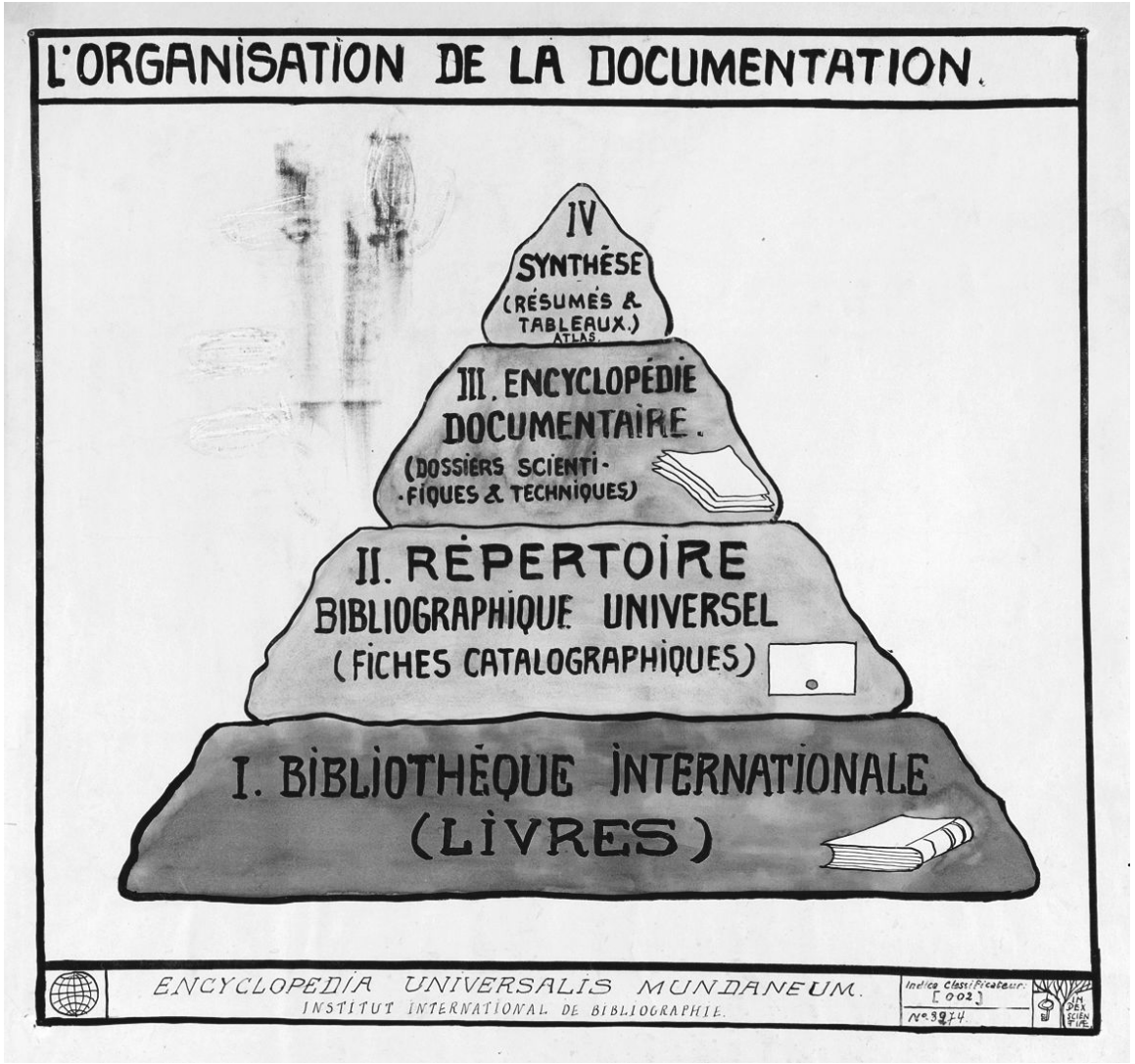
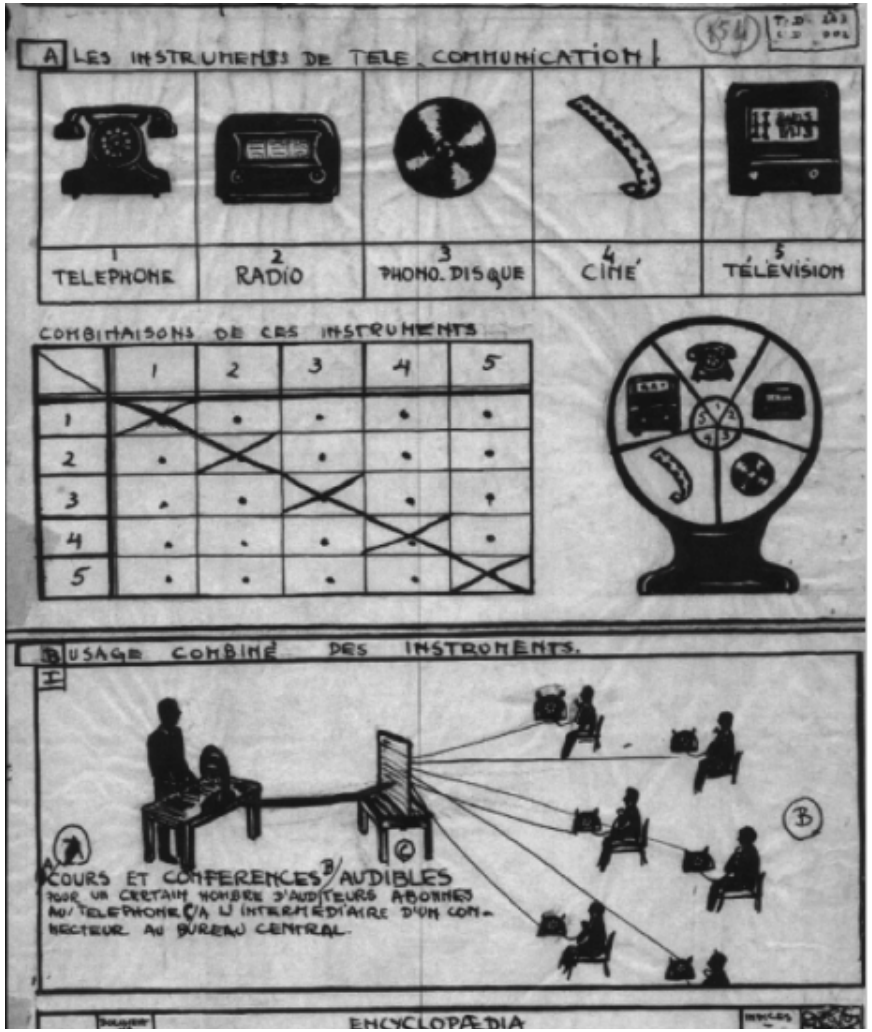
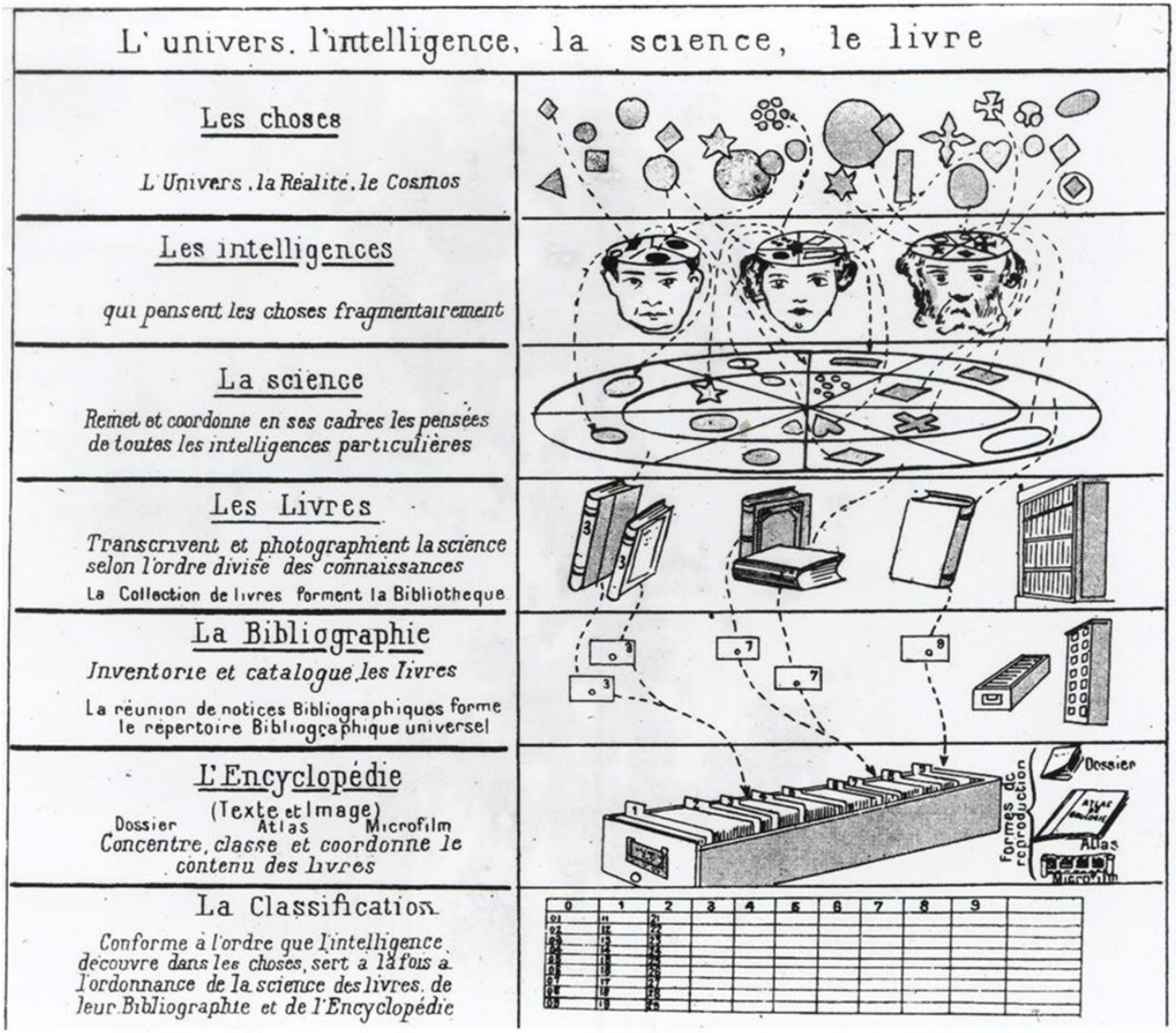
A brief history of the computers, the internet, and the democratization of knowledge

