Copyright Infrastructure:

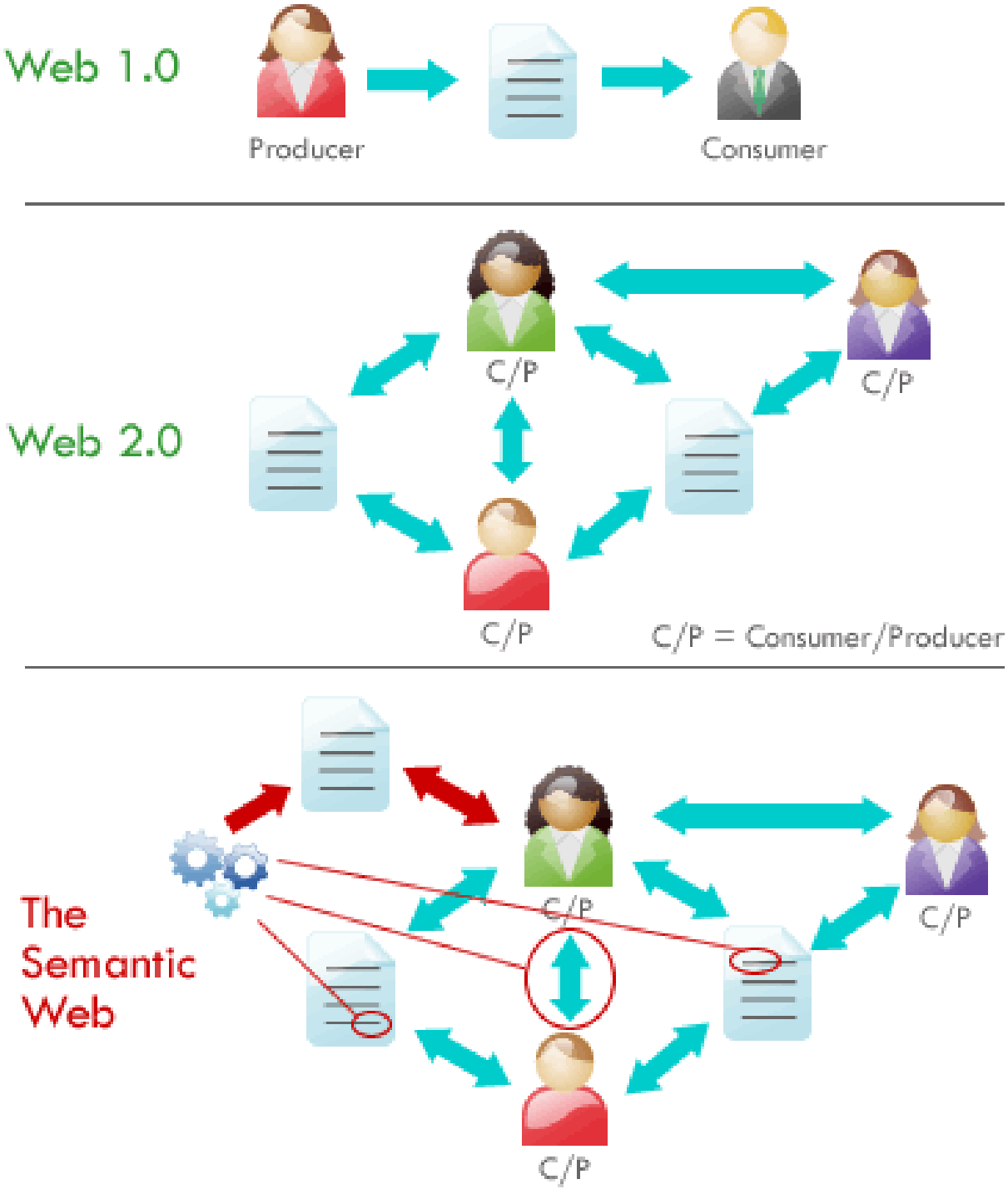
Enabling The Exercise Of Rights And Facilitating The Public Interest

Ismail Serageldin

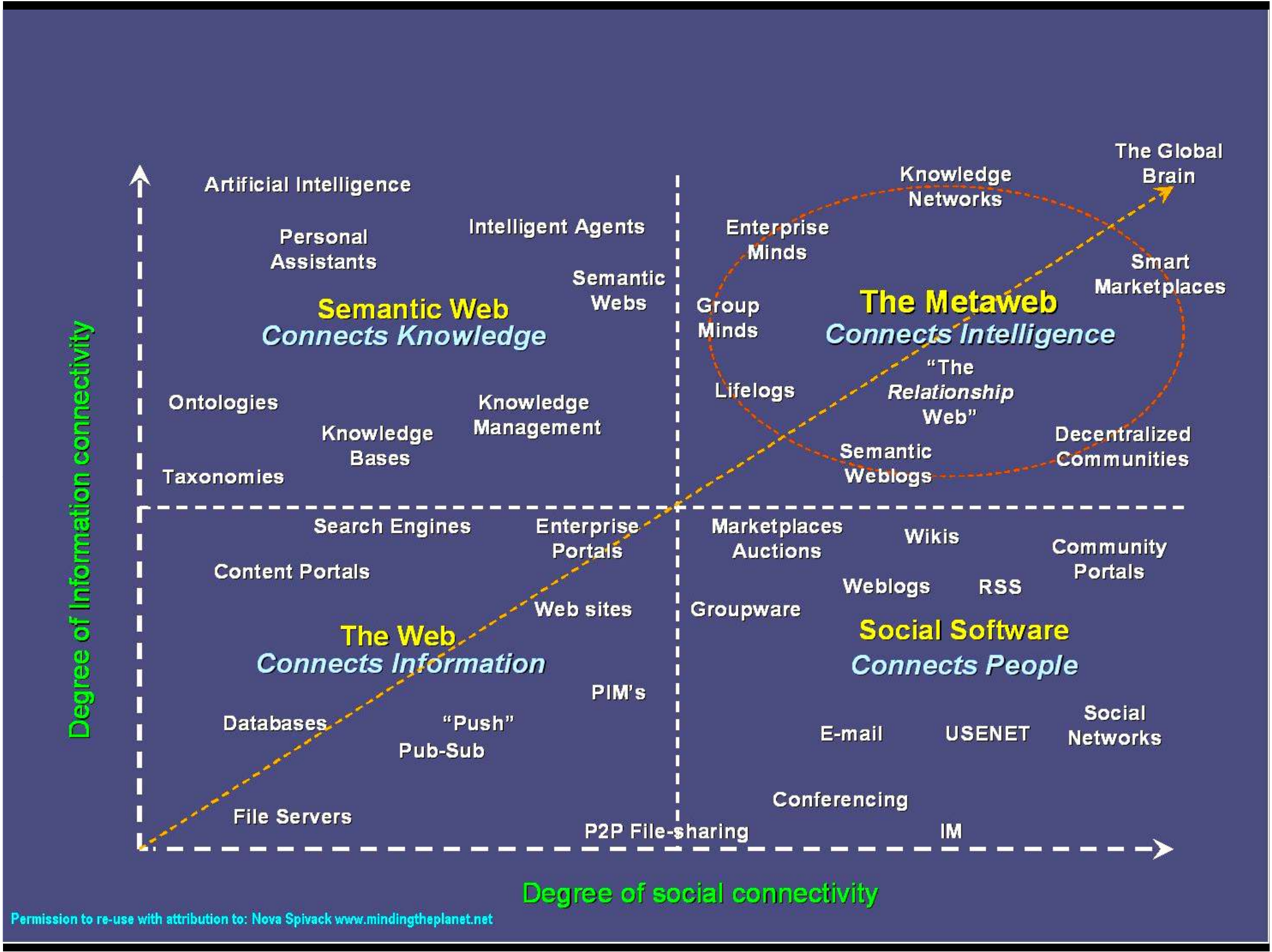
WIPO -- 13 10 2011

Outline

- The Seven Pillars Of The Knowledge Revolution
- Rethinking The Law
- What Is Copyrightable
- Inventing The Future
- Envoi


Web 1.0
Producer
Consumer
Web 2.0
C/P
C/P
C/P
C/P = Consumer/Producer
The
Semantic
Web
C/P
C/P
C/P

Add Social Connectivity Dimension




And
MORE CHANGE
will come…

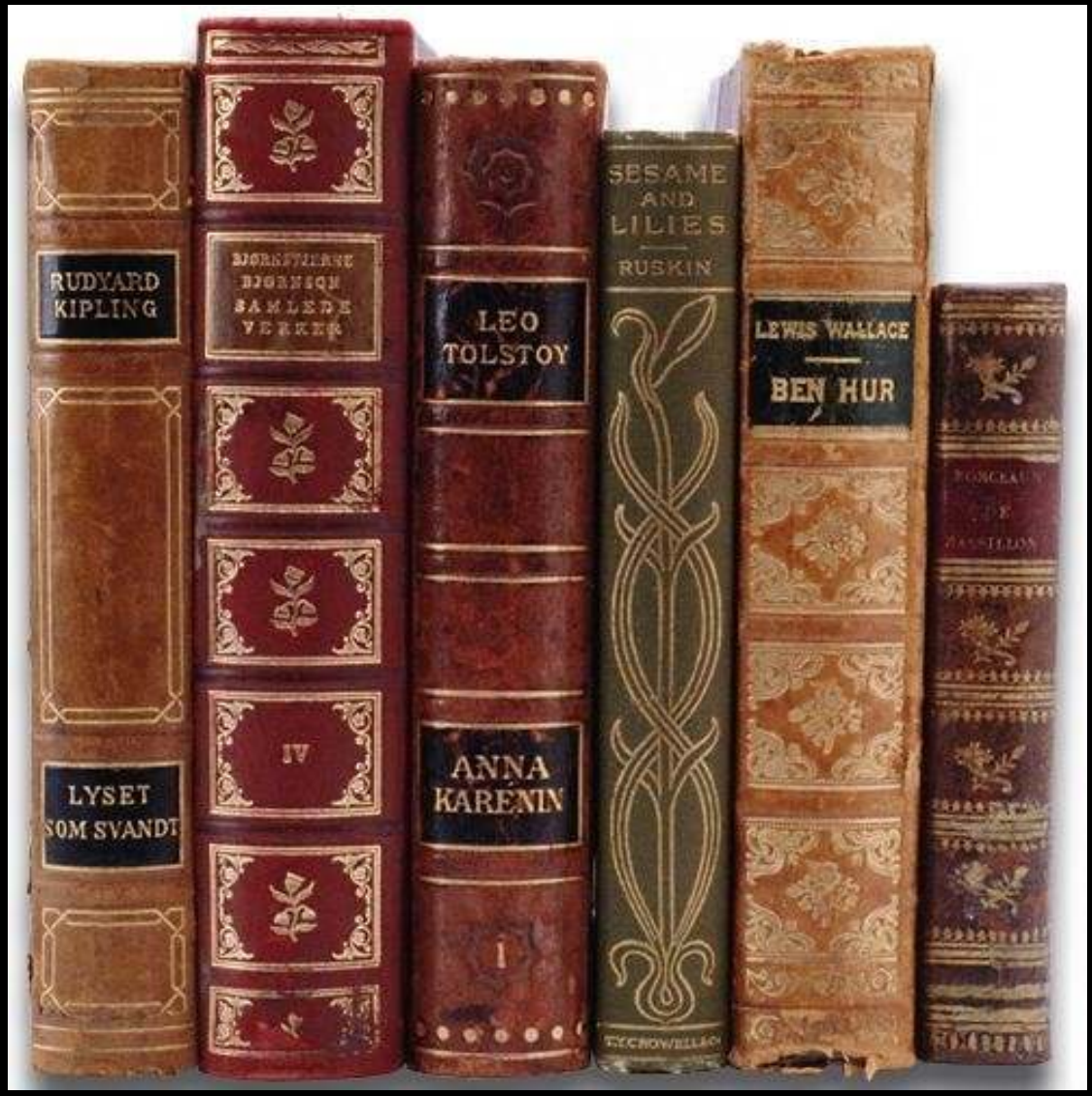
Beyond Tomorrow

The Seven Pillars Of The Knowledge Revolution

1.

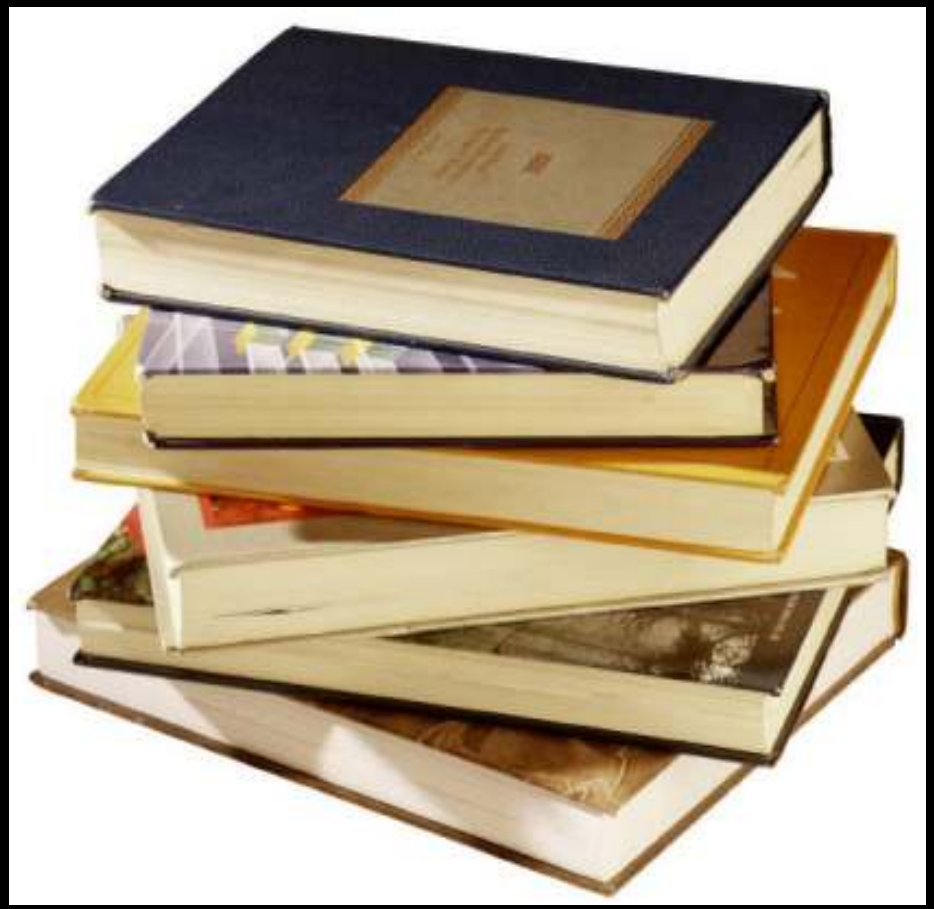
Parsing, Life & Organization

Knowledge Was Parsed in Individual Volumes



Web pages: the new parsing

Dead Or Alive?



Yesterday

- Document is “Dead”
- Knowledge has a well known structure:
  - Introduction
  - Problem statement
  - Methodology
  - Marshalling evidence
  - Analysis and interpretation
  - Conclusions
  - References and bibliography

Today

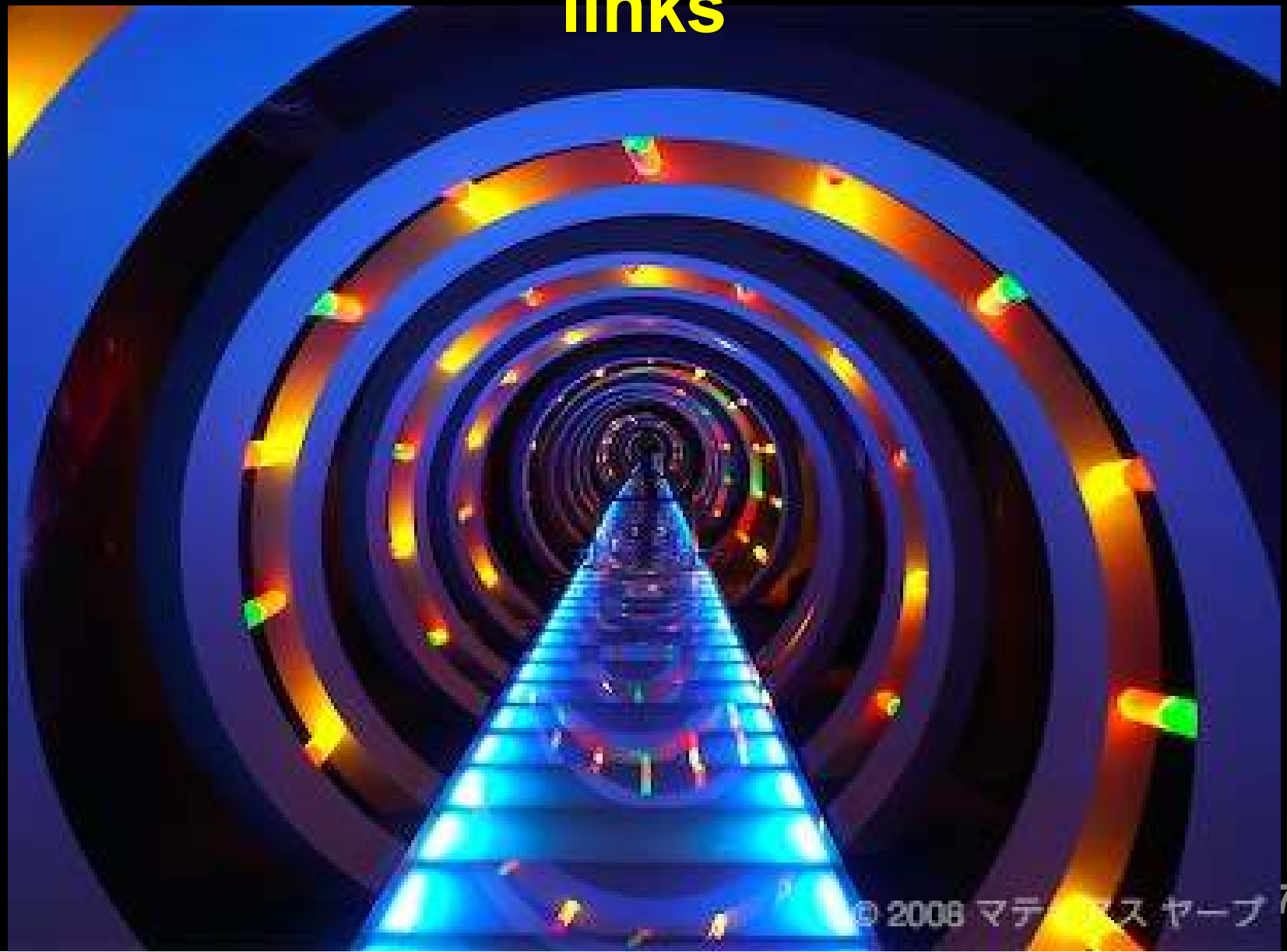
- Document is alive: can be updated constantly
- Webpage: home page
  - Short introductory statement
  - Hypertext links in the short one page
- Site map, search, browsing (you can find the part you want)
- Images, Videos

