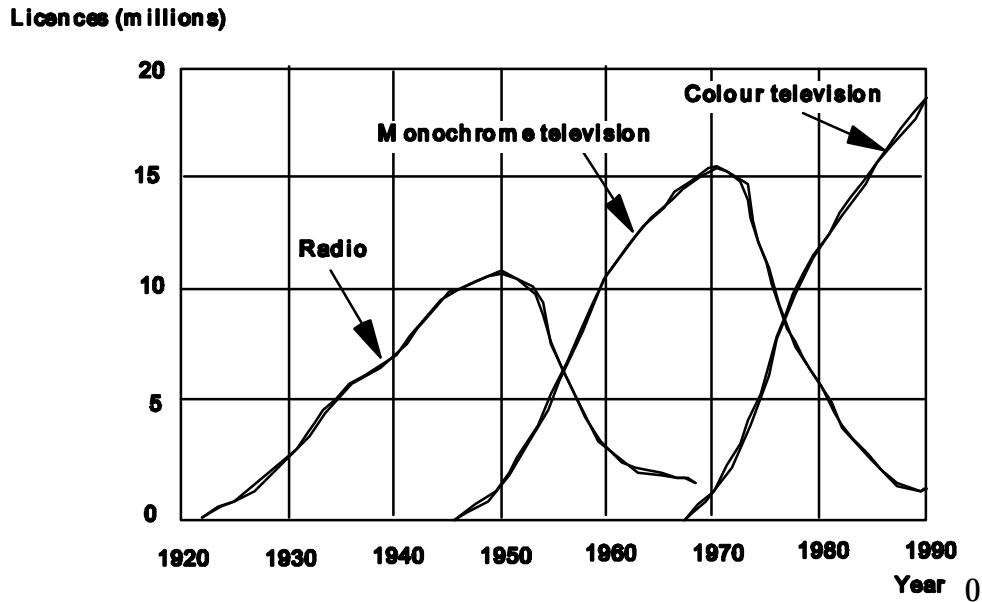


* C.S. Fischer, *America Calling: A Social History of the Telephone to 1940*, University of California Press, 1992.

Growth factors

- The cost of a service, relative to a person's income, is a key factor in service subscription.
- With conversational services, growth can be slow at first because there are not enough subscribers (a "critical mass") with whom to converse.
- Use of a service can be contrary to the service provider's expectations.

GROWTH OF ENTERTAINMENT RADIO AND TELEVISION IN THE UK*

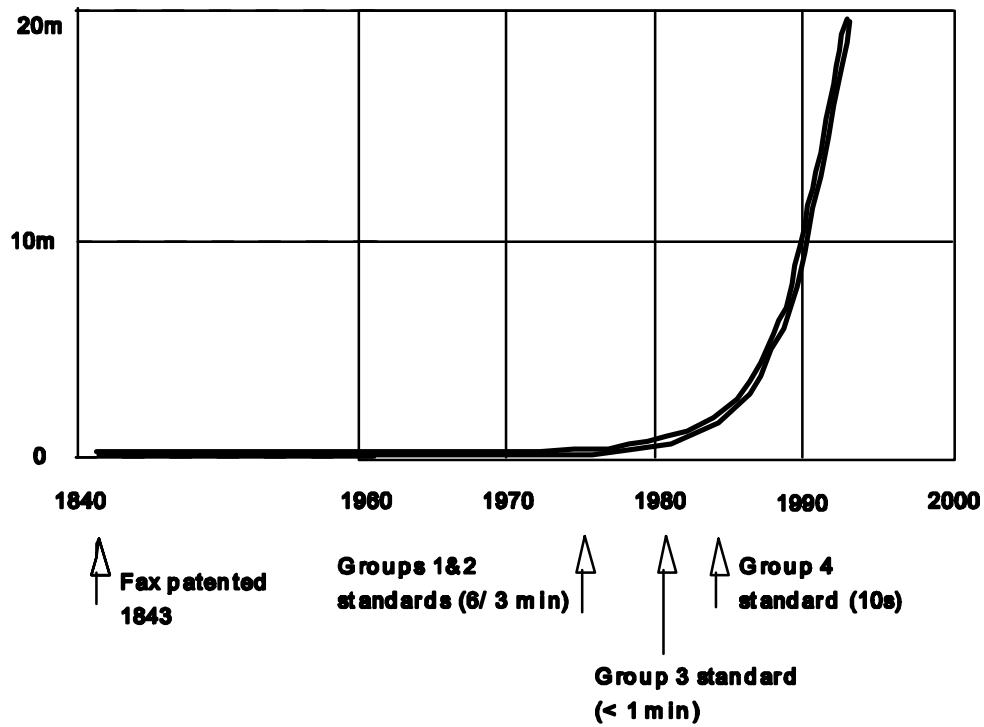


**BBC Annual Report and Handbook*, 1983 and 1987, BBC Written Archive Centre, Caversham Park, Reading, UK.

- People will pay for increased realism (presence) over the course of time.