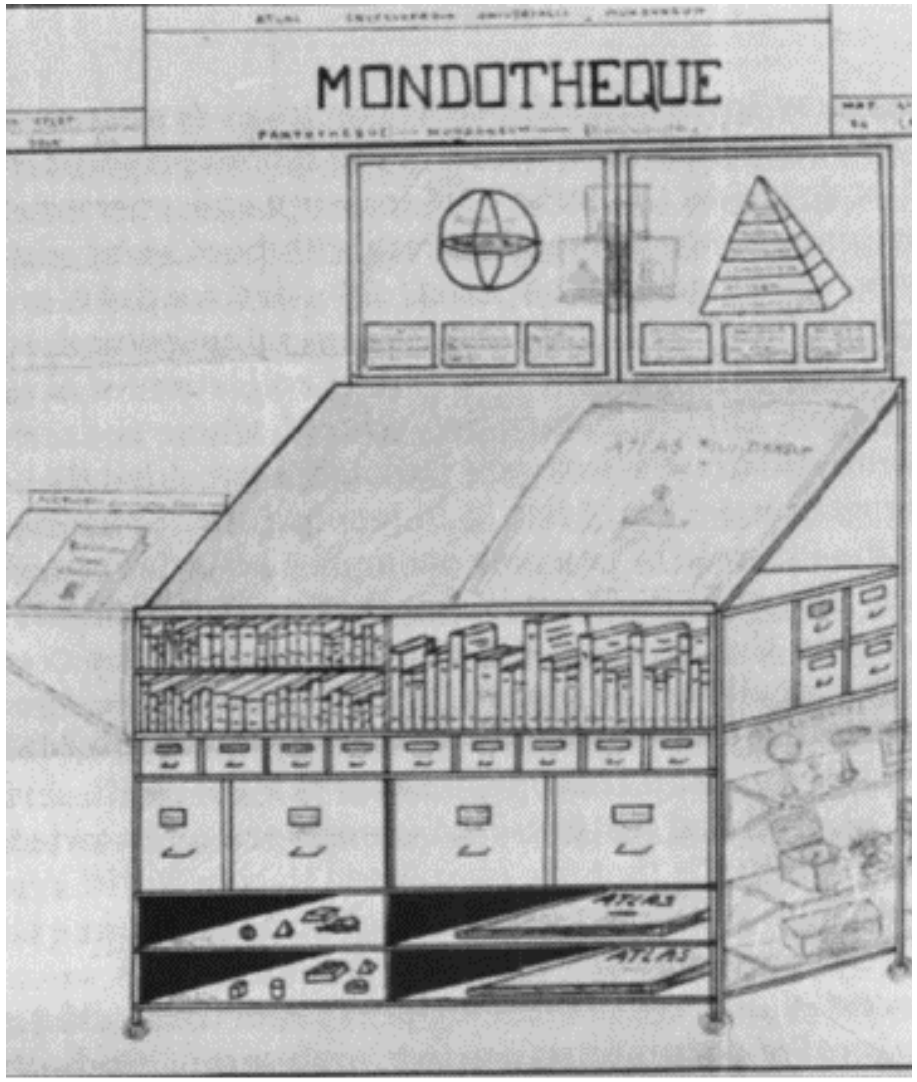


Paul Otlet

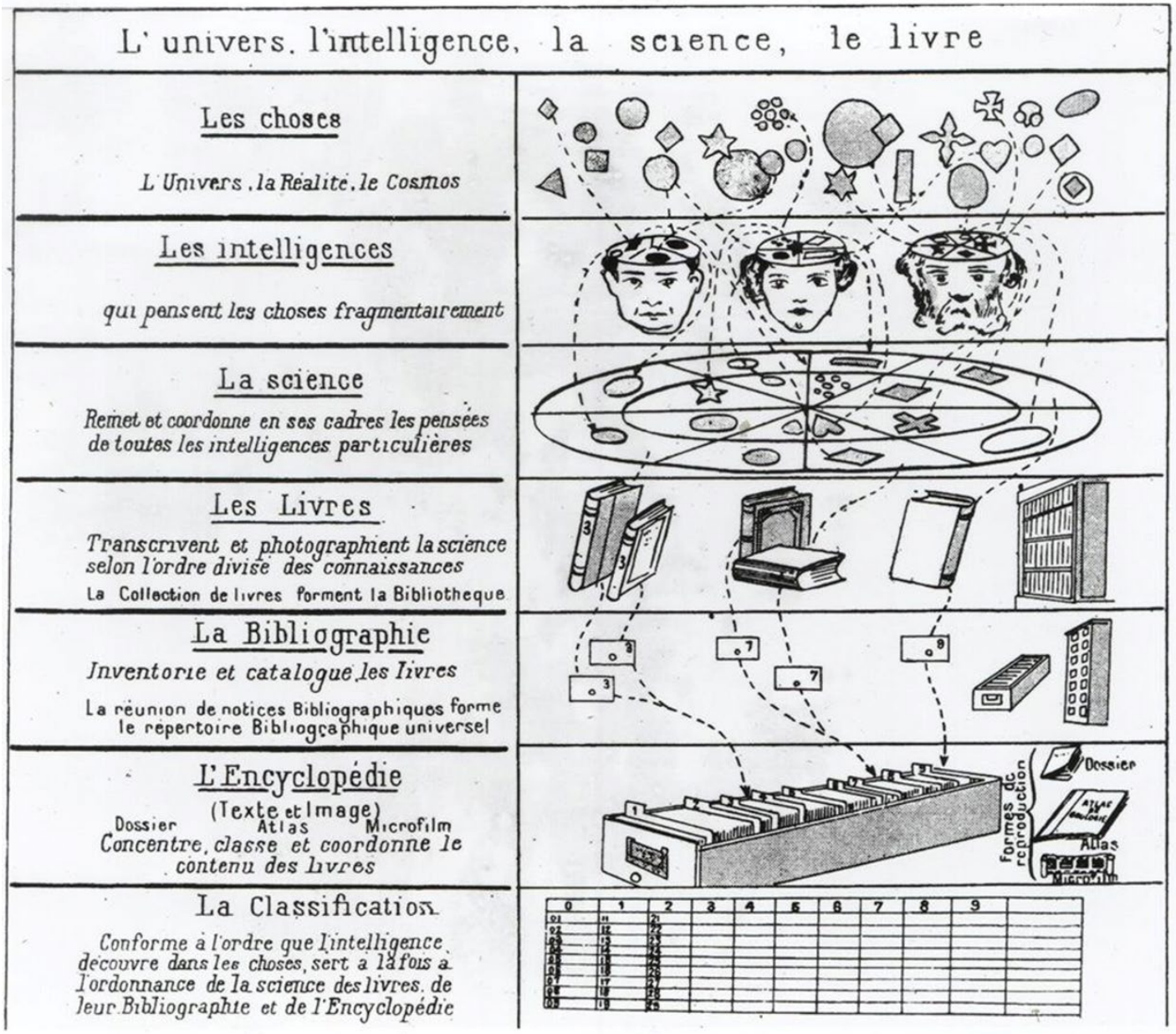
The Mundaneum

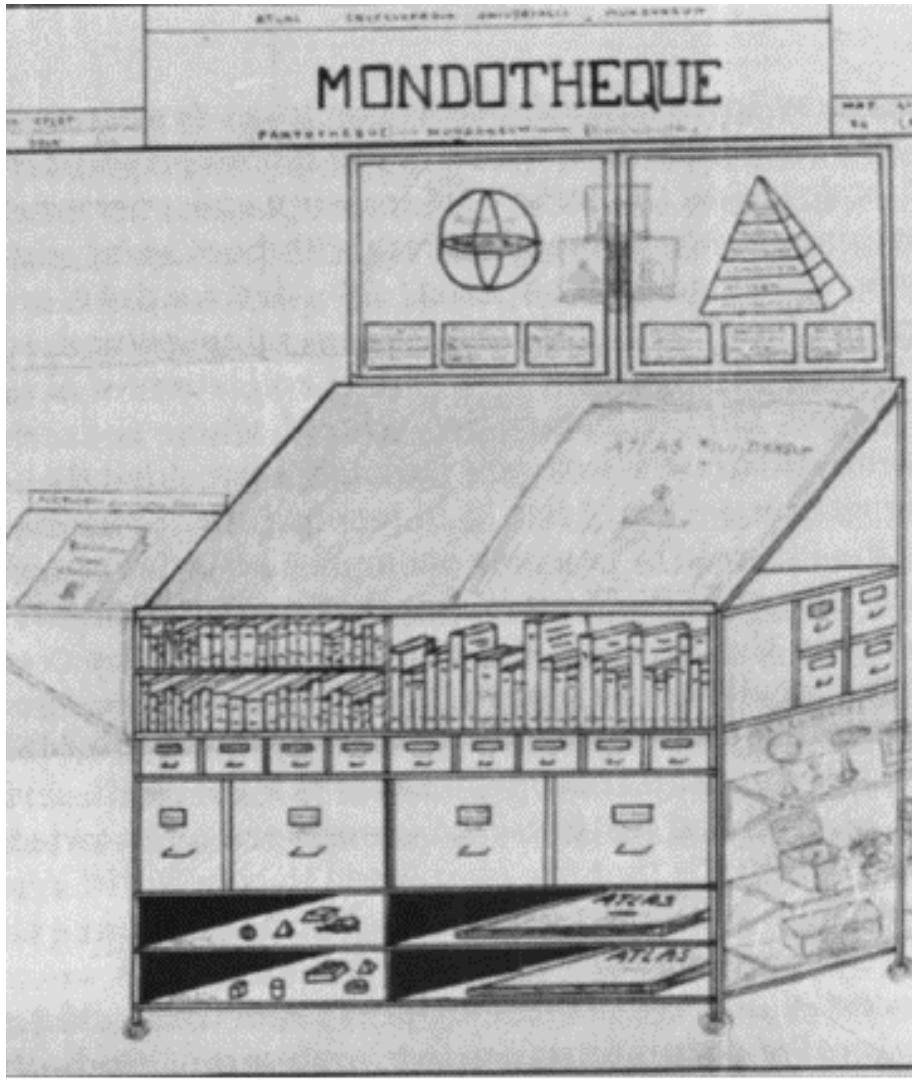

A LES INSTRUMENTS DE TELE COMMUNICATION
1 TELEPHONE
2 RADIO
3 PHONO. DISQUE
4 CINE'
5 TELEVISION
COMBINAISONS DE CES INSTRUMENTS
B USAGE COMBINE DES INSTRUMENTS.
COURS ET CONFERENCES AUDIBLES
ENCYCLOPAEDIA


L' univers. l'intelligence, la science, le livre
Les choses
L'Univers . la Réalité . le Cosmos
Les intelligences
qui pensent les choses fragmentairement
La science
Remet et coordonne en ses cadres les pensées de toutes les intelligences particulières
Les Livres
Transcrivent et photographient la science selon l'ordre divisé des connaissances
La Collection de livres forment la Bibliotheque
La Bibliographie
Inventorie et catalogue les livres
La réunion de notices Bibliographiques forme le répertoire Bibliographique universel
L'Encyclopédie
(Texte et Image)
Dossier Atlas Microfilm
Concentre, classe et coordonne le contenu des livres
formes de reproduction
Dossier
Atlas
La Classification
Conforme à l'ordre que l'intelligence découvre dans les choses, sert à la fois à l'ordonnance de la science des livres, de leur Bibliographie et de l'Encyclopédie