Tomorrow

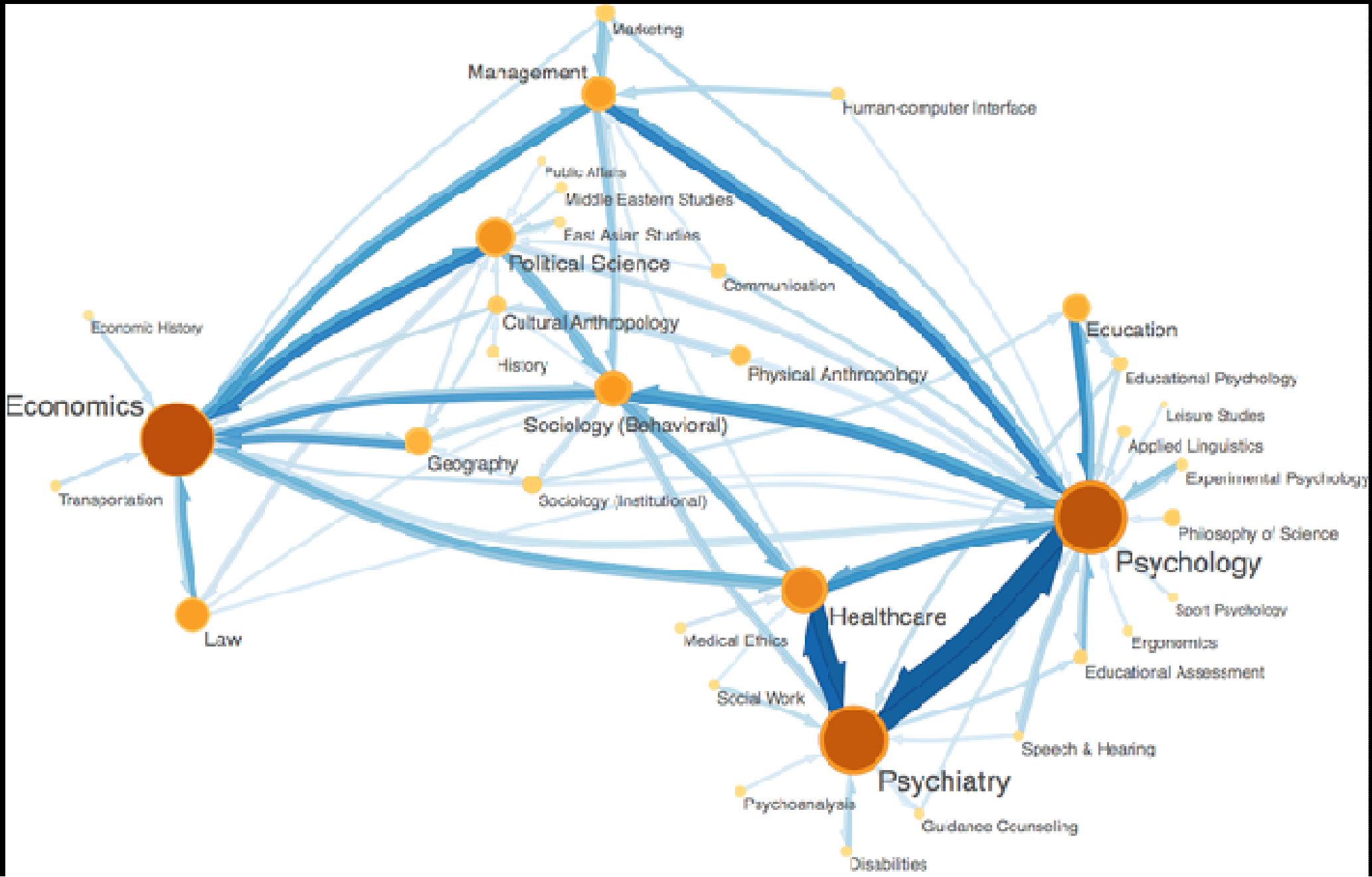
- Parsing, already reduced by web pages and hypertext, becomes almost continuous
- All documents are alive, and underlying concepts become part of the fiber of text and 3-D images and video
- Fluid, the entire system is alive, not just individual documents in it.
- Advanced searchability and browsing across the Semantic web
- Language is no longer a barrier


The Semantic Web

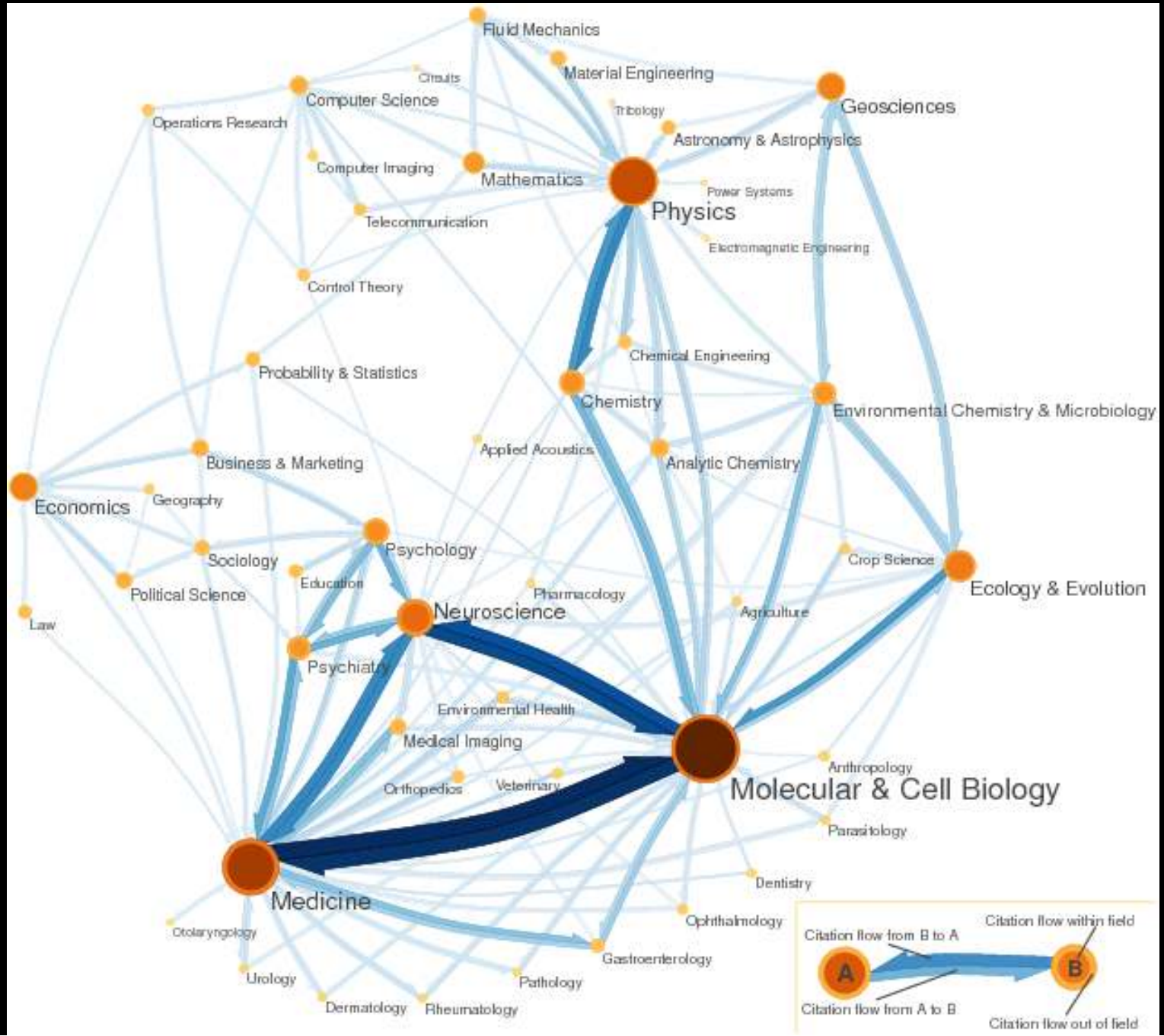
Organized domains of knowledge that allow you to drill down through the links



Social Sciences Links



Natural Sciences Links

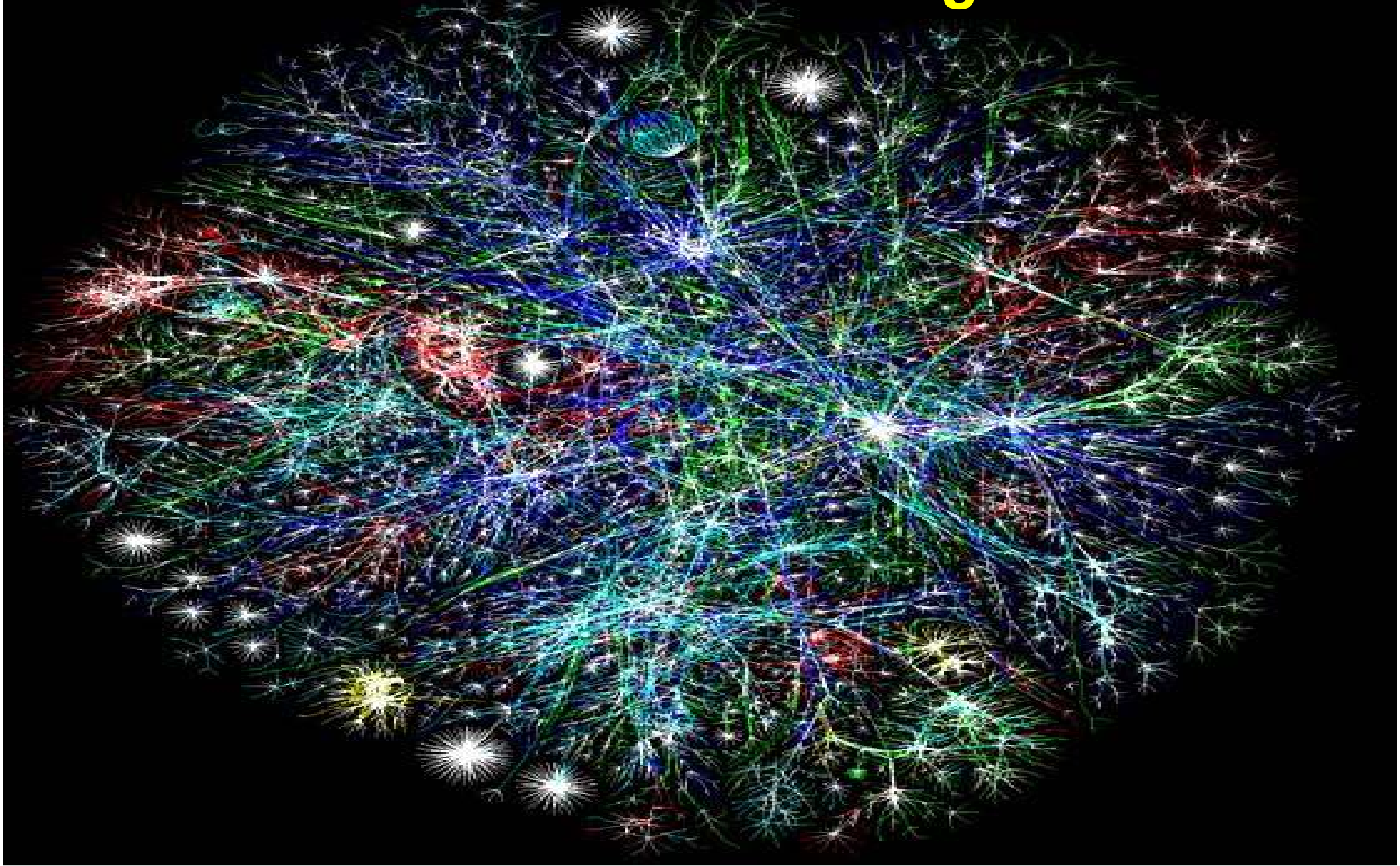


Beyond The Conventional Keyboard and Screen as interface

Augmented Reality

Providing information when and where it is needed

A Living, Vibrant, Changing Interconnected Knowledge Base



2.
Image & Text

Increasingly we rely on image rather than text to comprehend information and new knowledge

ANNALI

DI

BOTANICA

PUBBLICATI

DAL

PROF. ROMUALDO PIROTTA

Direttore del R. Istituto e dell R. Orto Botanico di Roma

VOLUME PRIMO

CON XIV TAV

E 34 INCISIONI N

ROMA

TIPOGRAFIA ENRICO

1904

exemplaires en fleur, mais sans aucun fruit. Le port et tous les autres caractères, me paraissent être ceux de l'E. *Valliniana* (les deux plantes ont des capsules et des graines lisses) *mais* l'E. *pauciflora* a les feuilles inférieures lineaires-oblongues; les moyennes et supérieures étroitement oblongues ou oboblongues et plus larges que les inferieures, *mais toujours plus étroites* que celles de l'E. *Valliniana*. Les feuilles des verticilles ombellaires sont nettement mucronées. Les glandes de l'involucre sont tronquées ou subémarginées, sans mucron (ecornutis dit Boissier), ou plus ou moins obscurement mucronées (brevissime bicornutis) selon Lange in Willk et Lge.) c'est-à-dire à peu près les glandes de l'E. *Valliniana*.

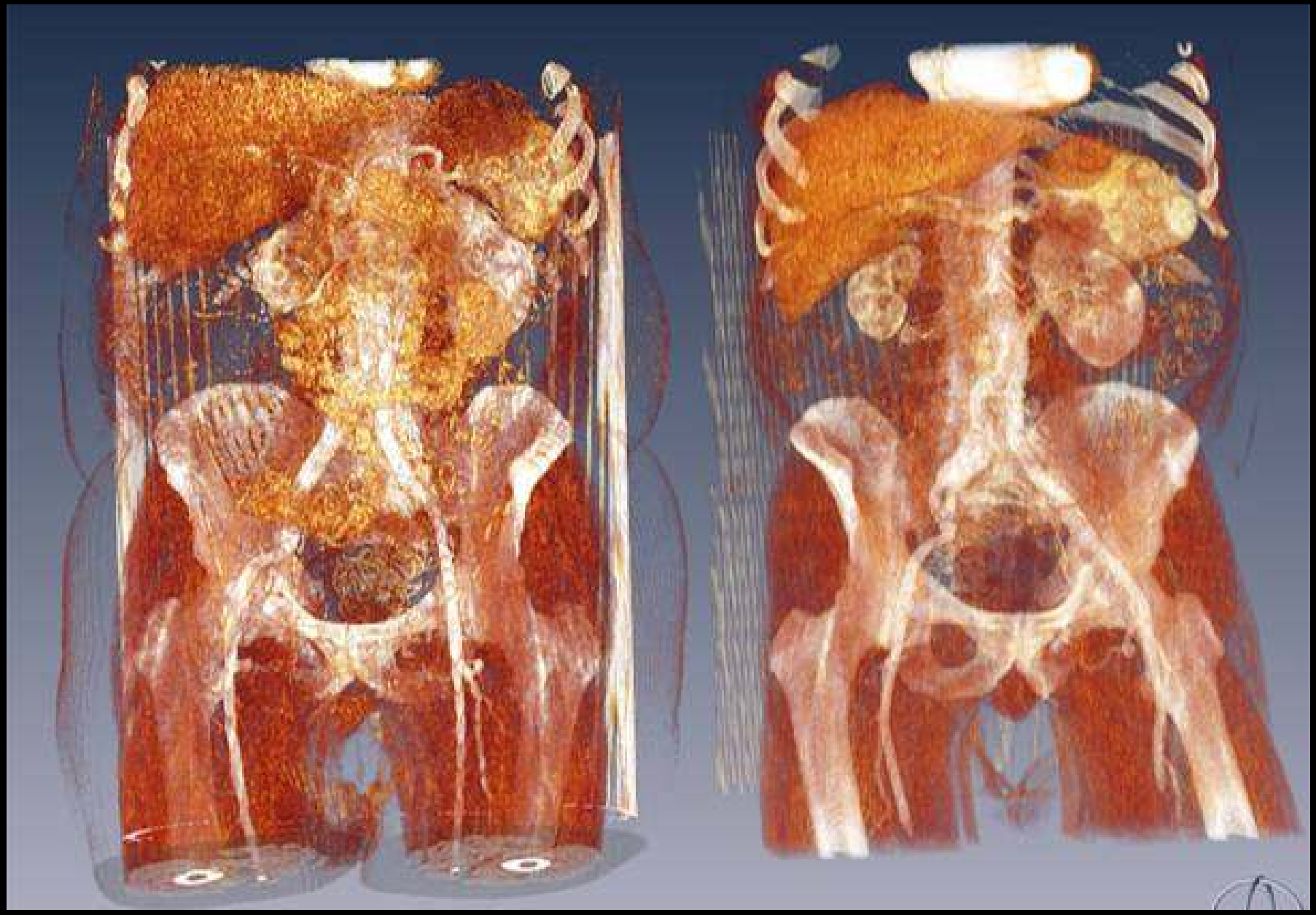
« La comparaison entre ce dernier et l'Euphorbia de Dufour merite une étude ulterieure, et il se pourrait que les affinités de l'E. *Valliniana* soient plus près de l'E. *pauciflora* que des E. *Chamaebuxus* et *capitulata* ».

La giustezza di quest'ultima considerazione del sig. Burnat vien confermata dal seguente periodo che tolgo dalla lettera del sig. Beauverd nella quale si dà la relazione dello studio comparativo della E. *Valliniana* colle affini.

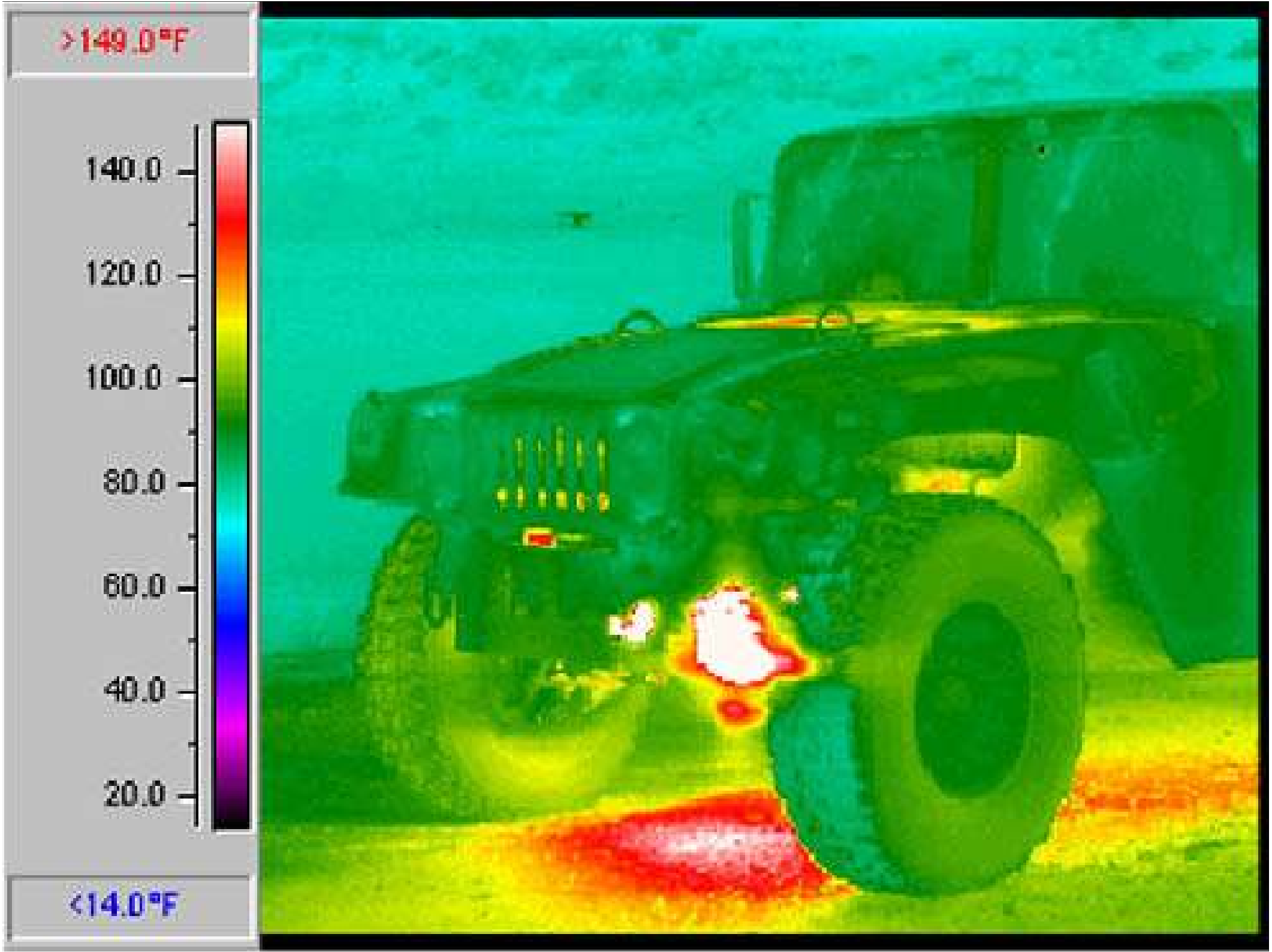
« Au sujet de l'E. *pauciflora* Duf. je ne puis que confirmer tout ce qu'on dit M.r E. Burnat: les trois échantillons de l'herbier Boissier n'ont pas de graines mûres: mais la forme des capsules que nous possédons (obconiques) est trop différente des vôtres pour permettre la moindre confusion: les feuilles et les cicatrices de la base des tiges achevent de compléter la différence ».

Ecco ora le osservazioni fatte dal Beauverd su alcune Euforbie affini alla nostra.