FAX

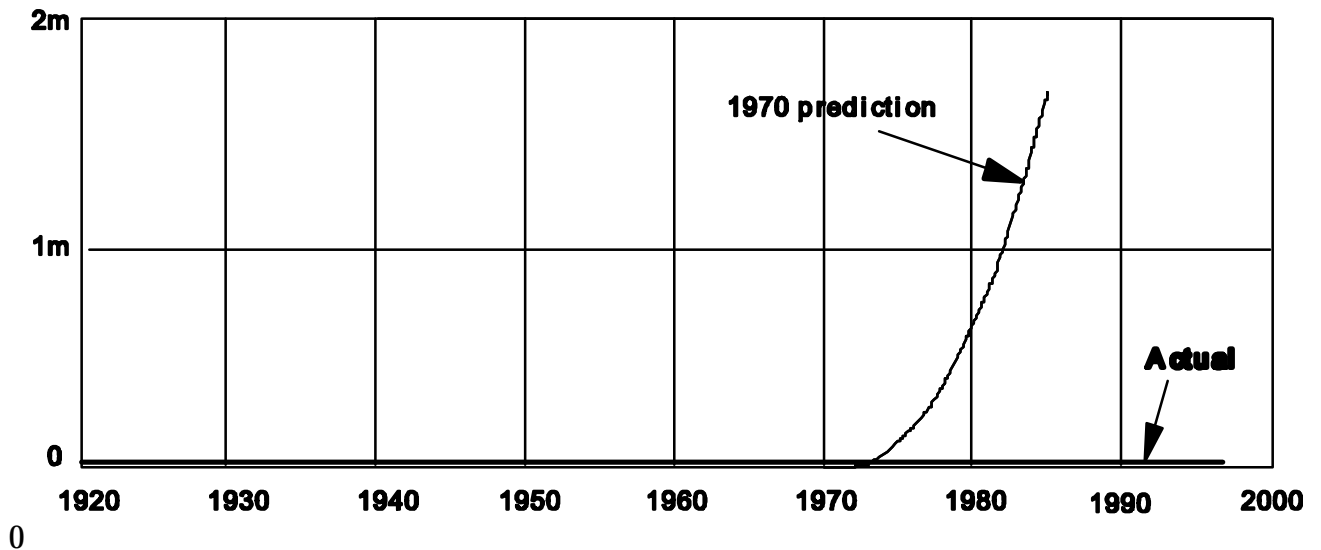
Number of FAX terminals



- Critical mass phenomenon.
- Ease and speed of use: standardisation, flatbed scanners, data compression.
- Gradual lowering of the real cost of a telephone call, until fax became competitive with the postal service.

THE VIDEOPHONE

Number of Videophone terminals in UK



- Videophone services have been demonstrated in various countries since the 1920s; however, so far all of these have failed.
- Videotelephony requires a switched network (which is costly) and a critical mass of subscribers.
- The role of vision in human telecommunication is complex and not well understood. The telephone is a *negative videophone*, yet it has been successful.
- The absence of *need* may be a key factor.

CONCLUSIONS

1. *Is it possible to say anything useful at all about the future of multimedia communication?*

This depends on complex interactions between the social behaviour of human beings and new technology, some of it yet to be invented. It is difficult to predict.

2. *Given the answer to 1, what strategy will lead to a maximum return on investment in this area?*

Multimedia services which have value to human beings and are likely to grow over the longer term are those which score highly on the following factors: **need**, **low cost**, **ease of use**, and **realism**.

High risk
Super-high-definition videophone

Low risk
Lower-cost entertainment television with enhanced presence

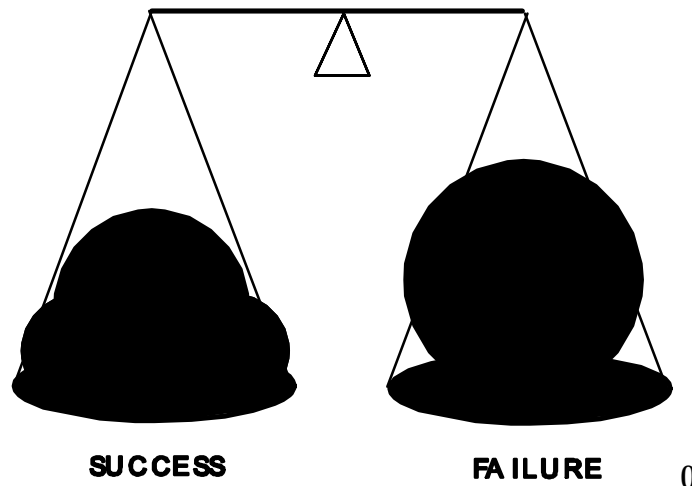


Figure from M. McMillan, "Foundations for Forecasting Telecommunication Services Growth", MSc project report, Department of Electronic Systems Engineering, University of Essex, 1996.

MEASUREMENT OF PRESENCE USING SSCQE