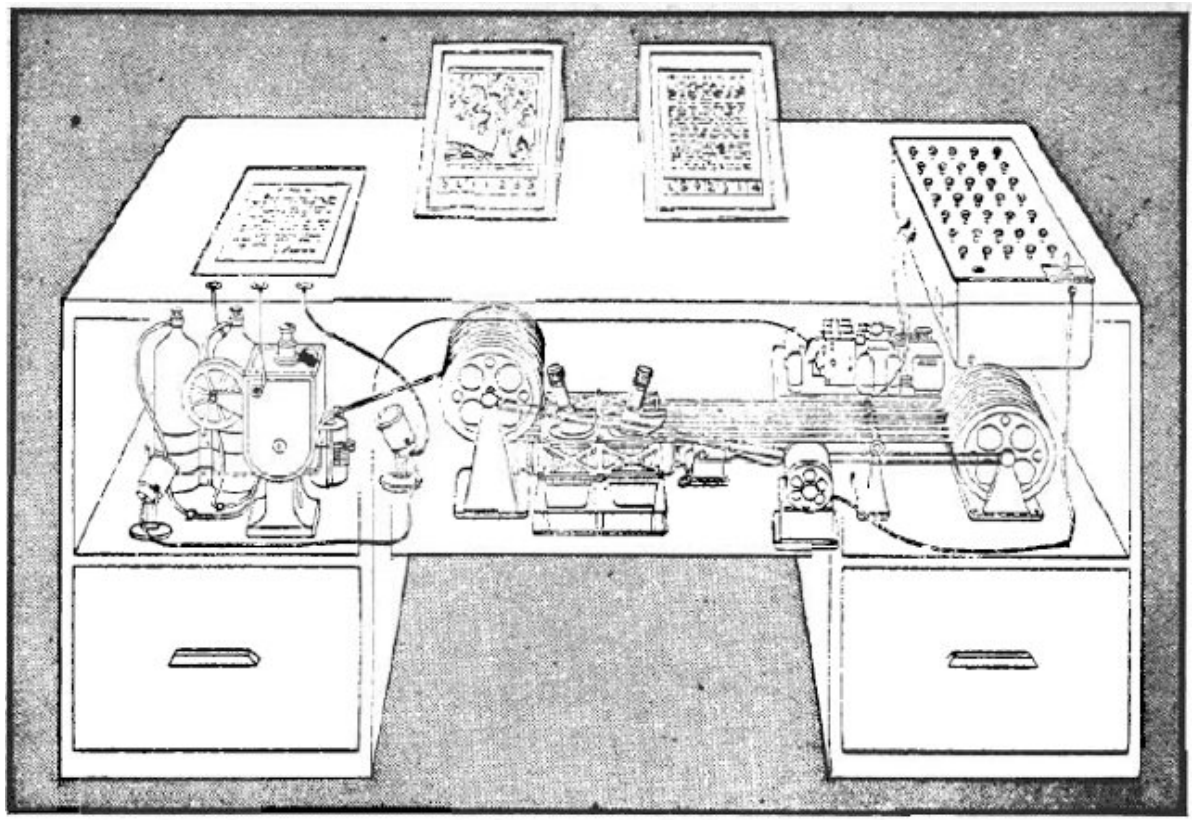


The Mondotheque

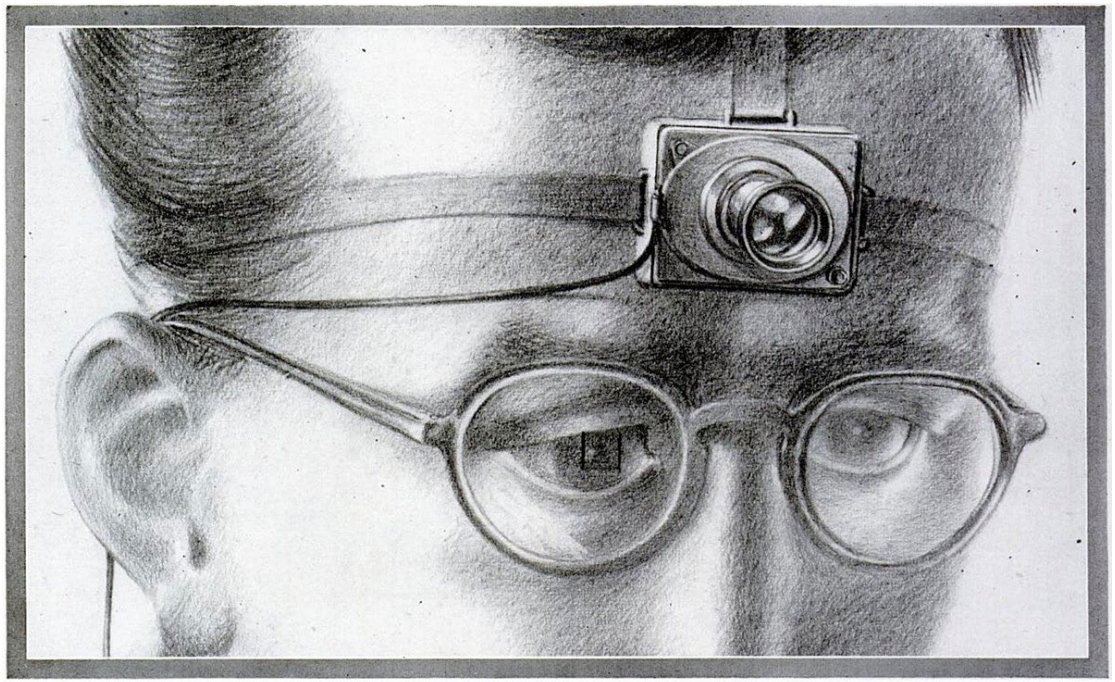




The Mondotheque



Memex

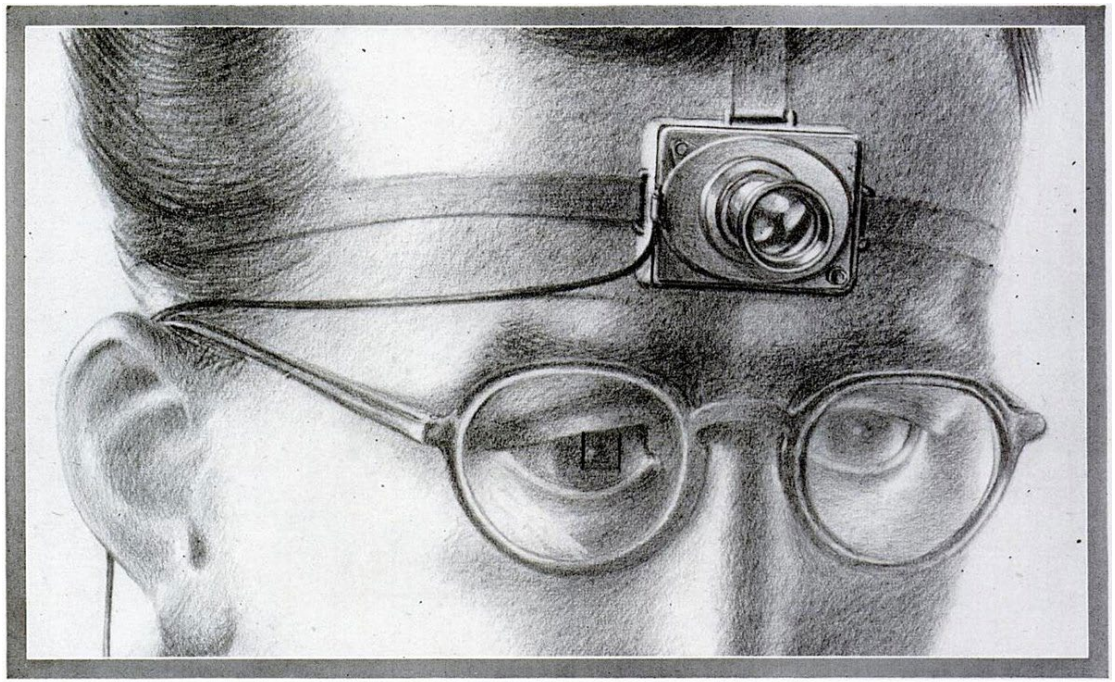


A SCIENTIST OF THE FUTURE RECORDS EXPERIMENTS WITH A TINY CAMERA FITTED WITH UNIVERSAL-FOCUS LENS. THE SMALL SQUARE IN THE EYEGLASS AT THE LEFT SIGHTS THE OBJECT

AS WE MAY THINK

A TOP U. S. SCIENTIST FORESEES A POSSIBLE FUTURE WORLD IN WHICH MAN-MADE MACHINES WILL START TO THINK

Vannevar Bush



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AS WE MAY THINK

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Vannevar Bush

Augmentation is fundamentally a matter of organization.
(typewriter, 7 seconds)

Augmentation is fundamentally a matter of organization. (cursive script, 20 seconds).