E. **saxatilis** Jacq. « Au premier aspect votre plante évoque l'image d'une *Euphorbia saxatilis* Jacq. dont plus d'un échantillon de nos collections possèdent, comme votre plante, des feuilles caulinaires mucronées (et non pas toutes tronquées ou même echancrées comme Rchb. l'indique dans Icones V. f. 144). Les différences avec votre plante portent principalement sur les glandes, la couleur des fruits et la base des tiges qui est couverte des cicatrices des feuilles rapprochées chez E. *saxatilis*, tandis que vos deux échantillons ne portent que quelques écailles *très espacées* sans cicatrices; l'un d'eux qui possède des tiges desséchées de l'année précédente indique, au surplus, que ces tiges sont franchement herbacées et n'affectent nullement l'apparence sous-ligneuse causée par les cicatrices dans l'E. *saxatilis*. En outre vos deux échantillons sont rameux, caractère que je n'ai observé qu'à un bien plus faible degré sur un seul éxemplaire d'E. *saxatilis* de Pichler (Riva bianca 1869 Venetie). »



Surgery before and after


>149.0°F
140.0
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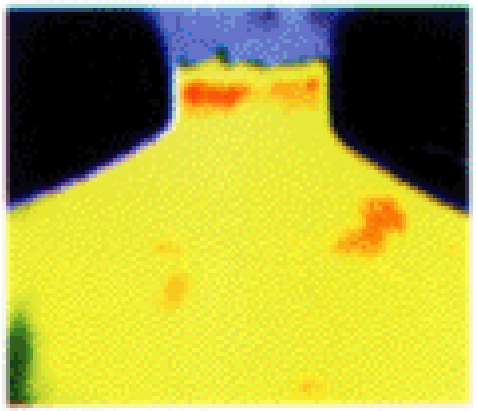
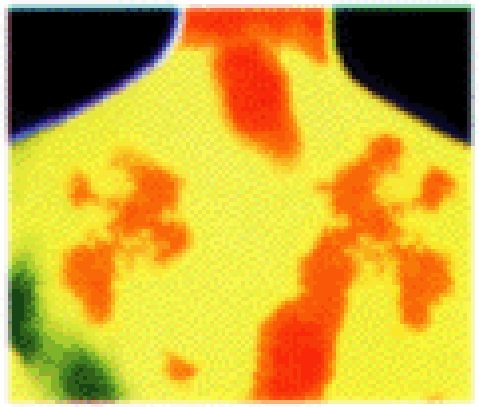
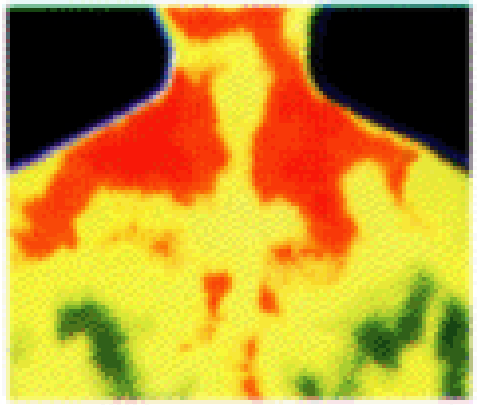
20.0
<14.0°F



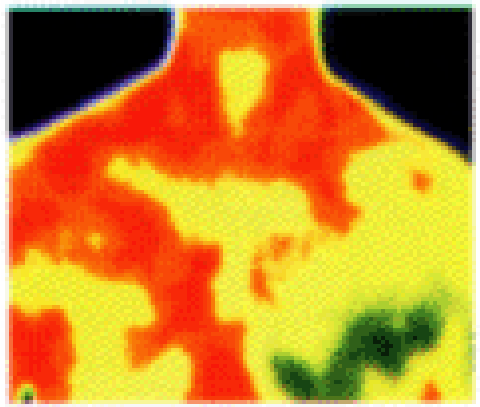
Before



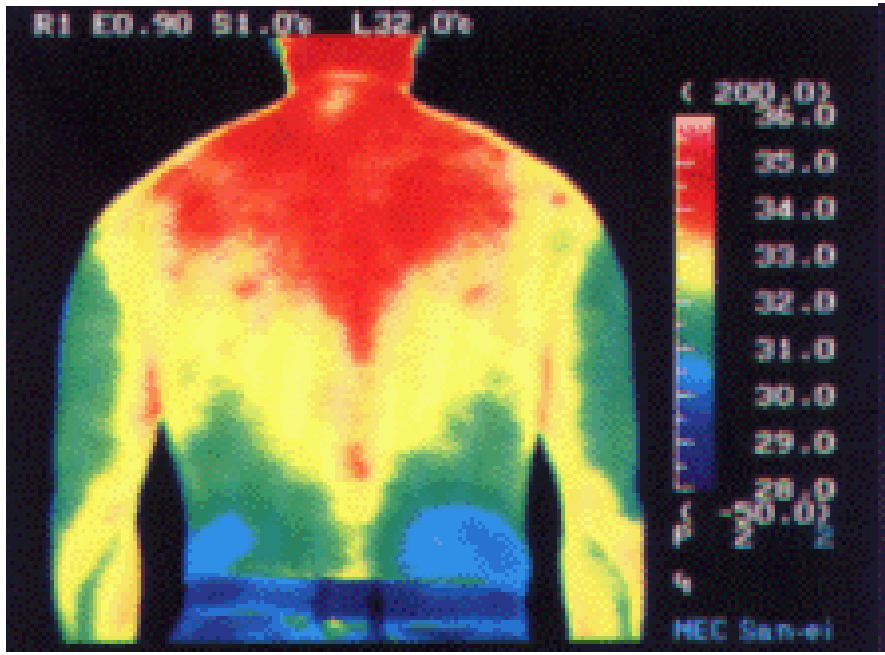
After 11 minutes



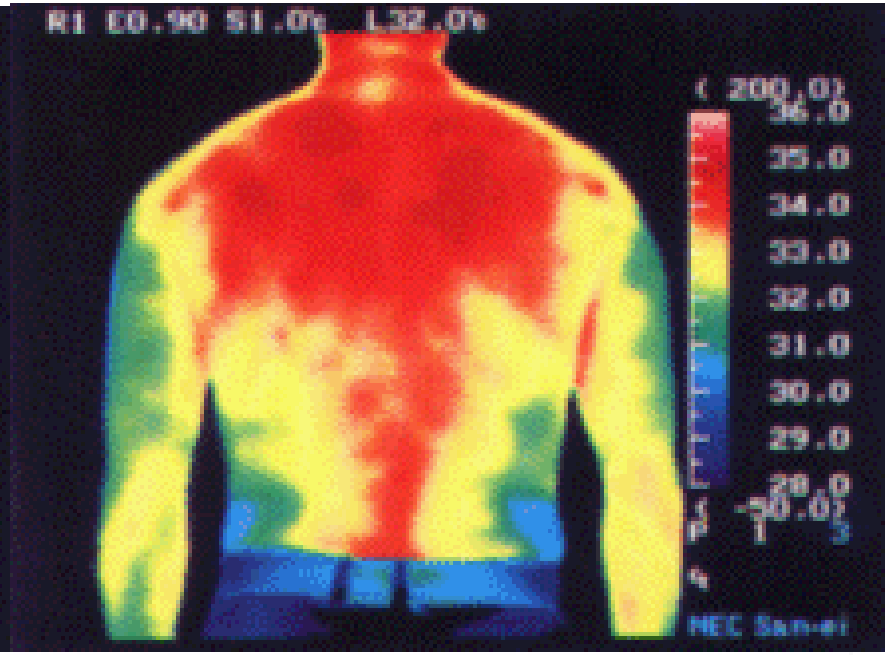
After 28 minutes



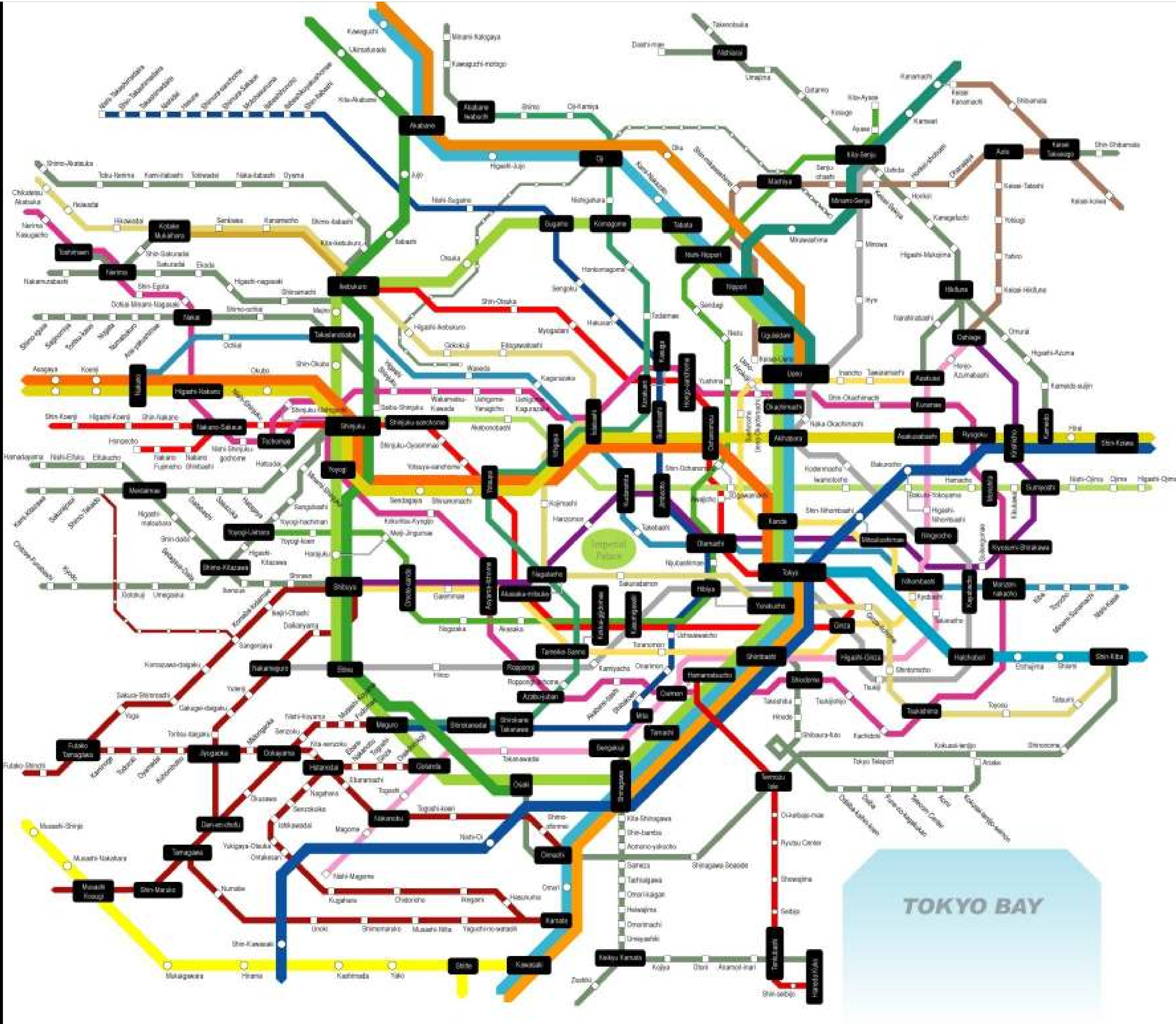
After 42 minutes



Before

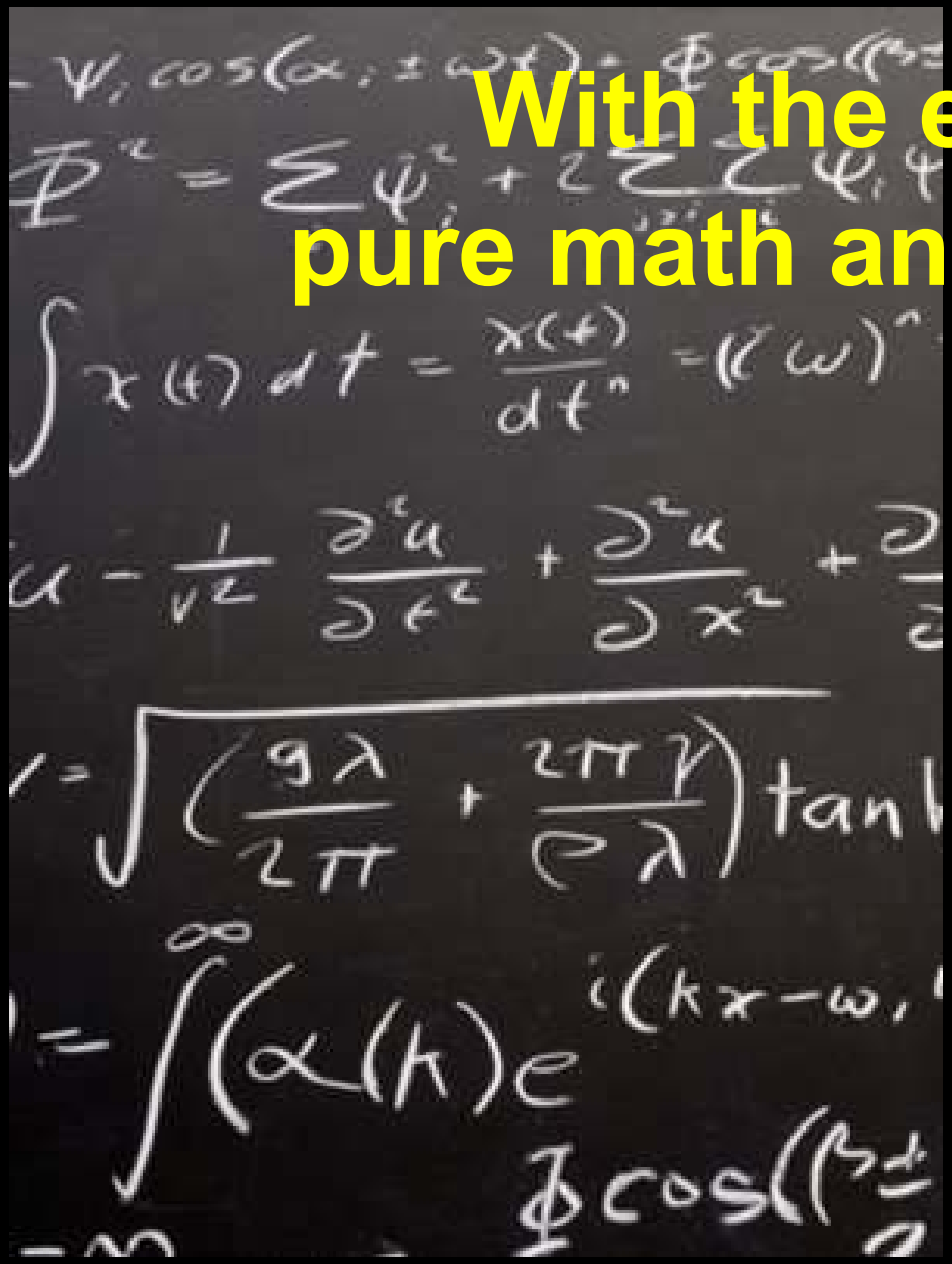


After 35 minutes

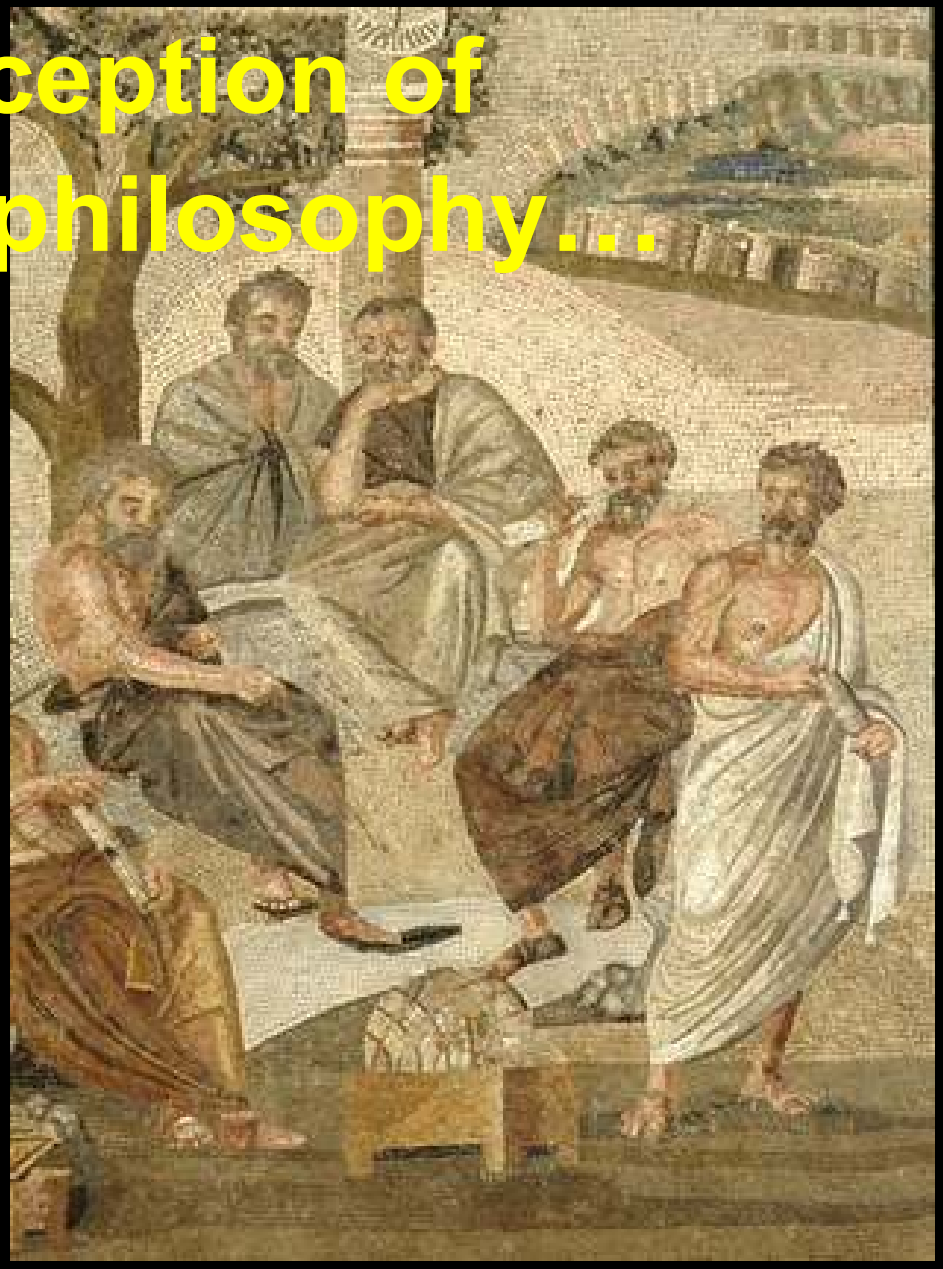


Imperial Palace
TOKYO BAY

3.
Humans & Machines



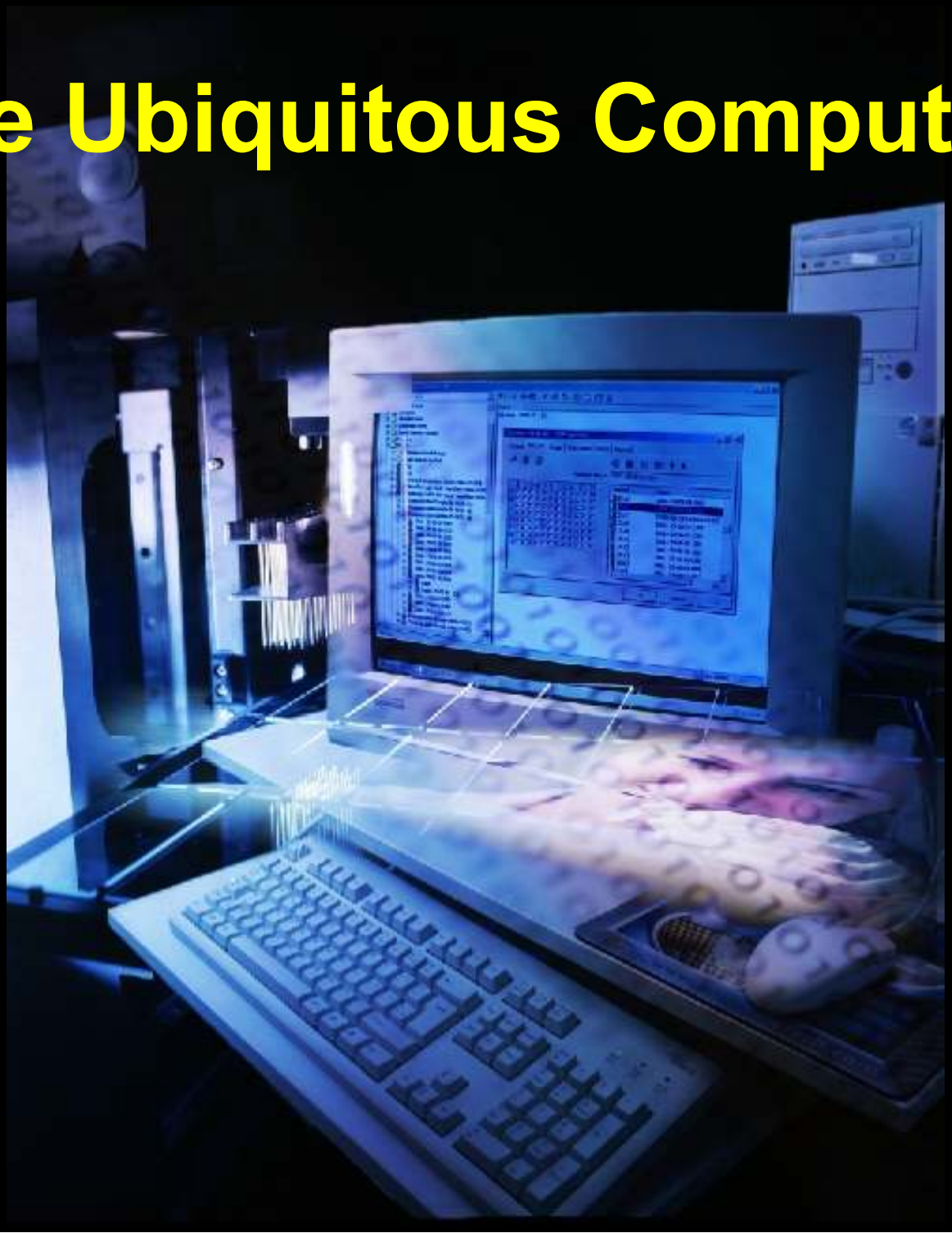
With the exception of
pure math and philosophy…

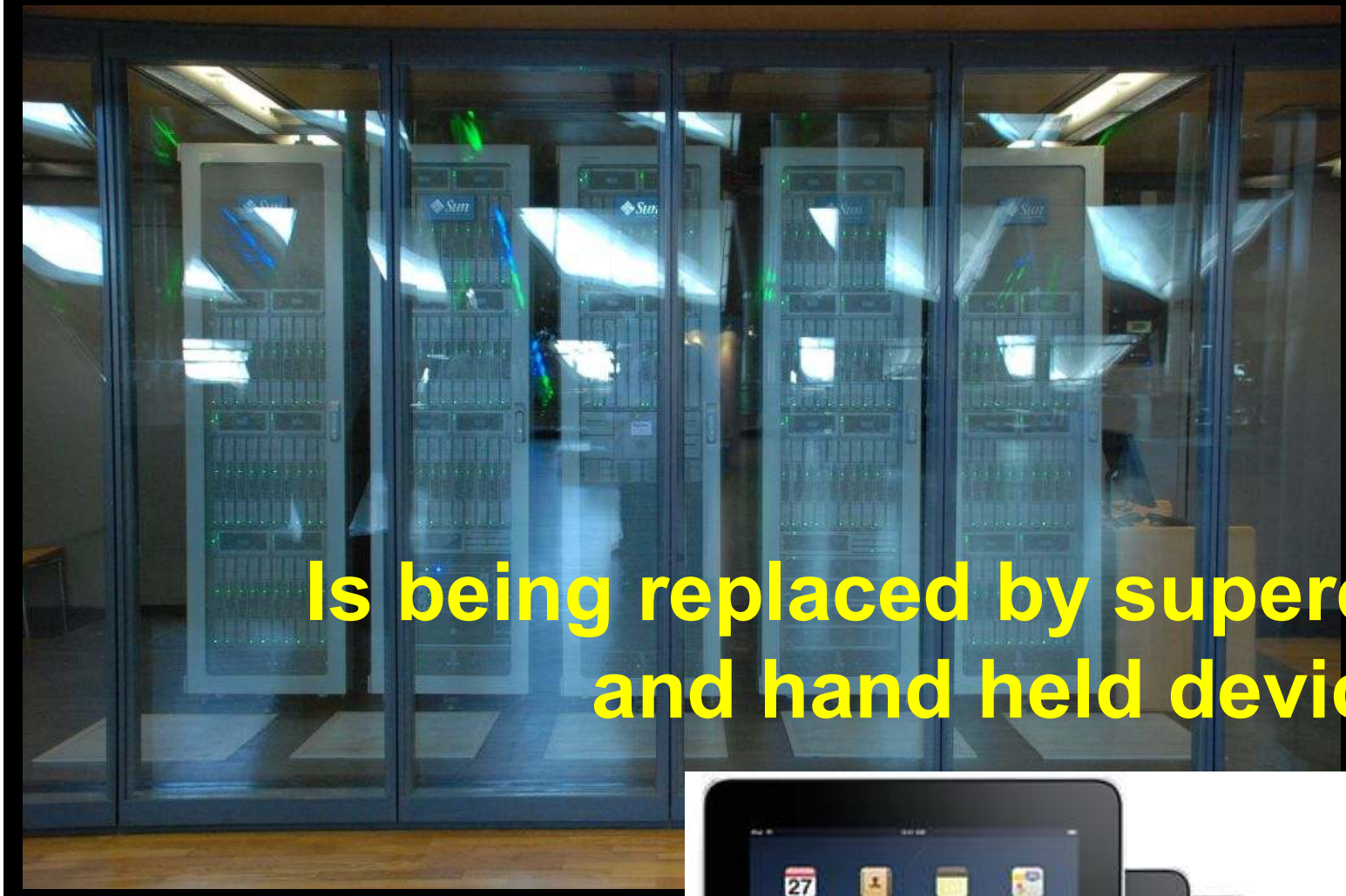


In every other field of knowledge…

Humans will need machines to access, retrieve, manipulate and add to the body of knowledge

The Ubiquitous Computer

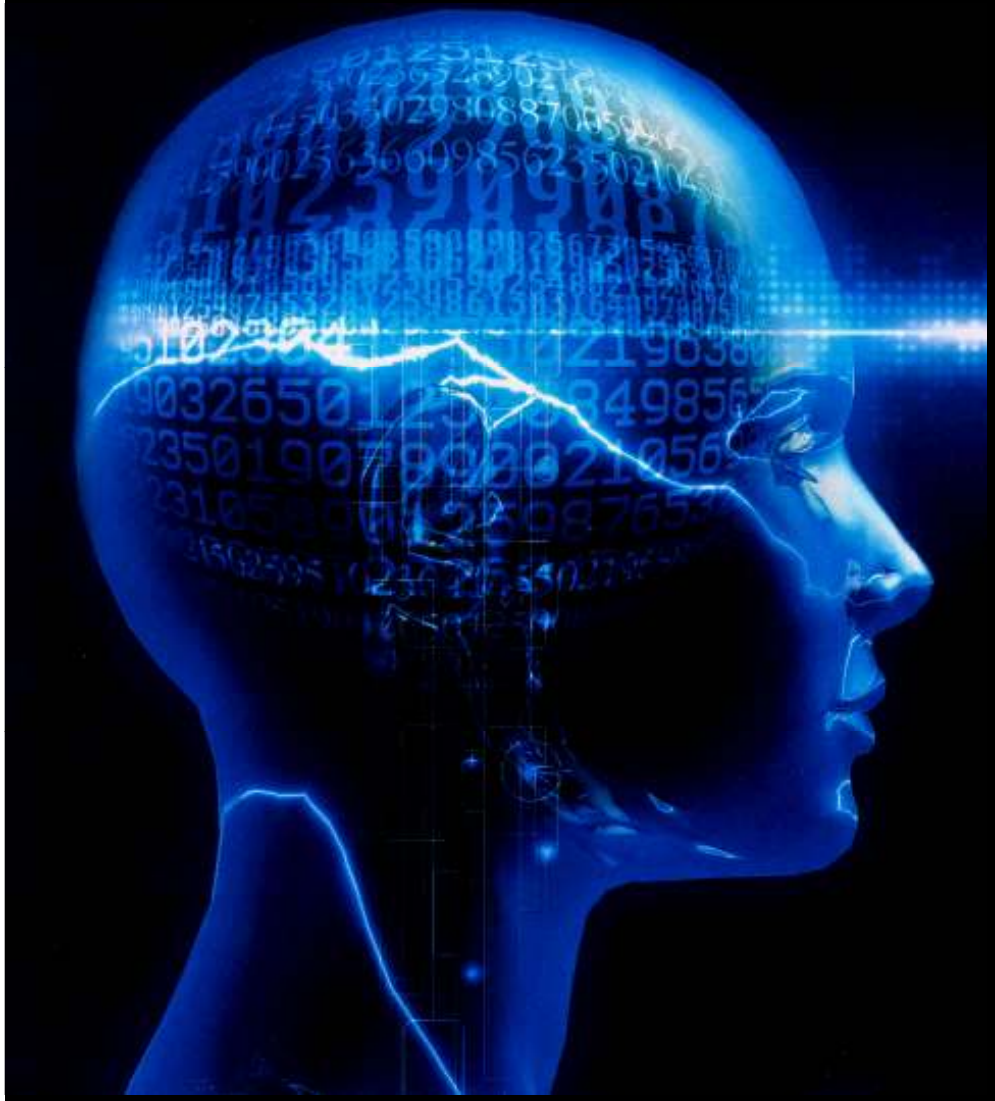


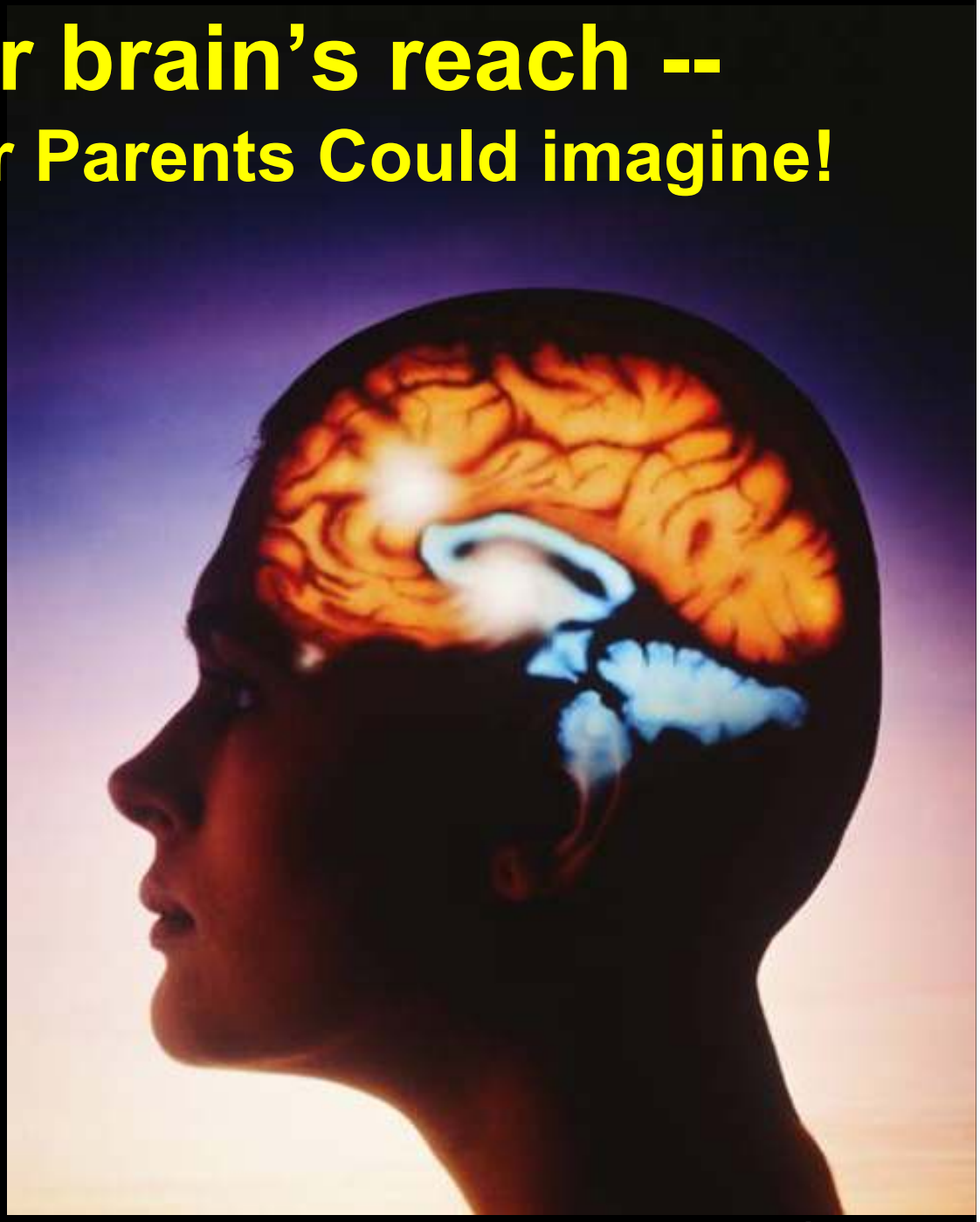


Is being replaced by supercomputers and hand held devices

Effective Machine Translation Is Coming … Soon!

Expanding our brain's reach --
Beyond Anything Our Parents Could imagine!

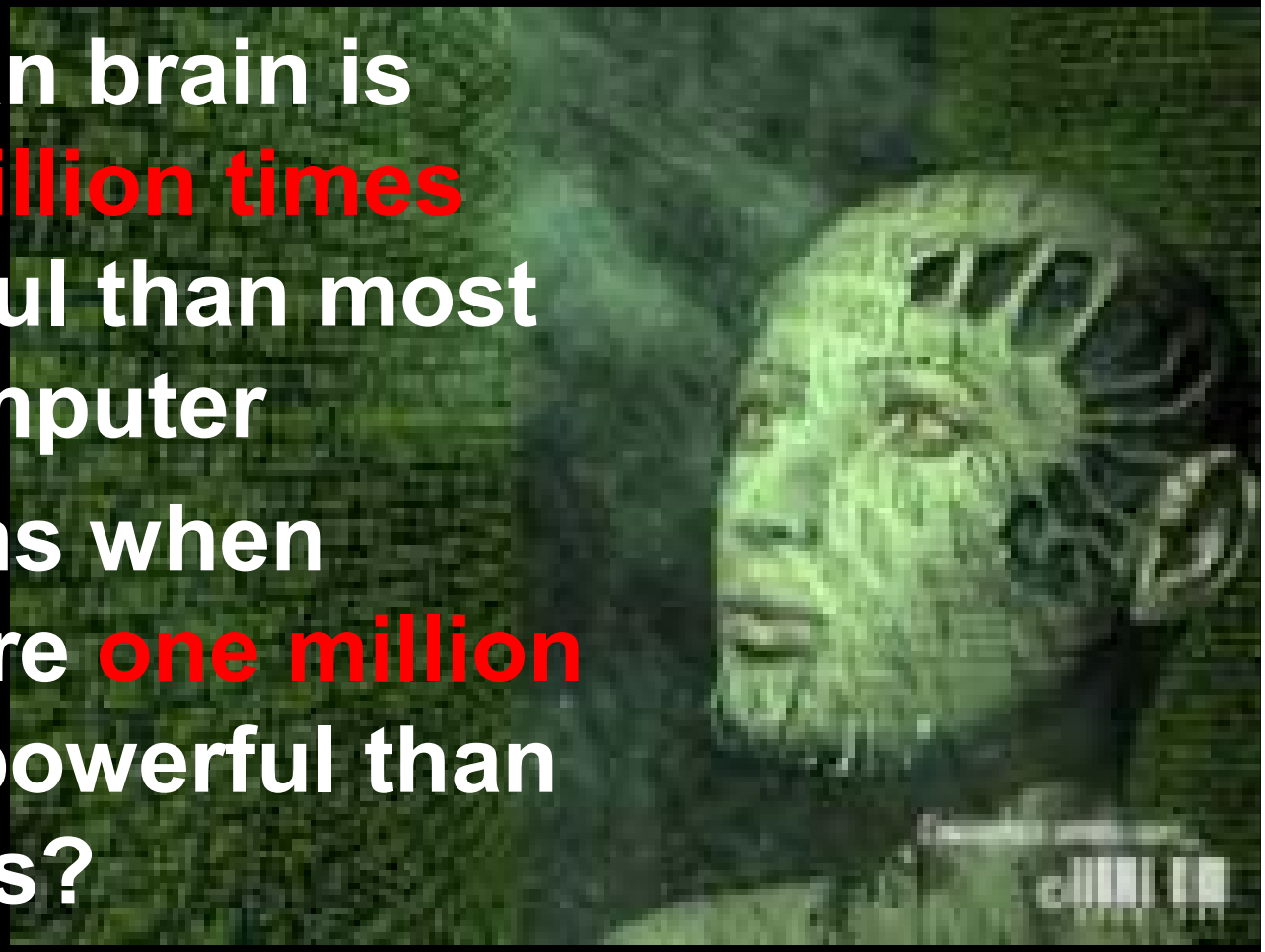





The search for A.I. continues…

Note:
(In terms of processing power)

- Today, human brain is about one million times more powerful than most powerful computer
- What happens when computers are one million times more powerful than human brains?



4.

Complexity & Chaos

The Emerging Science of Complexity and Chaos

5.
Computation & Research

From Data Collections To Connections Between Collections

From data collections …

- In the past science focused on building ordered data collections

Group	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Period																			
1	1 H																		2
2	3 Li	4 Be												5 B	6 C	7 N	8 O	9 F	
3	11 Na	12 Mg												13 Al	14 Si	15 P	16 S	17 Cl	
4	19 K	20 Ca		21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	
5	37 Rb	38 Sr		39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	
6	55 Cs	56 Ba	*	71 Lu	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	
7	87 Fr	88 Ra	**	103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Uuu	112 Uub	113 Uut	114 Uuq	115 Uup	116 Uuh	117 Uus	
*Lanthanoids			*	57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb		
**Actinoids			**	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No		

…to data connections

Entry	C00073 (mol file)
Name	L-Methion L-2-Amino
Formula	$C_5H_{11}NO_2S$
Links to REACTION	R00177 R00648 R00649 R00650 R00651 R00652 R00653 R0065 R00655 R00656 R00657 R00946 R02025 R02821 R03659 R0415 R04405
Links to : PATHWAY	MAP00271 Methionine metaboli MAP00970 Aminoacyl-tRNA bios
Links to : LENZYME	1.4.3.2 1.8.4.5 2.1.1. 2.1.1.10 2.1.1.12 2.1.1.13 2.5.1.6 2.5.1.49 2.6.1.73 3.5.1.11 3.6.1.25 4.1.1.57 5.1.1.7 6.1.1.10
CAS number	CAS: 63-68-3