Augmentation is fundamentally a matter of organization. ("de-augmented" cursive script, 65 seconds).

Augmentation is fundamentally a matter of

[de-augmented cursive script, large size--42 seconds to complete whole passage (completed on separate sheet)].

Fig. 2
Experimental Results of Tying a Brick to a Pencil
to "De-Augment" the Individual

the first “mouse”
Douglas C. Engelbart, 1960~

ABSTRACT

The objective of the Computer-Aided Design Project is to evolve a man-machine system which will permit the human designer and the computer to work together on creative design problems. This document states the philosophy of approach being used by the computer applications group of the project. A companion document, 8436-TM-5, states the philosophy of the design and graphics group.

From the computer applications point of view the primary problem is not how to solve problems, but how to state them. It is proposed that outside-in problem statement, in which a problem is described first in general terms and then refined and made precise by further elaborative statements, is required, rather than the inside-out problem statement form which characterizes present computer programming. General problems are viewed as internally structured by means of interconnected "objets". An objet is an abstract entity of meaning, and the computer's "understanding" of a problem is represented by the structure connecting the objets of the problem. The human's understanding is in terms of a language which is isomorphic to the structure of objets. This language for problem statement will consist of pictorial as well as alphabetic representations, and can be molded to suit particular problem areas. The various project activities required to establish a proper research environment are also outlined.

Computer-Aided Design: A Statement of Objectives
Douglas T. Ross, 1960

ABSTRACT

The objective of the Computer-Aided Design Project is to evolve a man-machine system which will permit the human designer and the computer to work together on creative design problems. This document states the philosophy of approach being used by the computer applications group of the project. A companion document, 8436-TM-5, states the philosophy of the design and graphics group.

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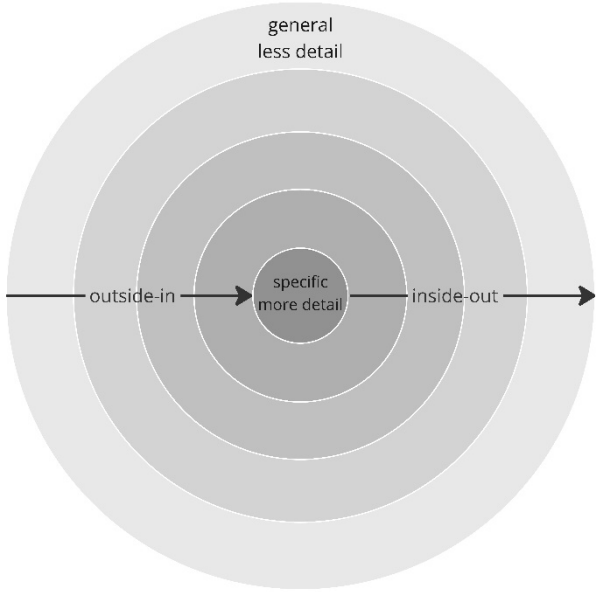


Computer-Aided Design: A Statement of Objectives
Douglas T. Ross, 1960

Let's design a BUILDING

What kind of building? HOUSE

What kind of house? SINGLE-FAMILY

Where is the house located? OTTAWA, ON

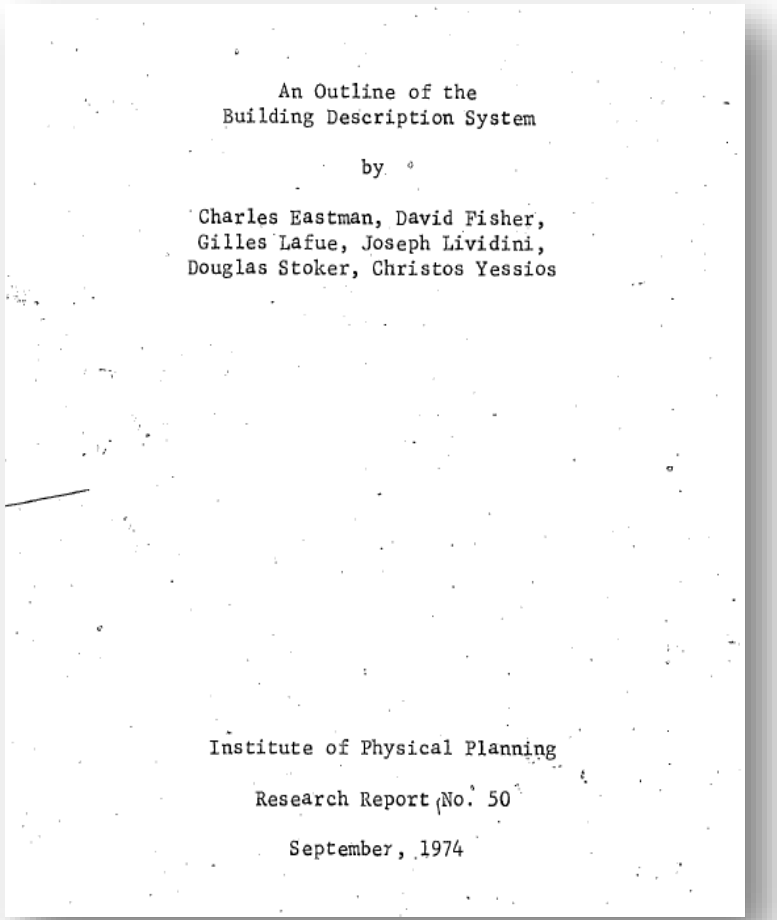
Where in Ottawa? HOLMWOOD AVE

How many floors? TWO LEVELS

How many rooms? THREE BEDROOMS

And so on…

Computer-Aided Design: A Statement of Objectives
Douglas T. Ross, 1960



An Outline of the
Building Description System

by

Charles Eastman, David Fisher,
Gilles Lafue, Joseph Lividini,
Douglas Stoker, Christos Yessios

Institute of Physical Planning

Research Report No. 50

September, 1974

Abstract

Many of the costs of design, construction, and building operation derive from the reliance on drawings as the description of record of the building. This paper outlines as a replacement the design of a computer system useful for storing and manipulating design information at a detail allowing design, construction, and operational analysis. A building is considered as the spatial composition of a set of parts. The system, called Building Description System (BDS) has associated with it: (a) a means for easy graphic entering of arbitrarily complex element shapes; (b) an interactive graphic language for editing and composing element arrangements; (c) hardcopy graphic capabilities that can produce perspective or orthographic drawings of high quality; (d) a sort and format capability allowing sorting of the database by attributes, e.g. material type, supplier, or composing a dataset for analysis. The system runs on a Digital Equipment PDP-11/20, with extended disc memory and graphics.