C00073

R00650

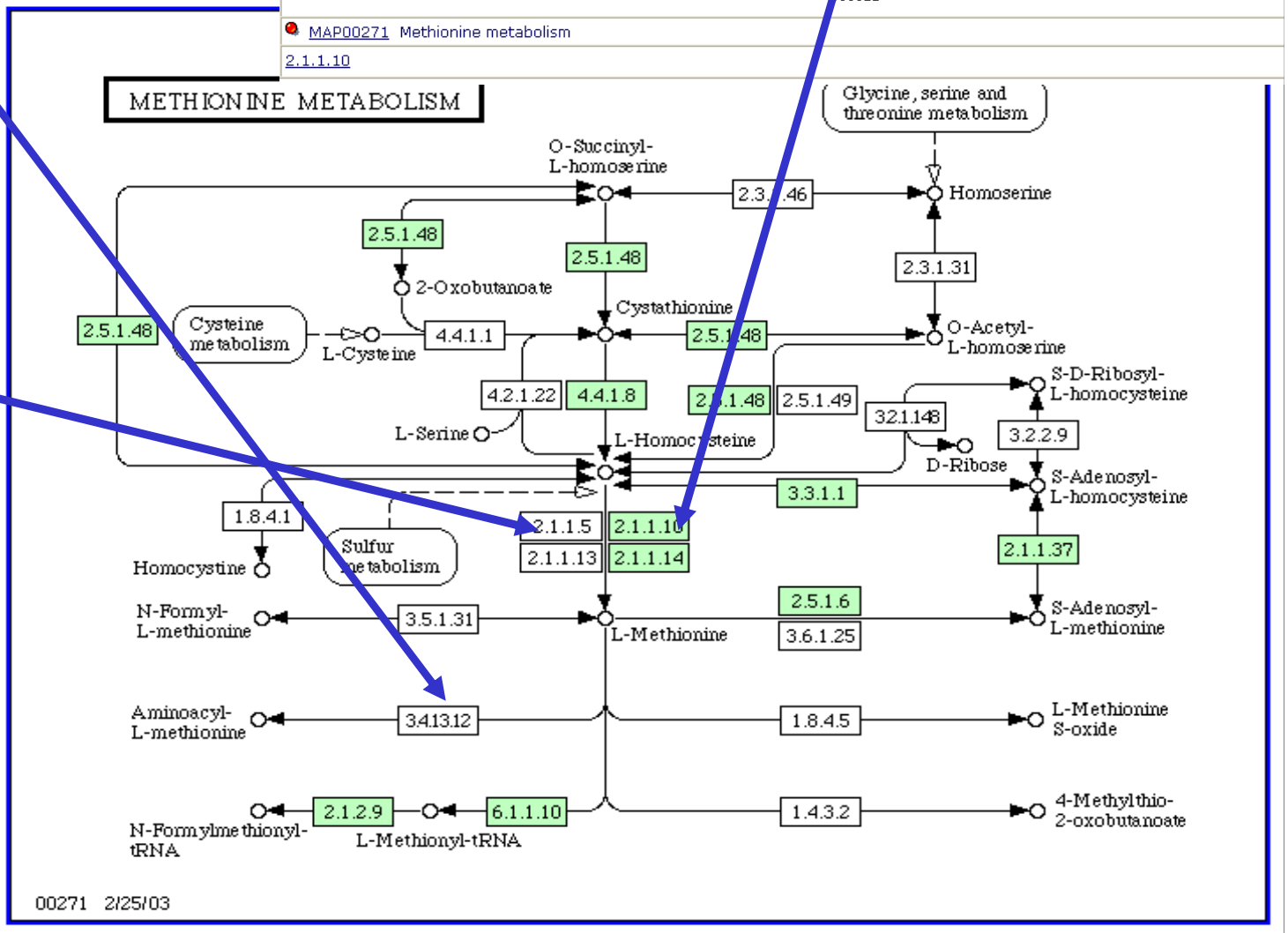
C00019

C00073

C00021

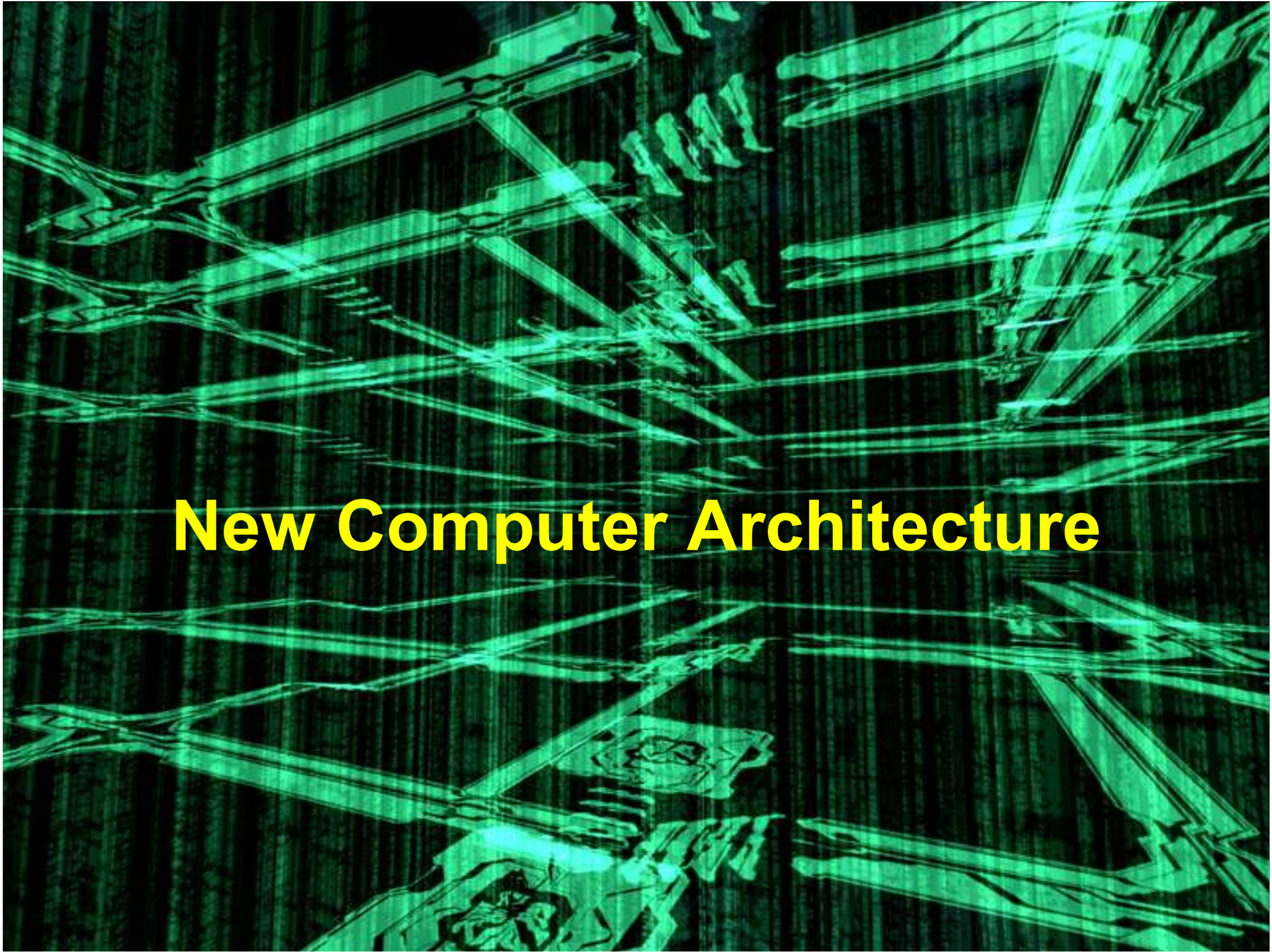
MAP00271 Methionine metabolism

2.1.1.10



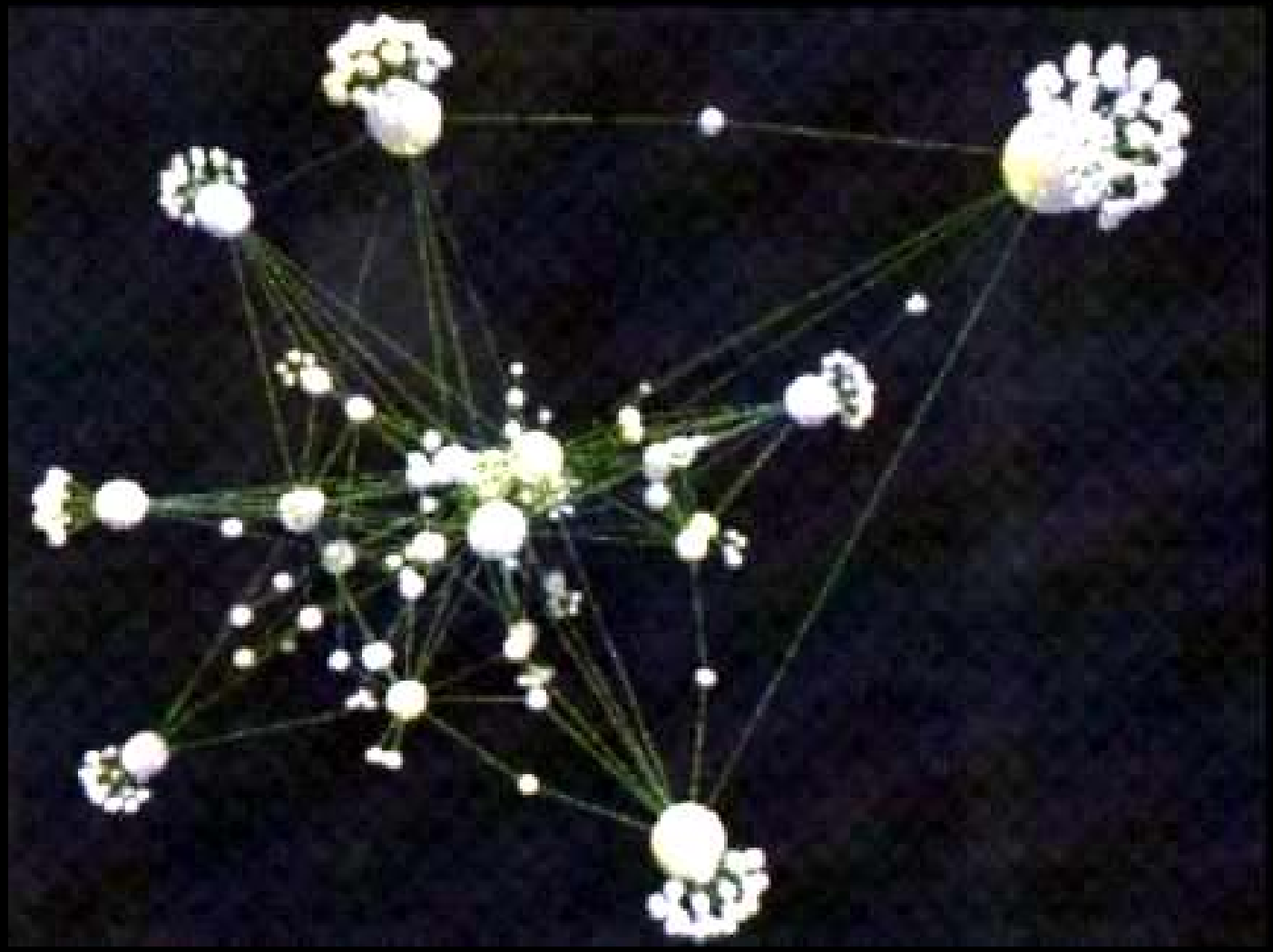
	homocysteine transmethylase L-homocysteine S-methyltransferase S-adenosyl-L-methionine:L-homocysteine S-adenosylmethionine-homocysteine trans S-adenosylmethionine:homocysteine meth
	Transferases Transferring one-carbon groups Methyltransferases
matic name	S-adenosyl-L-methionine:L-homocysteine S-m
ion	S-adenosyl-L-methionine + L-homocysteine =
rate	'L-homocysteine' 'S-adenosyl-L-methionine'
ct	'L-methionine' 'S-adenosyl-L-homocysteine'
ent	The bacterial enzyme uses S-methylmethionir
ences	1. [MEDLINE:68010530] Balish, E. and Sh of methylmethionine (or adenosylmeth 68. 2. Shapiro, S.K. Adenosylmethionine-hom 3. Shapiro, S.K. and Yphantis, D.A. Assay transmethylases. Biochim. Biophys. Act
to : PATHWAY	MAP00271 Methionine metabolism
log	KO: K00547 homocysteine S-methyltransferas
to : GENES	Arabidopsis thaliana At3g22740 (MWI23.:

What will this lead to?

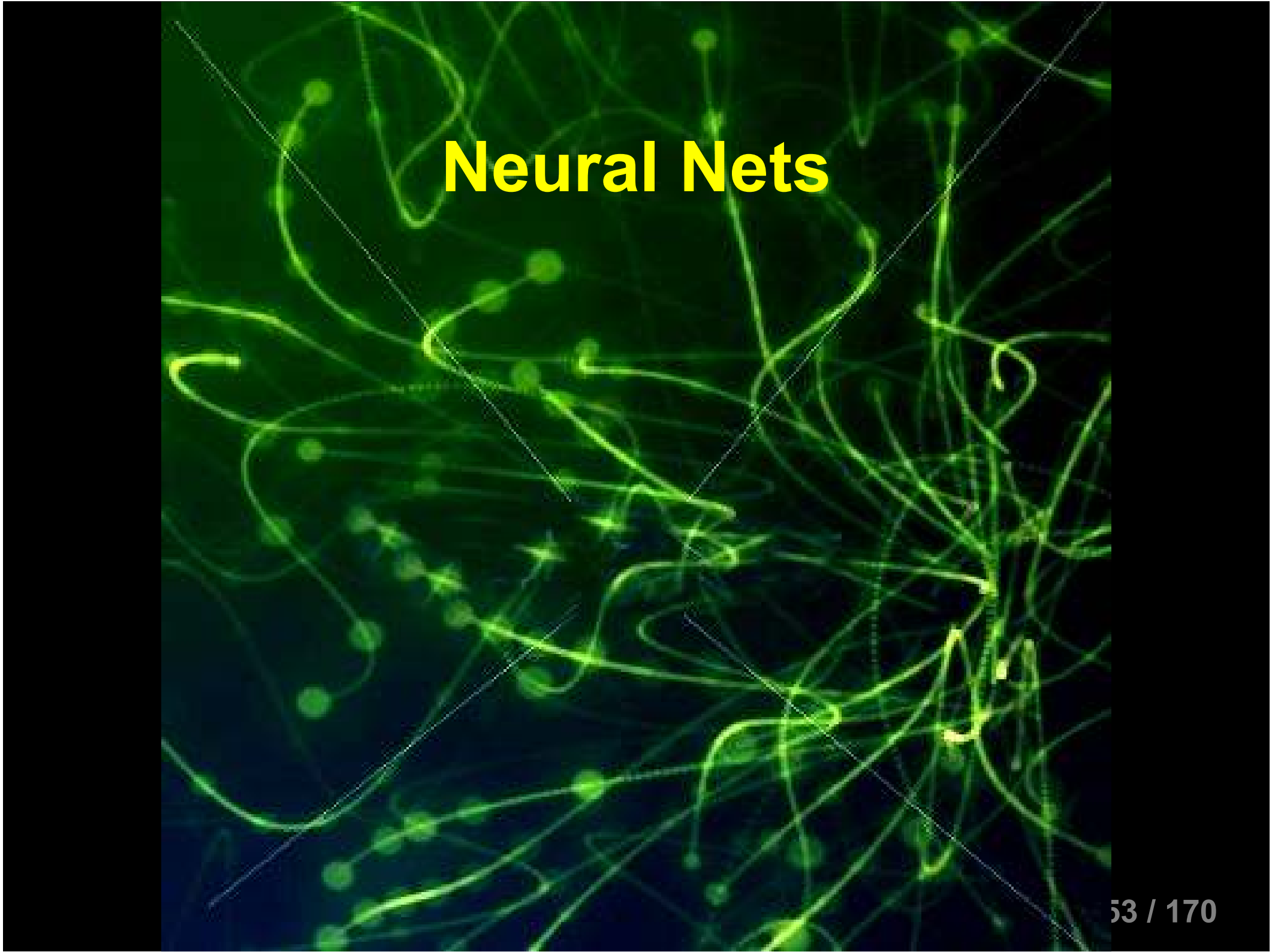

New Computer Architecture

New Pathways

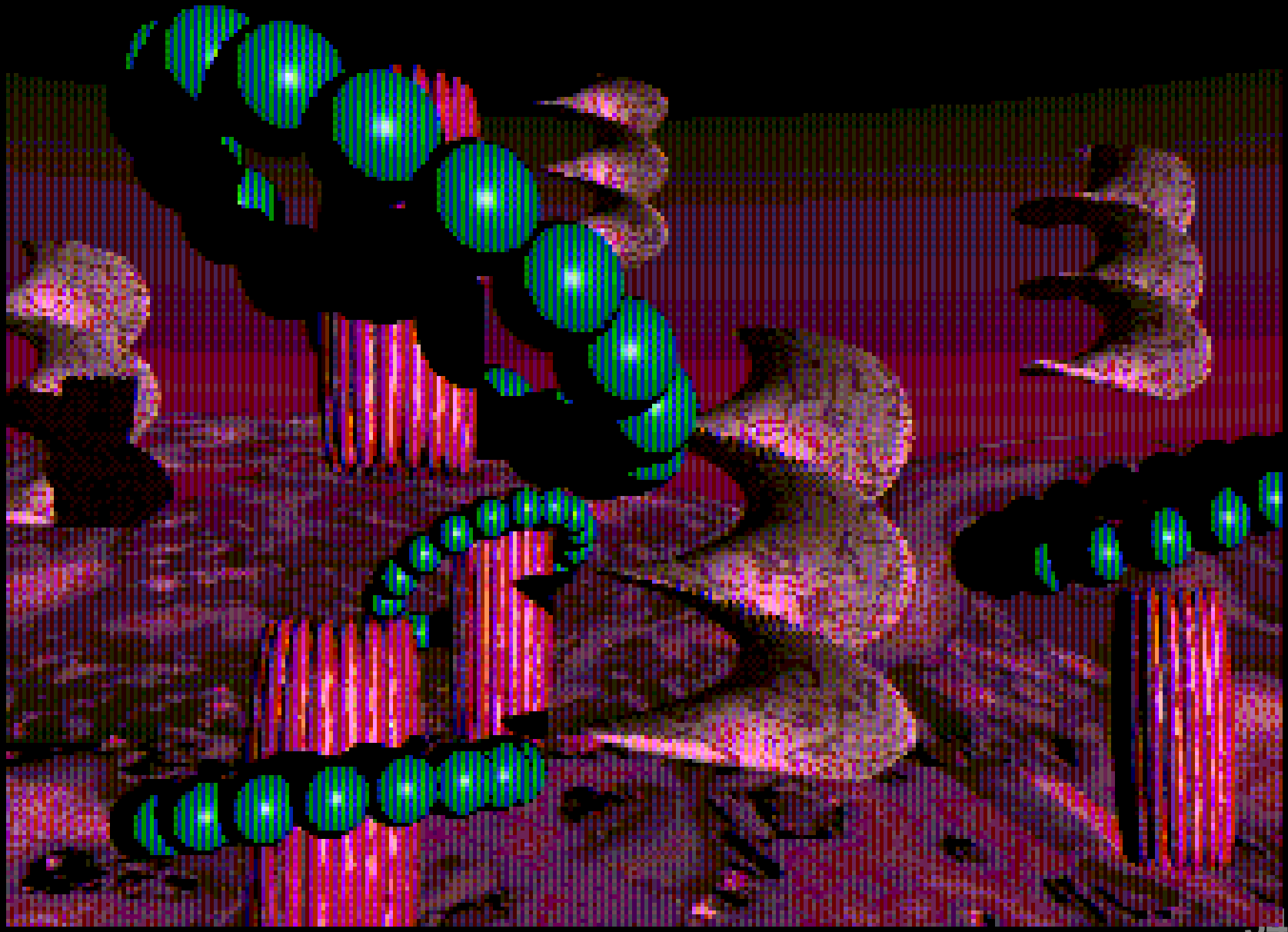
Clusters



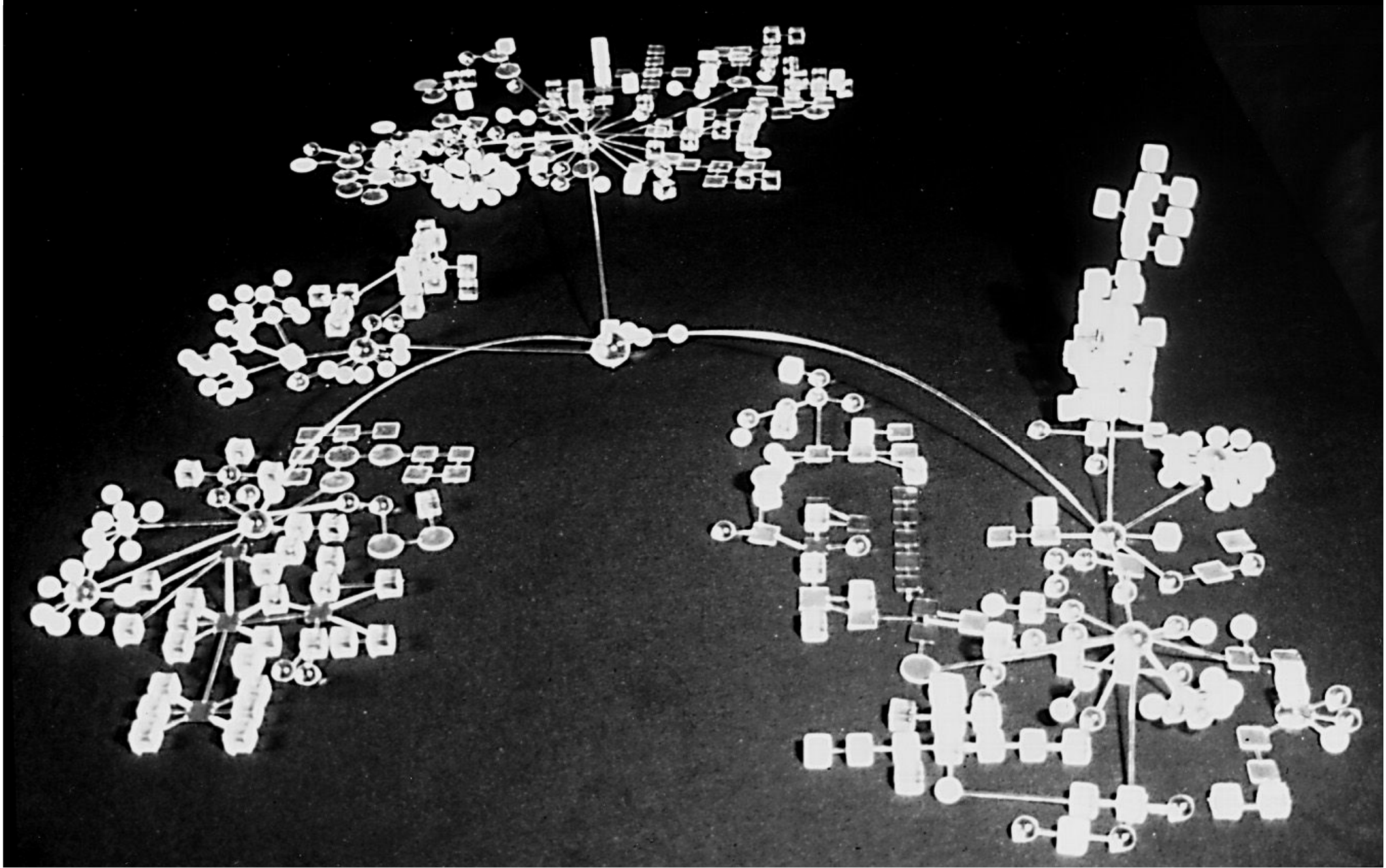

Network Control

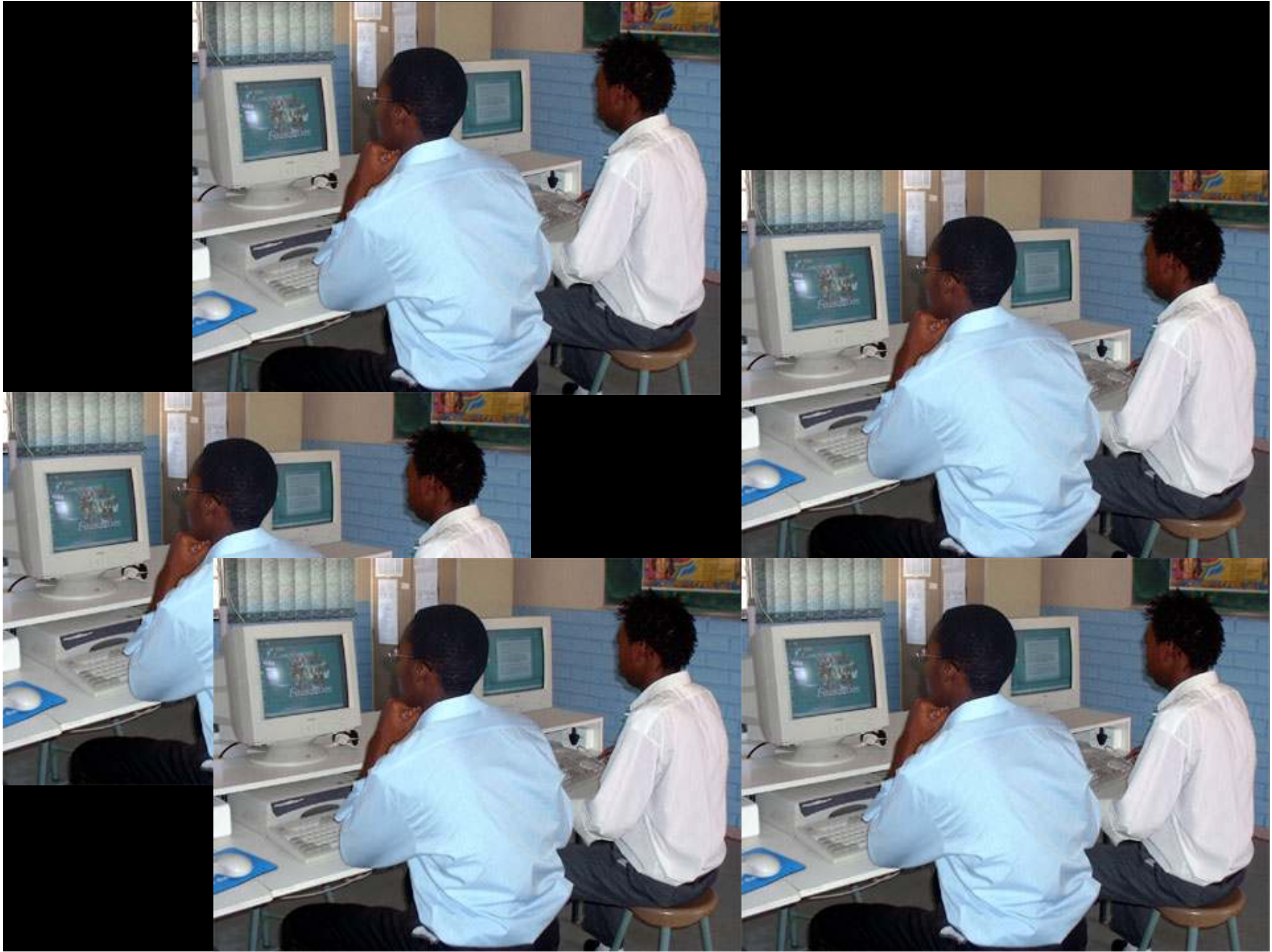

Neural Nets

Multi-dimensional Manifolds



Virtual Communities





6.

Convergence & Transformation

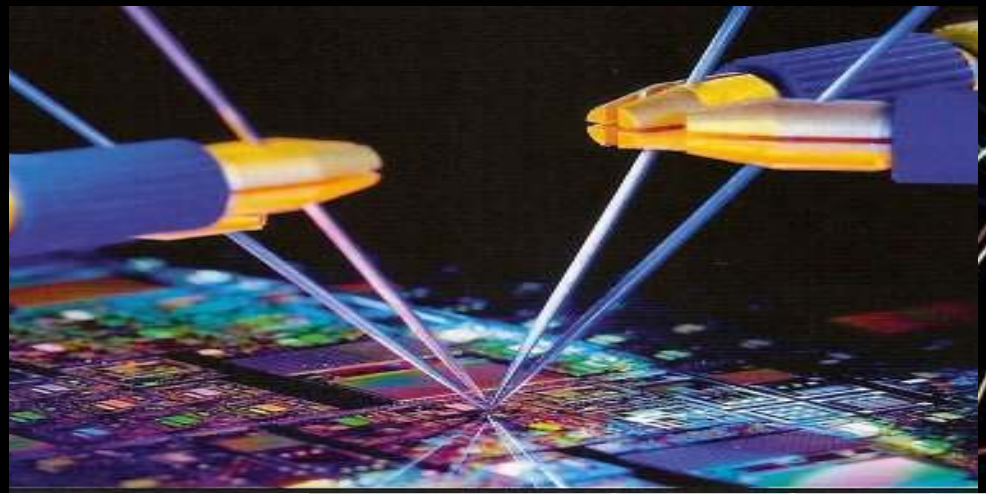
The Converging New Sciences

Bio

Info

Nano

Technologies



Convergence and Transformative Research

- **Bio / Info / Nano Technology**
- **Transformative research (capable of changing the paradigm in some fields and domains) e.g. Synthetic biology.**

7.

Pluri-Disciplinarity & Policy

Three major approaches to pluri-disciplinarity

- At present there are three major ways of organizing joint work between the disciplines:
  - Inter-disciplinary,
  - Multi-disciplinary; and
  - Trans-disciplinary.

Rethinking The Law

Life & Death were clear cut…

New technology creates new issues and requires new laws


Today, digital technology is making sound, pictures, and text all viewable and copiable on an unprecedented scale.

Viewing Movies through your mobile phone

- You can already view movies through your mobile phone… (pay per download!)

The Digital Future Is Unstoppable

Copyright law,, like any law, is there to serve the interest of society, not to maximize the profits of any particular group of people

Fundamental principles

- The social contract – for a limited time
- The public domain – the public interest
- The rights of users and the public

Fundamental principles

- The social contract – for a limited time

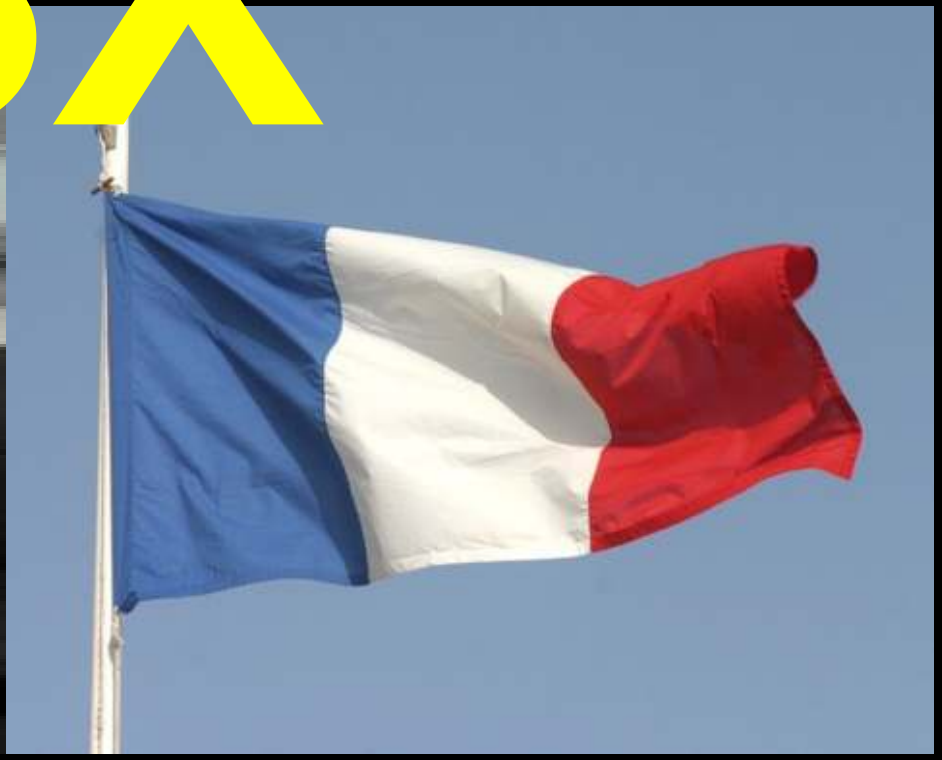
Fundamental principles

- The social contract – for a limited time
- **The public domain – the public interest**

Fundamental principles

- The social contract – for a limited time
- The public domain – the public interest
- The rights of users and the public

3X



The French Law does not respect the presumption of innocence, nor does it accept the evidence of large errors in machine based policing

What Is Copyrightable

Susan M. Kornfield and her cat.

Source: Copyright Authorship in an Age of Automation.
(or what cats, computers, and monkeys are teaching us about copyright)
By Susan M. Kornfield, Reissued in ReMix: The Stanford University Libraries Newsletter,September 23, 2011 - Issue 44 see: http://hosted-p0.vresp.com/260487/7f244efaef/ARCHIVE

Classes of content that is NOT copyrightable

- facts, data, unoriginal (standard, typical, ordinary) collections of facts or data;7
- ideas, concepts, principles, processes, procedures, functions, systems, methods of operation, and discoveries;8
- algorithms (because they are “processes,” above);
- features, functions, and elements that can be written in just a few different ways (through the doctrine of “merger”);

Also

- research (because copyright does not allow ownership of knowledge);9
- theories and interpretations of history;10
- content due to external requirements or constraints, including content required by law;
- a computer model comprised of numerous datapoints gathered from the object being modeled;
- titles, short phrases, slogans,

As well as …

- recipes; and

- incidents, characters or settings which are as a practical matter indispensable, or at least standard, in the treatment of a given topic (“scenes a faire”).

1884 US Supreme Court Decision

- Sarony, the artist who photographed Oscar Wilde was protected by copyright.
- The picture represented a creative work by him, even though he used technology (camera, chemicals) and the subject was a public figure.

Key thought:

- Technology (camera, software) can enable the embodiment of choices but does not, itself, make any creative choices. The copyrightable expression is clearly ascribed to the one making choices – if, in fact, creative choices are being made.

Some interesting examples…

Bridgeman Art Library claimed copyright ownership in the new photographs. Corel digitized the Bridgeman images and sold them on a CD ROM.

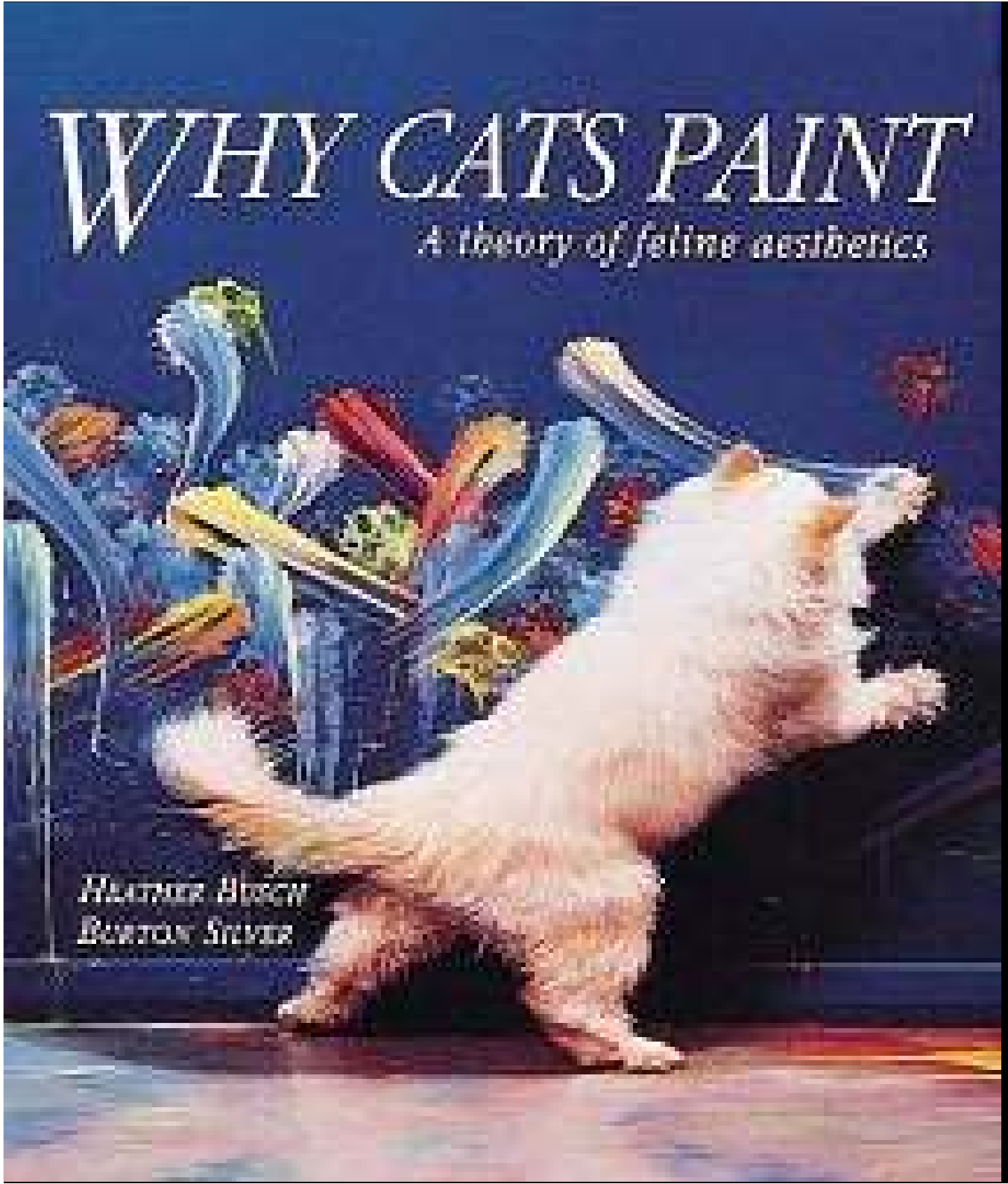
Corel Won!

Bridgeman (left) and Corel (right) versions of Vincent Van Gogh's "The Diggers."

Cooper the cat takes pictures –

do his owners have copyright of the results?

NO



The text of the book and the picture of the cat painting, are covered…

but the painting itself is not.

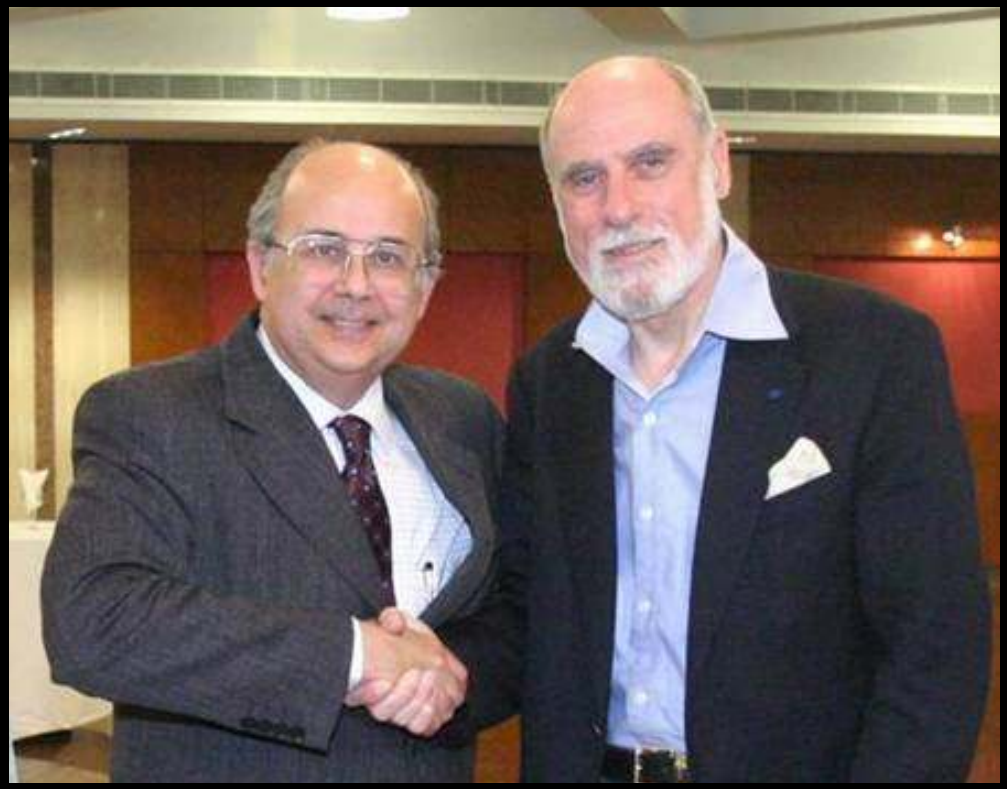
(left to right – the photo by Manny Garcia, the Shepard Fairey poster, a photo of Senator Obama by Steve Jurvetson).