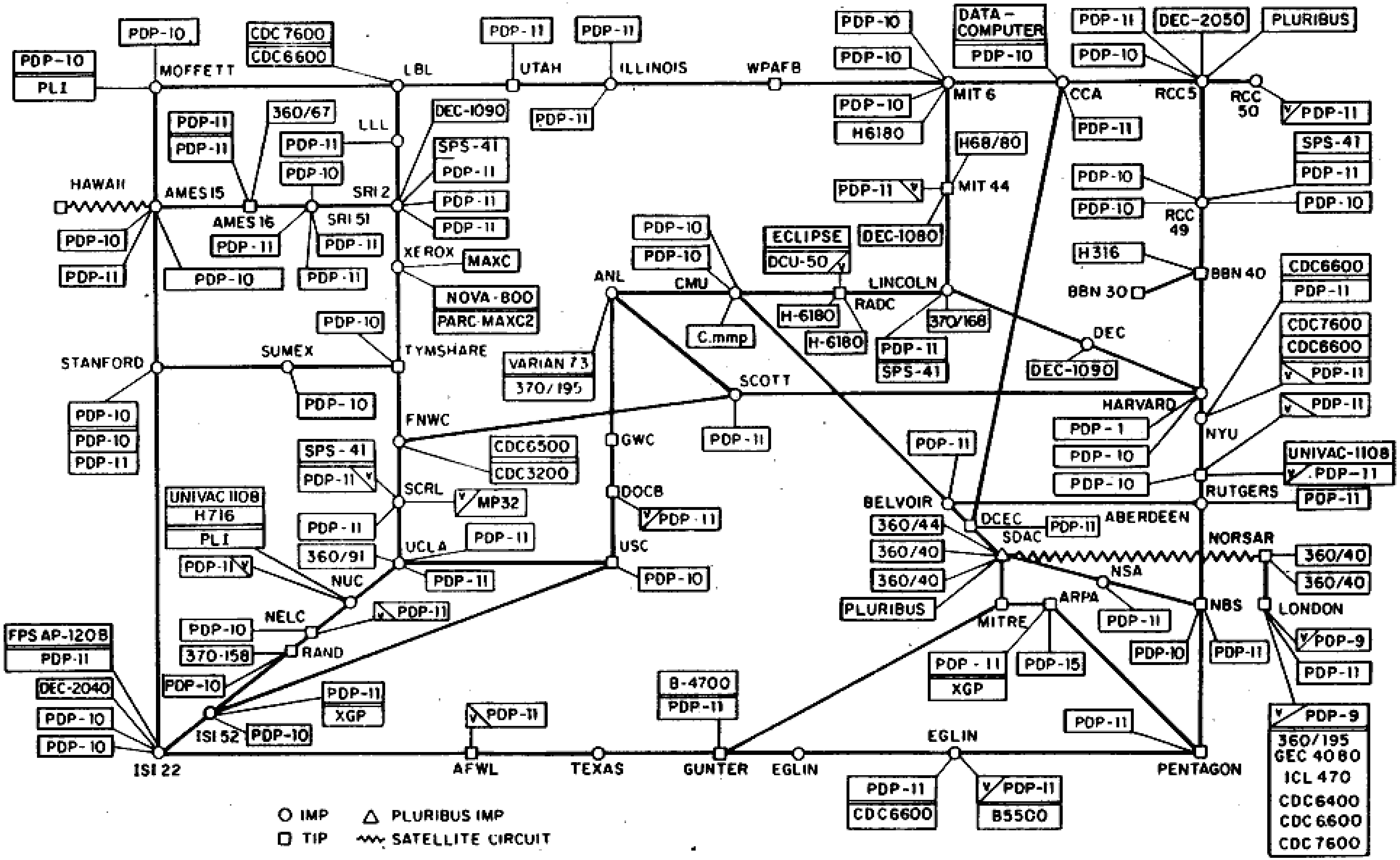
This report is a progress report, outlining the goals and current status of work on BDS.

PDP-1 Demo Lab at Mountain View's Computer History Museum, photo by Alexey Komarov

The ARPANET in December 1969

1969

ARPANET LOGICAL MAP, MARCH 1977



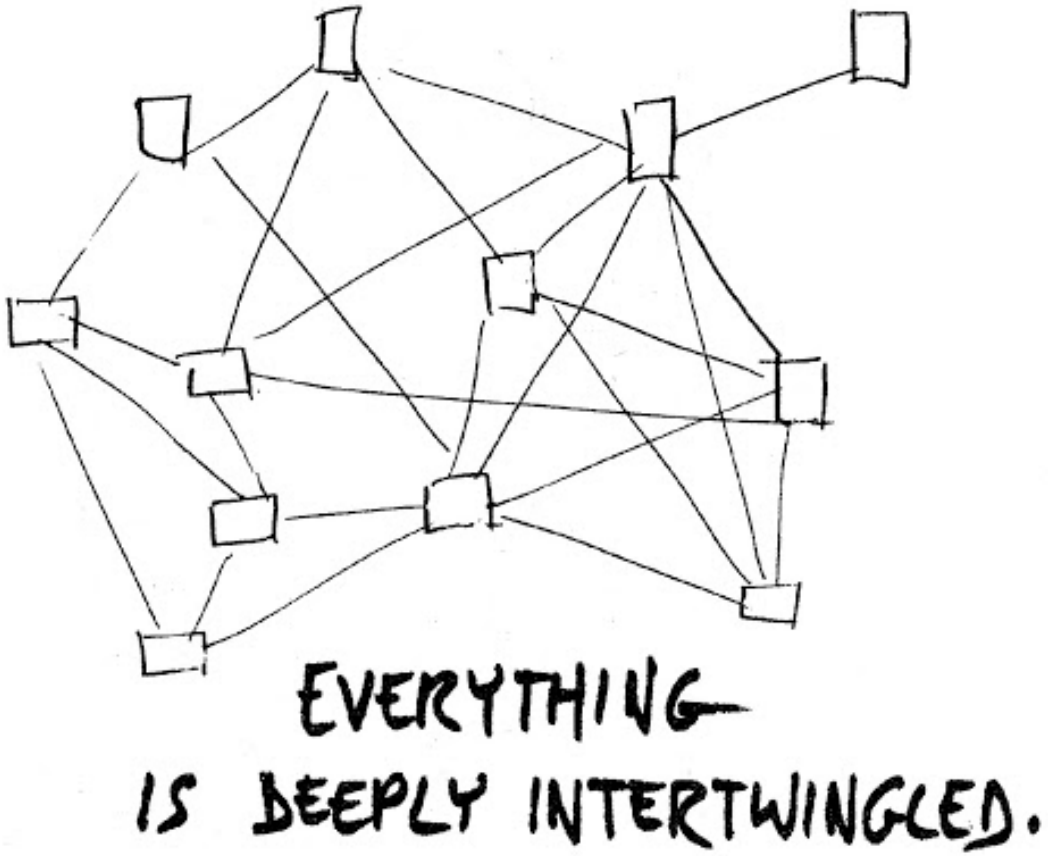
(PLEASE NOTE THAT WHILE THIS MAP SHOWS THE HOST POPULATION OF THE NETWORK ACCORDING TO THE BEST INFORMATION OBTAINABLE, NO CLAIM CAN BE MADE FOR ITS ACCURACY)