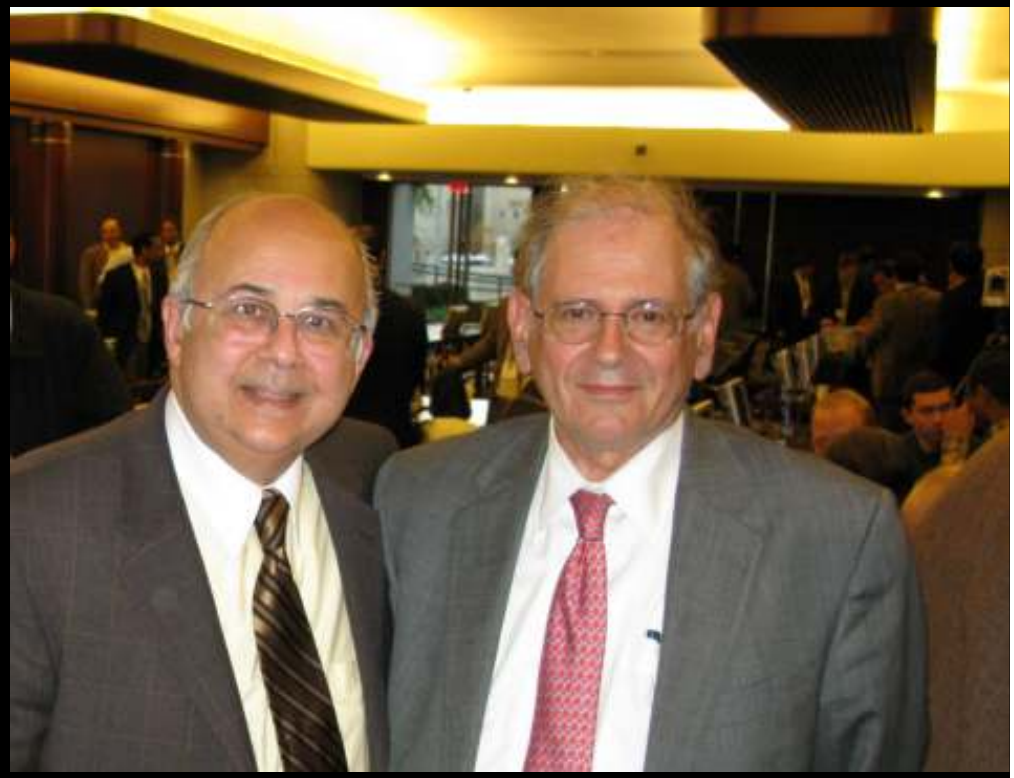
Inventing The Future

The Internet

One of the most transformative innovations of the last century

Vint Cerf & Bob Kahn



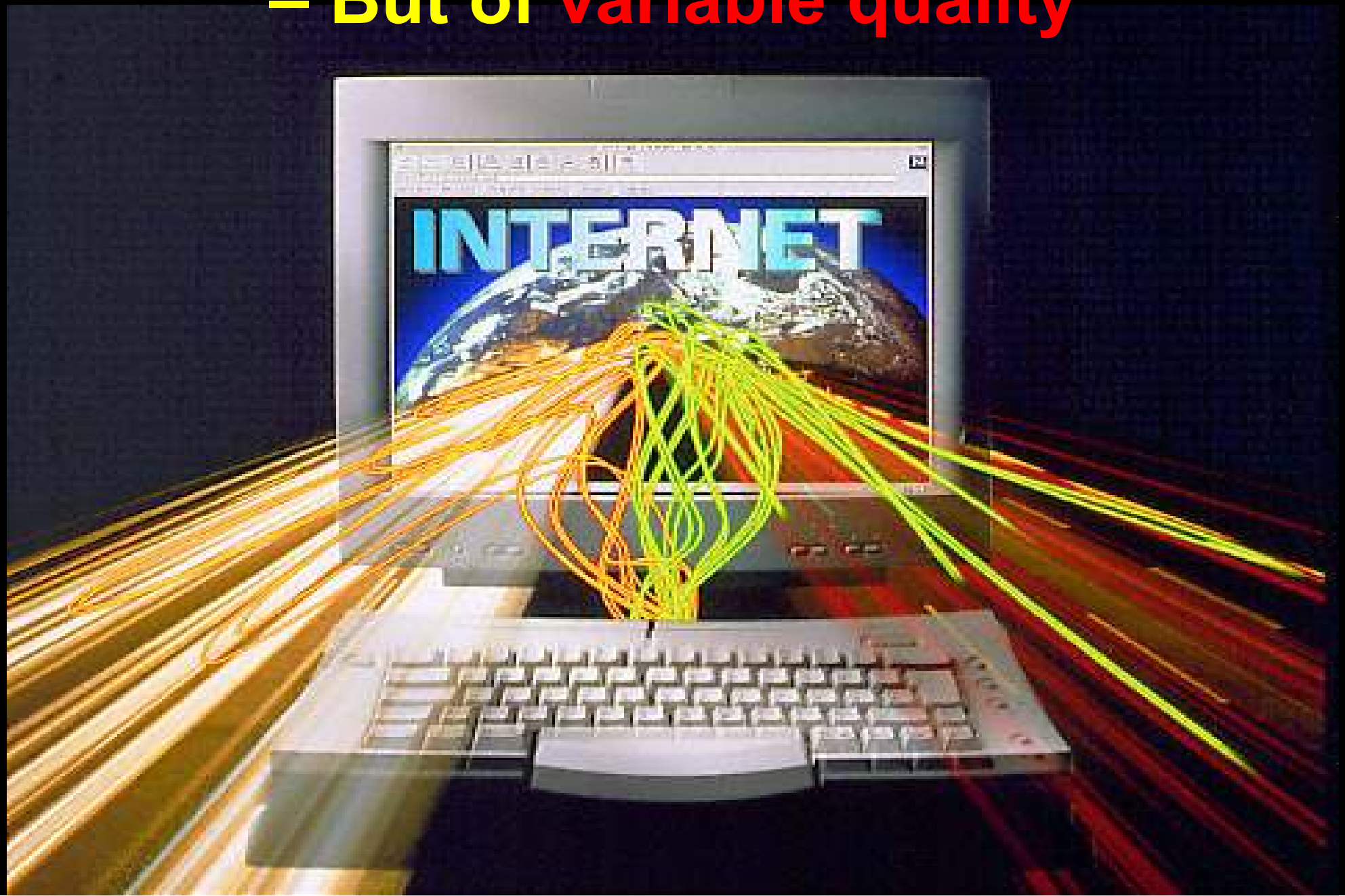


Founders of the Internet - Inventors of TCP/IP

Tim Berners-Lee

Founder of the World wide web – Inventor of www

Enormous amount of information – But of variable quality




Global
SEARCH:
DVD Movies biz.com
Search
keyword
Related Topics:
Shopping
On-Line
The very latest updates for movies in 2000
Deutschland
Global

Inventing The Future

- Creative Individuals and the private sector

Google!

Web Images Groups News Froogle Maps more »

Google Search I'm Feeling Lucky

Advanced Search
Preferences
Language Tools

Advertising Programs - Business Solutions - About Google

Larry Page (left) and Sergei Brin

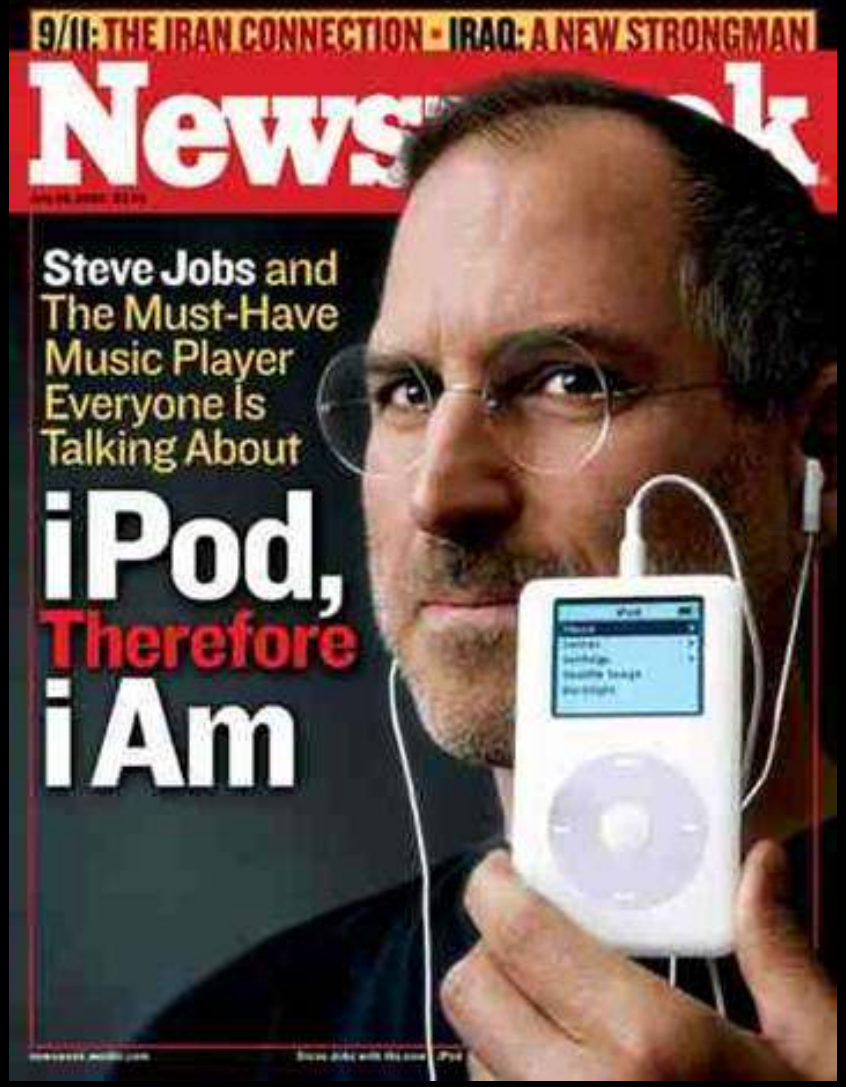
Google's Book Digitization Program

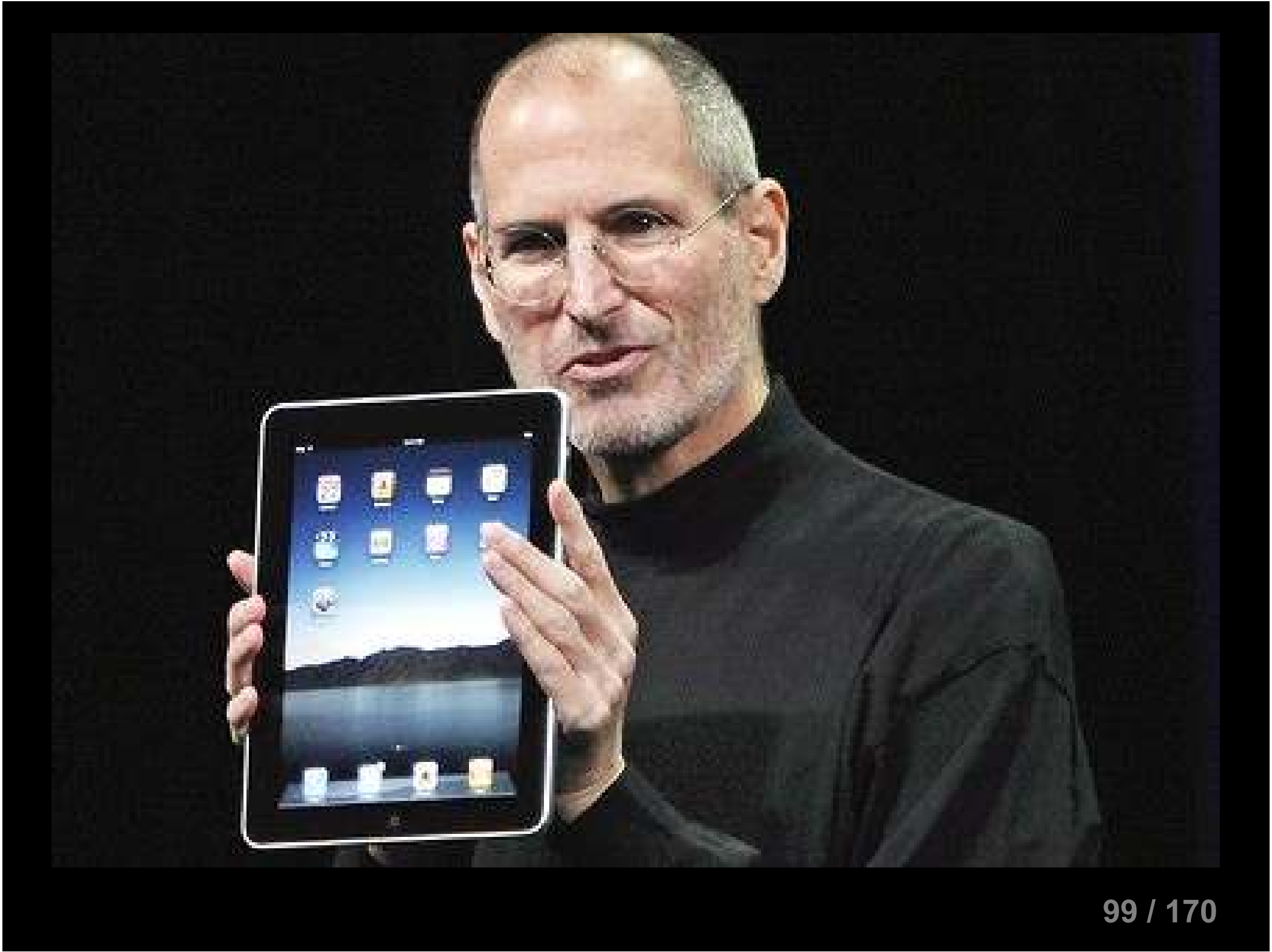
Creative Individuals And The Private Sector:

- New Business Models

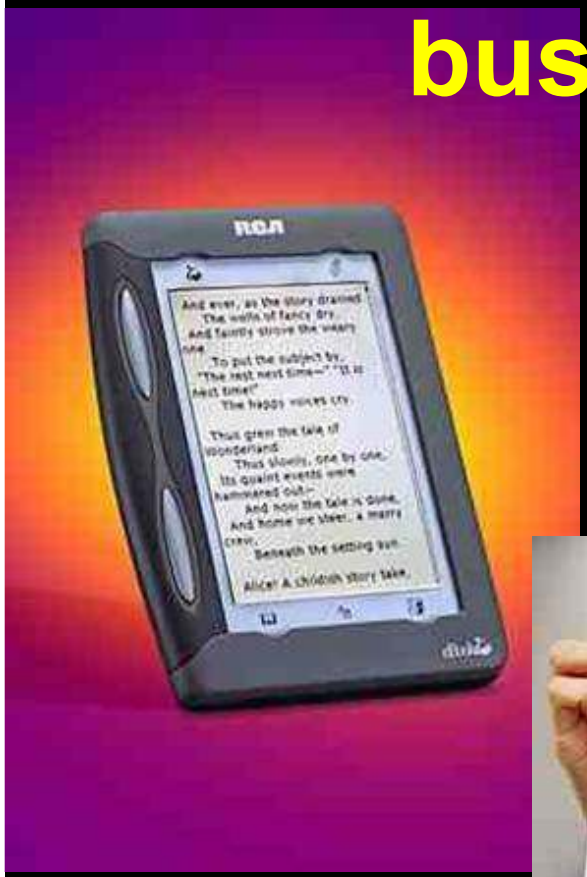
Apple i-Tunes

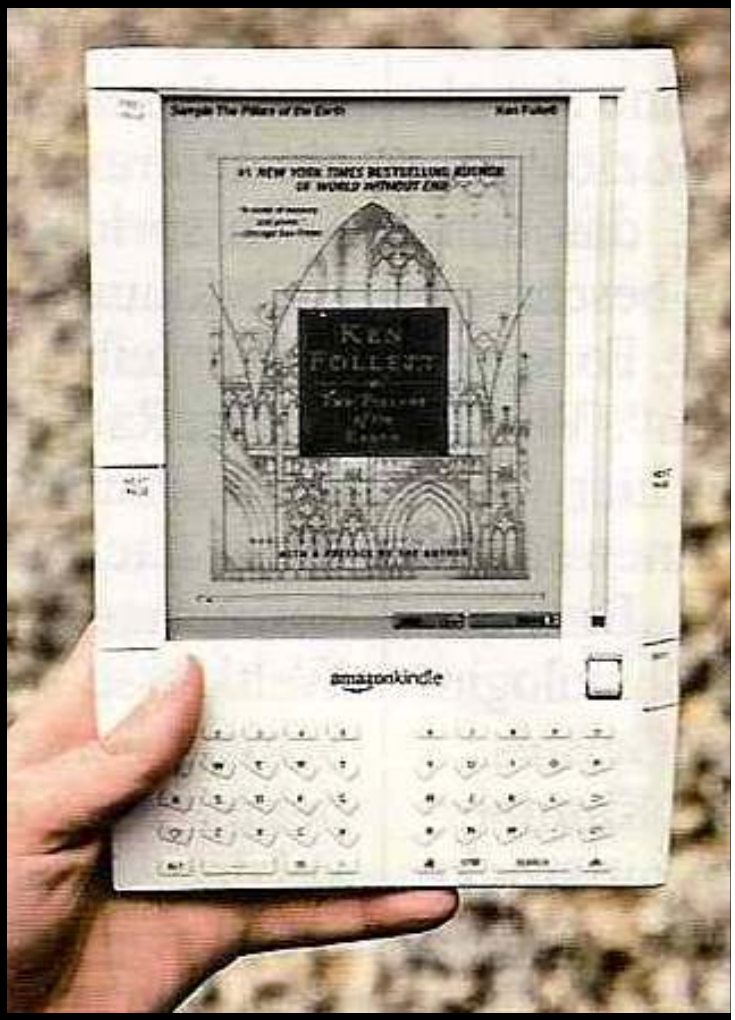
- Legal alternative to Piracy
- Download on PC and cool iPod and Nano





Electronic Books are the future… Using the iTunes business model…





October 2010:
First Bookless Library

- **Engineering School, University of Texas, San Antonio, has 425,000 books on line and 18,000 electronic Journals.**
- Source: Publié le 7 Octobre 2010 sur :http://www2.macleans.ca/2010/10/07/from-e-books-to-no-books/?sms_ss=facebook&at_xt=4cc203f7a4b576bc%2C0