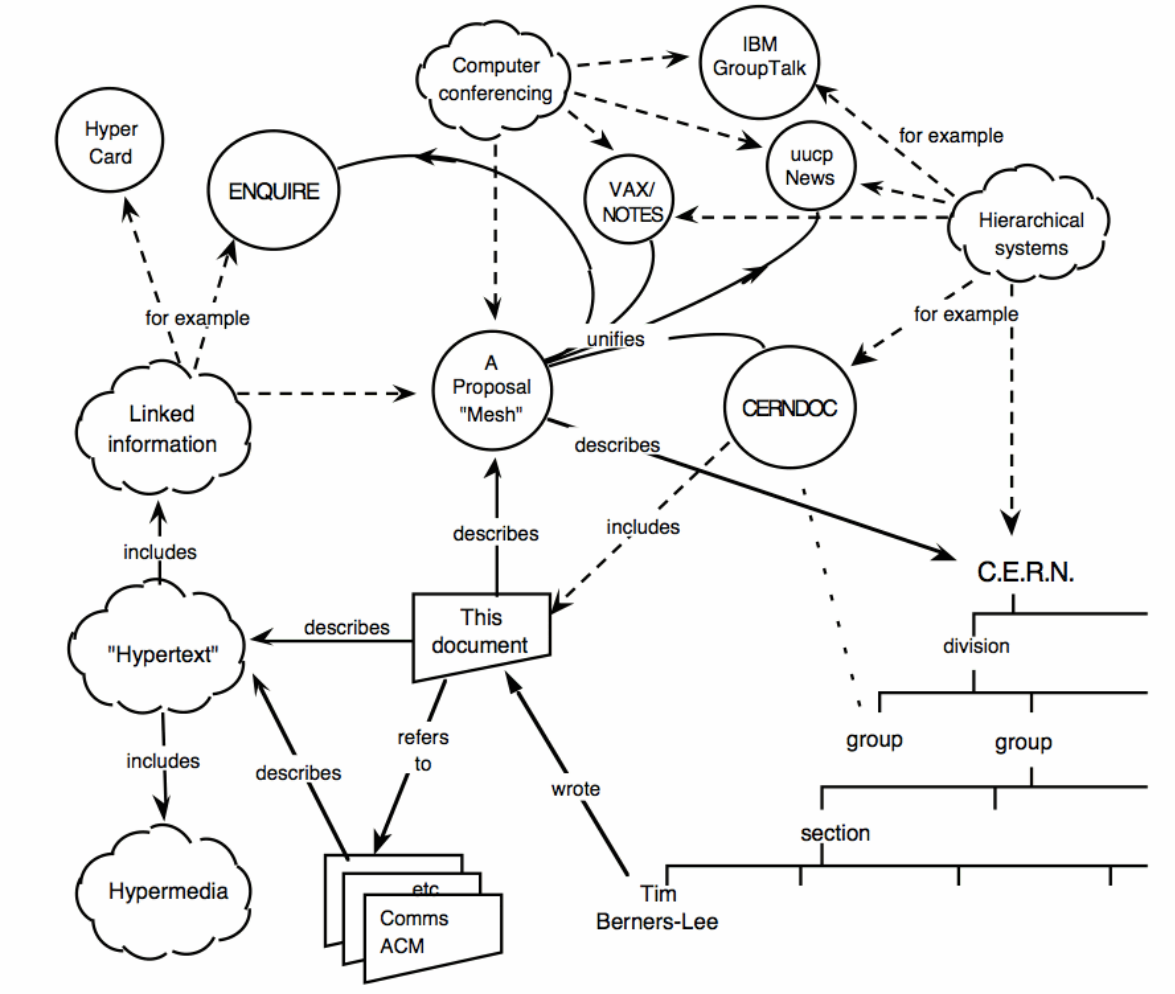
NAMES SHOWN ARE IMP NAMES, NOT (NECESSARILY) HOST NAMES

Ted Nelson

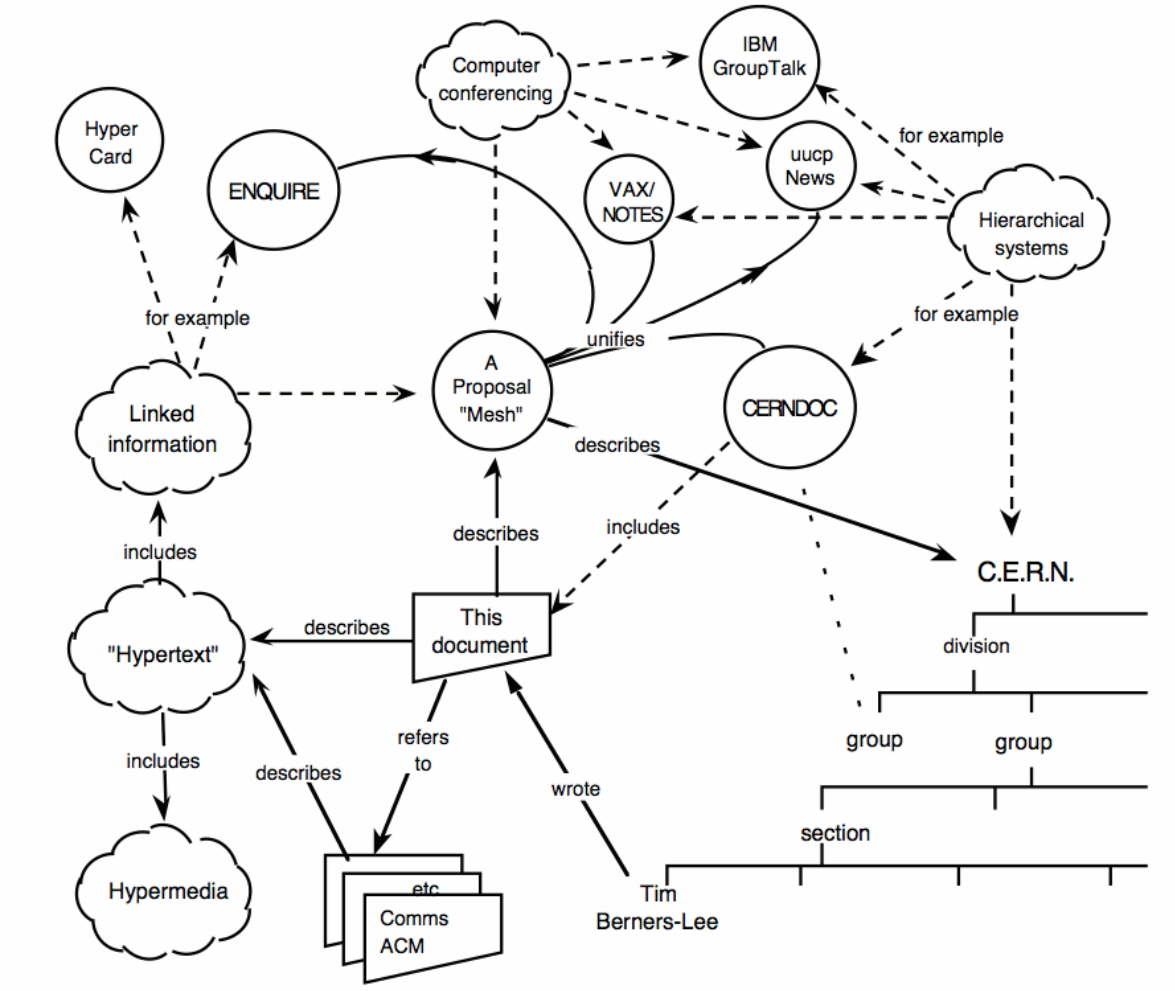
Hypertext

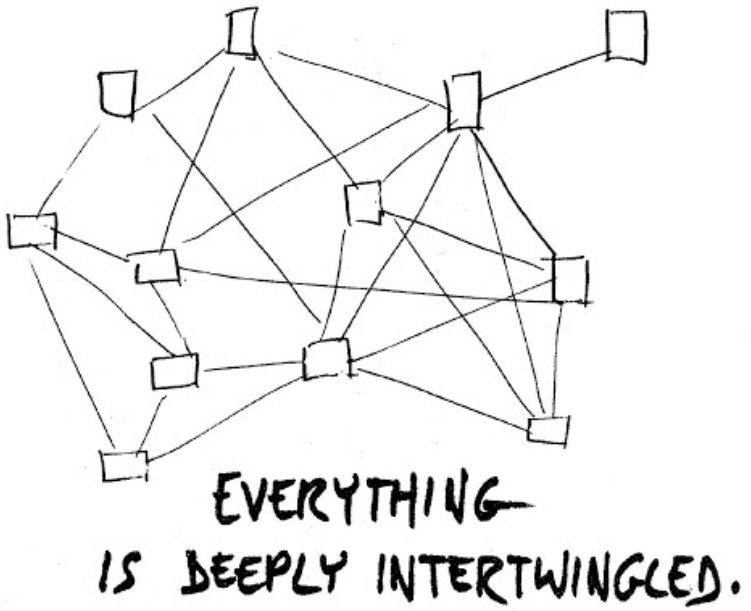
Xanadu





World Wide Web
Time Berners-Lee, 1998





World Wide Web
Time Berners-Lee, 1998

You can and must understand computers NOW.

COMPUTER

LIB

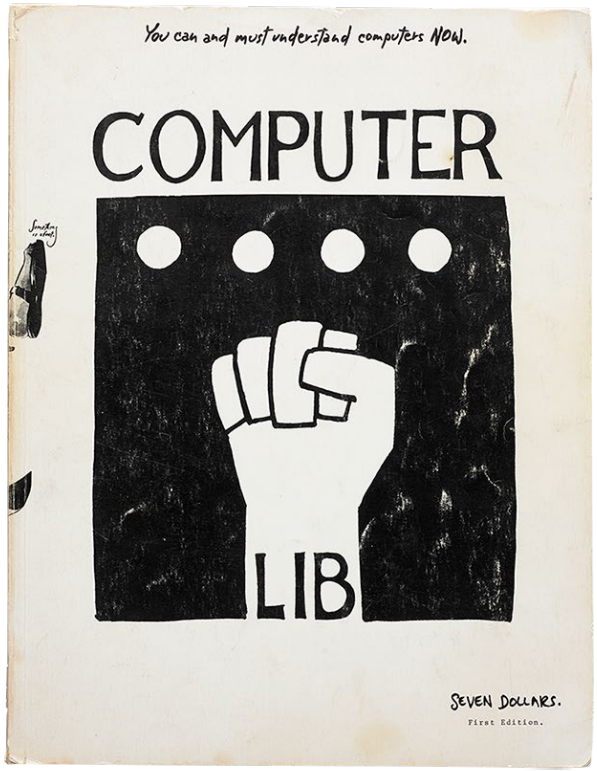
SEVEN DOLLARS.

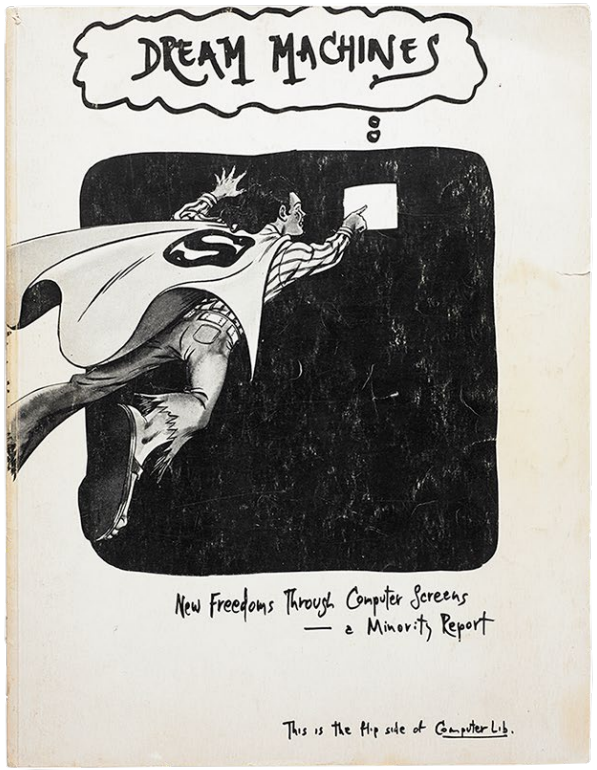
First Edition.

DREAM MACHINES

New Freedoms Through Computer Screens
— a Minority Report

This is the flip side of Computer Lib.





Free and Open Source Software (FOSS)

0. Freedom to run the program

1. Freedom to study and change the program in source code form.

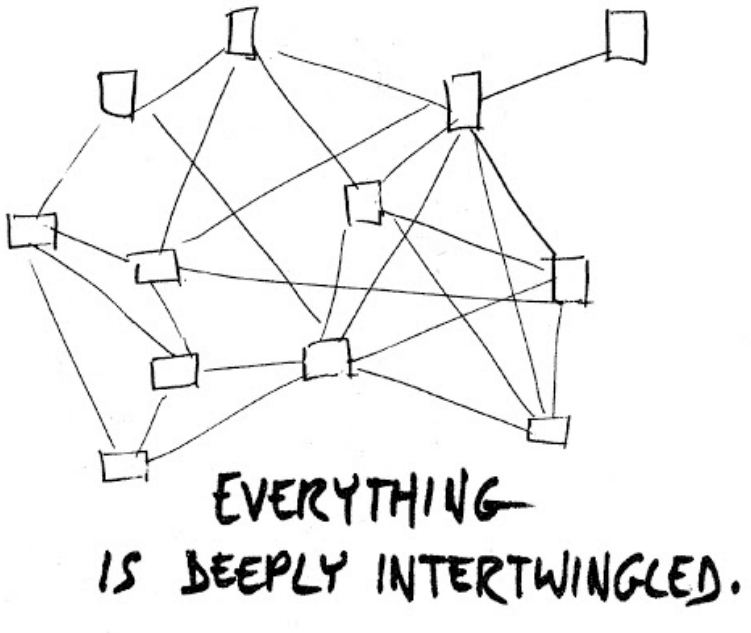
2. Freedom to redistribute exact copies, and

3. Freedom to distribute modified versions.

Free Software, Free Society: Selected Essays of Richard M. Stallman

Summary

- for knowledge to be used, it must be shared
- tools augment humans, they do not replace them
- humans must lead machines, not the inverse
- power is in the net, not the chain
- success is built on trust



1895	Universal Bibliography	Paul Otlet, Henri La Fontaine
1937	World Brain	H. G. Wells
1939	Library of Babel	Jorge Louis Borges
1945	Memex	Vannevar Bush
1948	Cybernetics: Or Control and Communication in the Animal and the Machine	Norbert Weiner
1956	An Intro to Cybernetics	William Ashby
1960	Xanadu	Ted Nelson
1969	first message sent using the ARPANET	Leonard Kleinrock et al
1980	Autodesk takes on Xanadu	
1998	World Wide Web	Tim Berners-Lee
2019	ICDT	