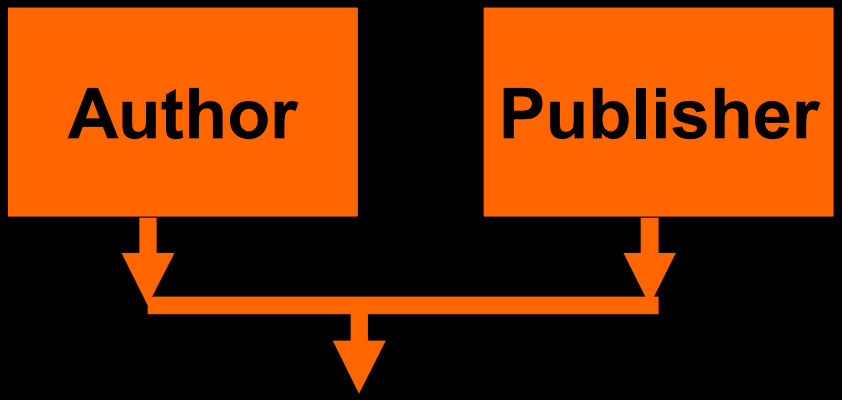
Print-On-Demand Business Model

Print-On-Demand Business Model

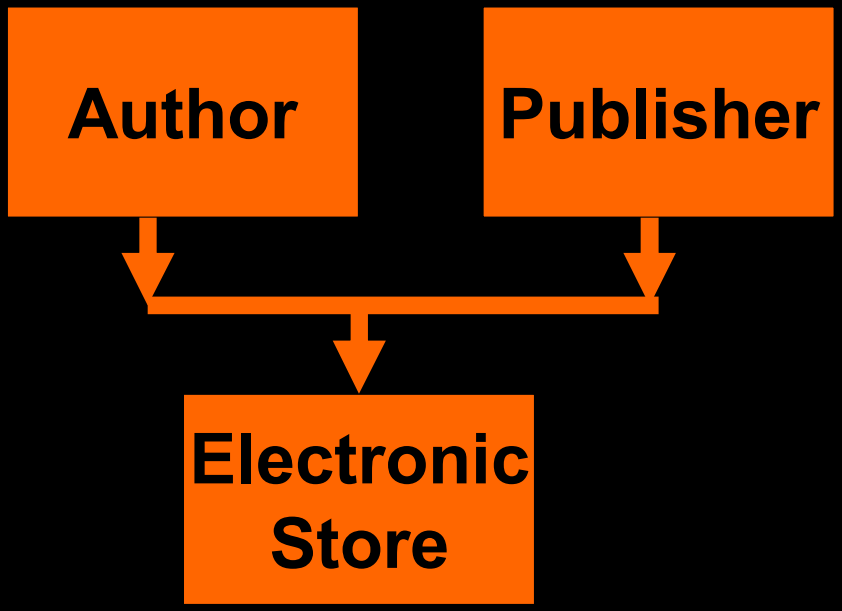
Author

Publisher

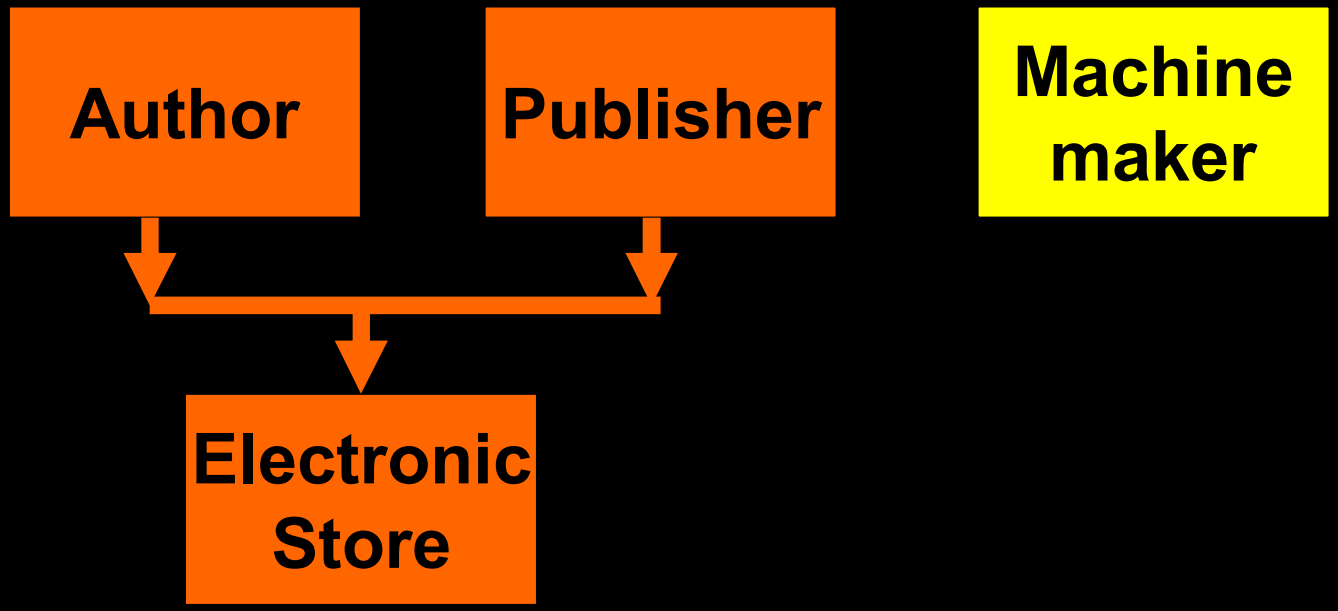
Print-On-Demand Business Model



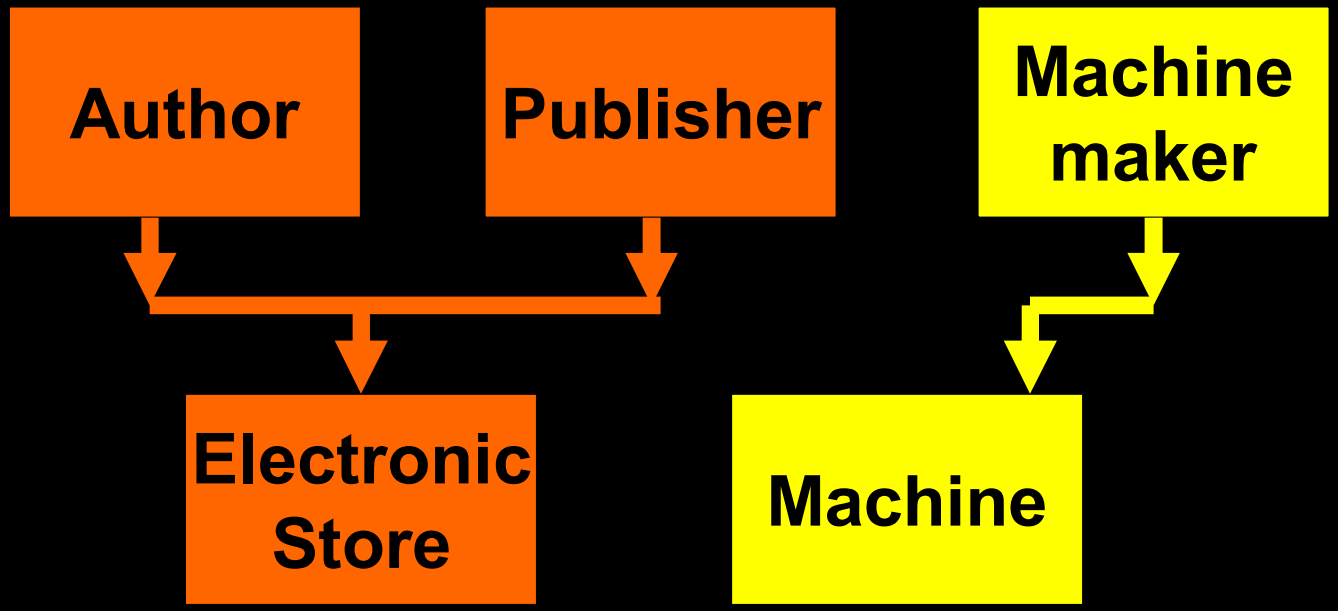
Print-On-Demand Business Model



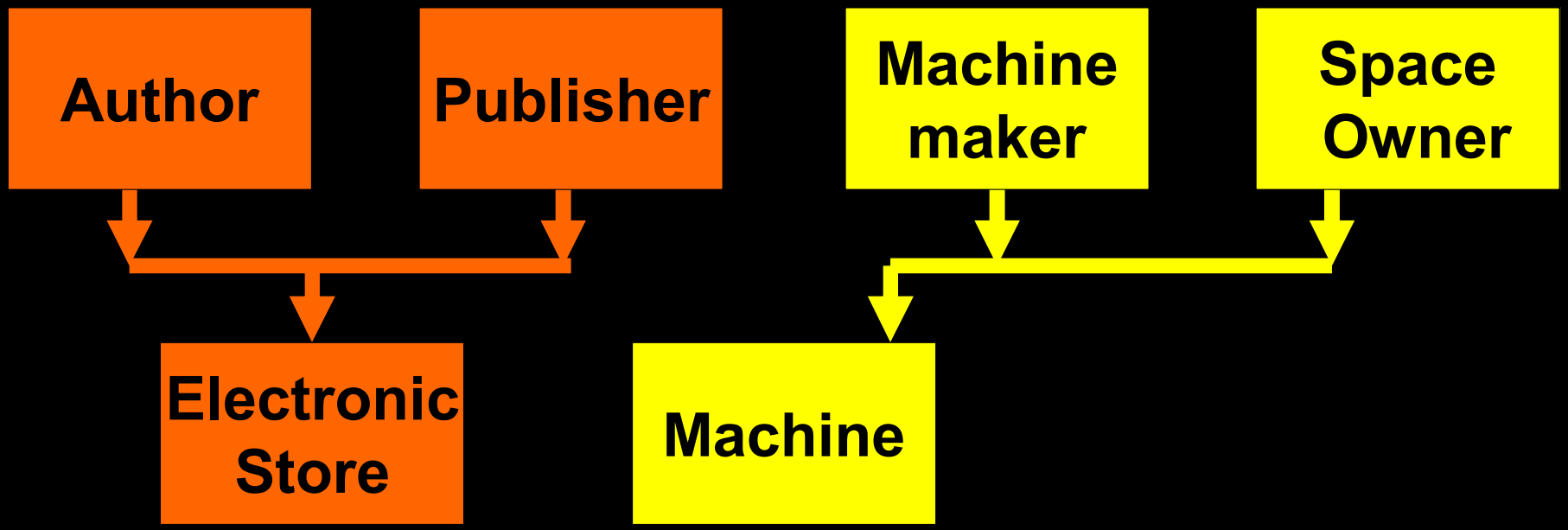
Print-On-Demand Business Model



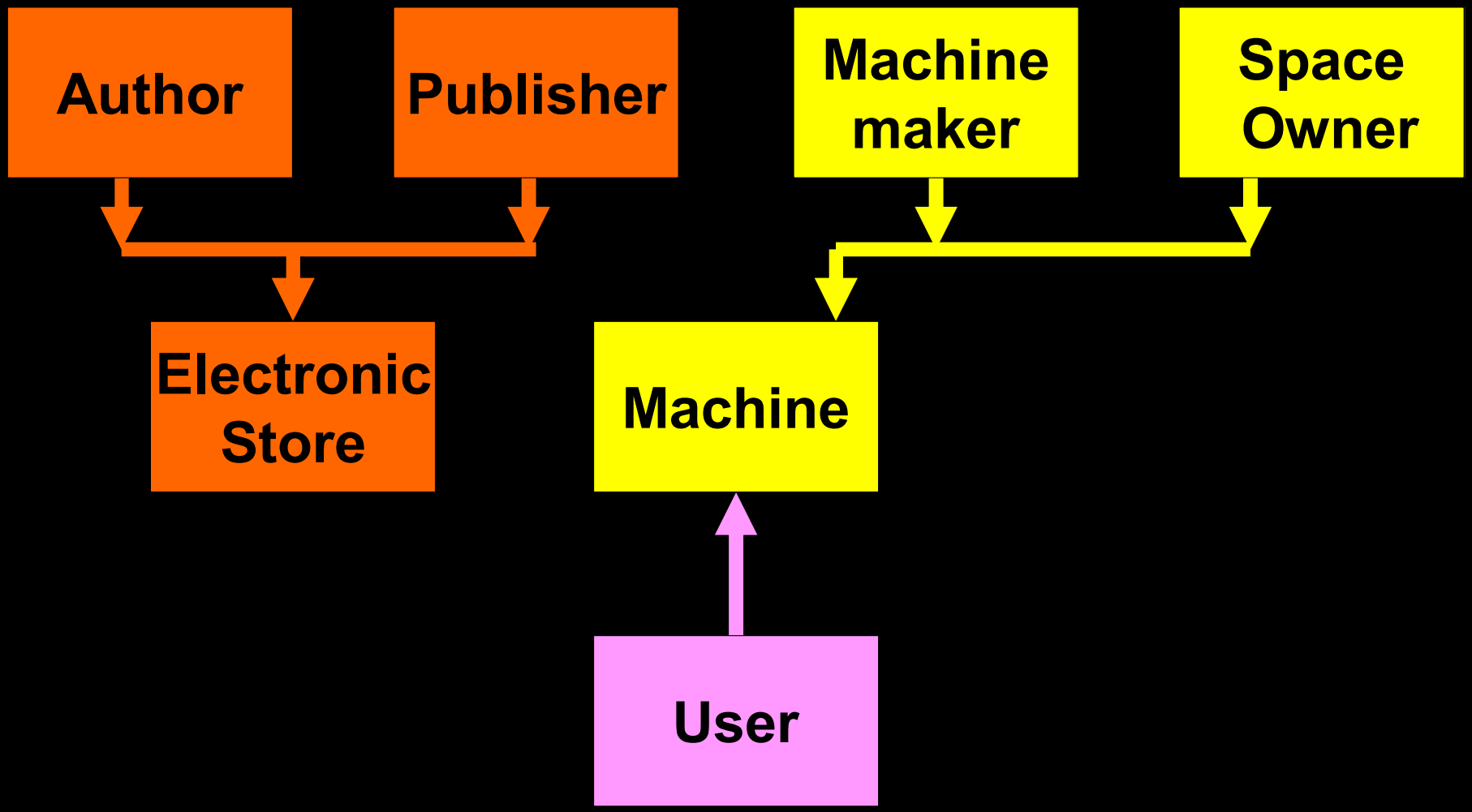
Print-On-Demand Business Model



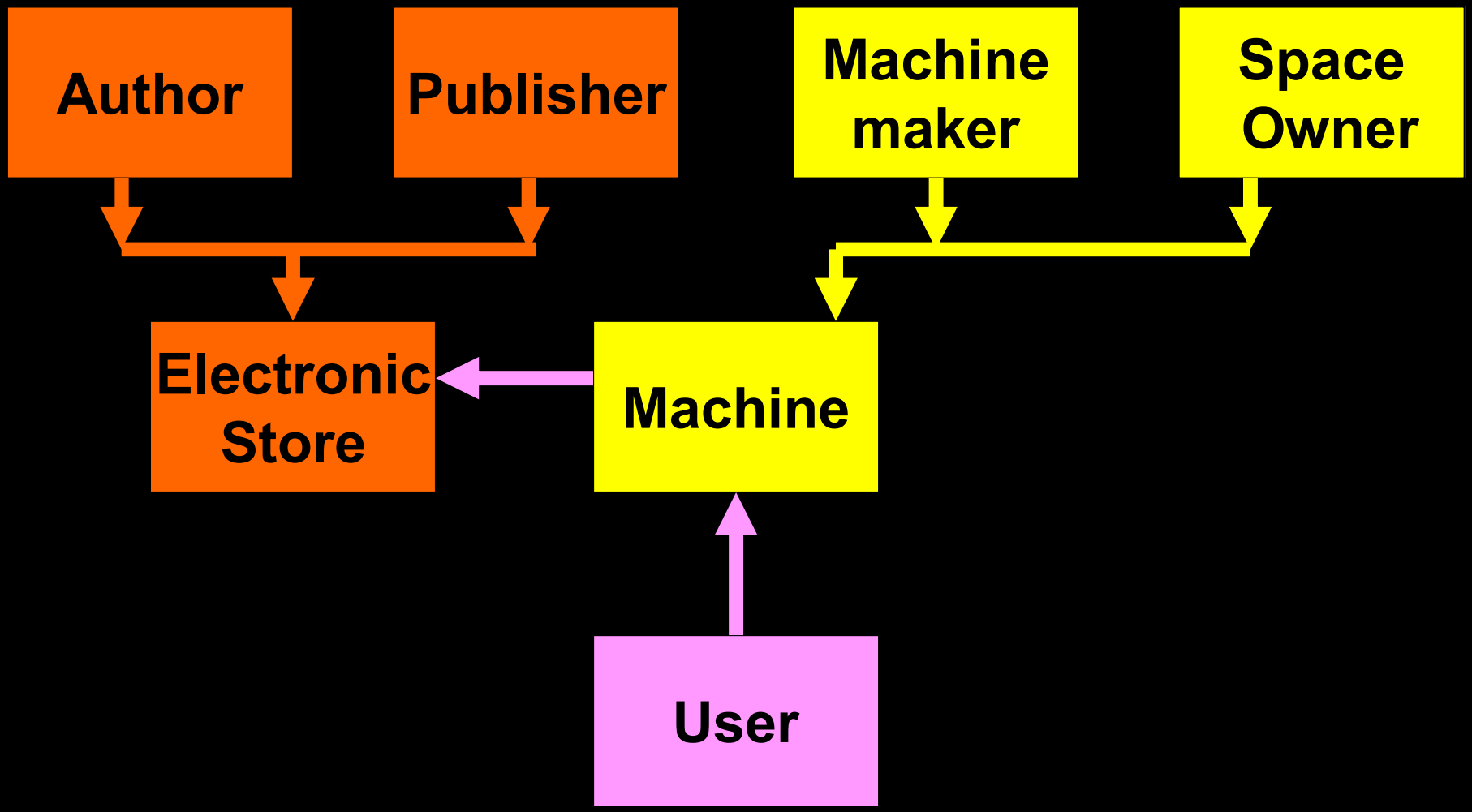
Print-On-Demand Business Model



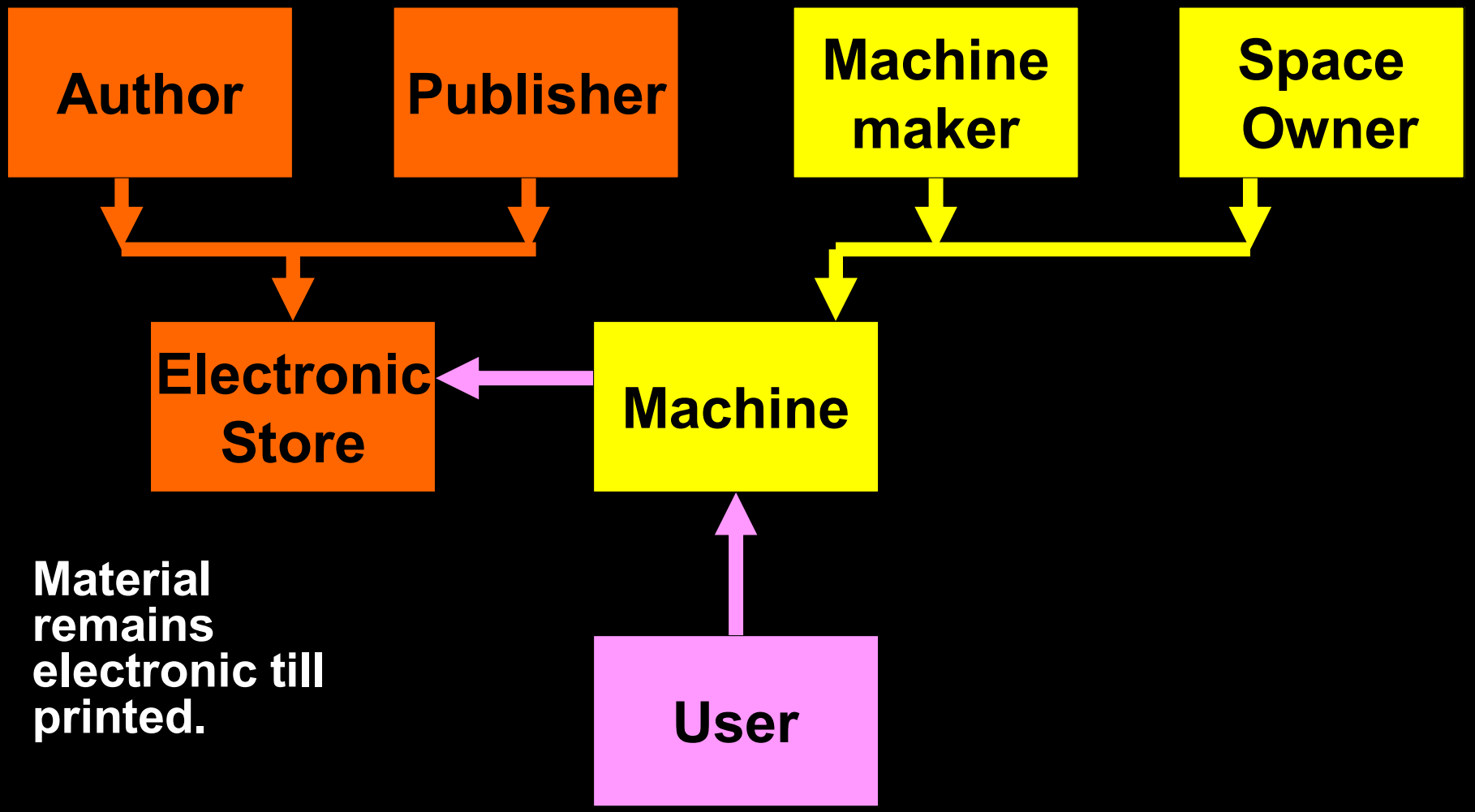
Print-On-Demand Business Model



Print-On-Demand Business Model

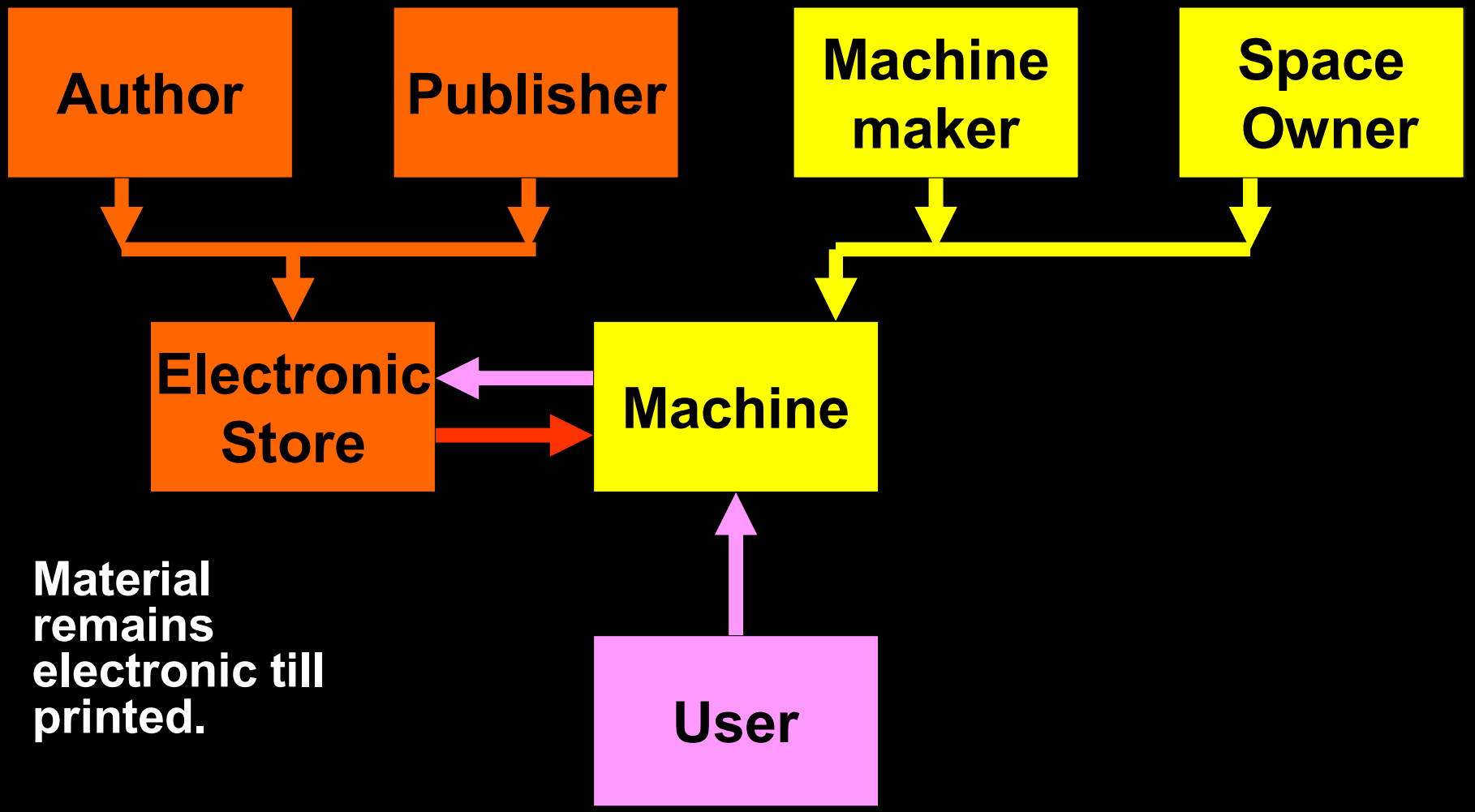


Print-On-Demand Business Model



Material remains electronic till printed.

Print-On-Demand Business Model



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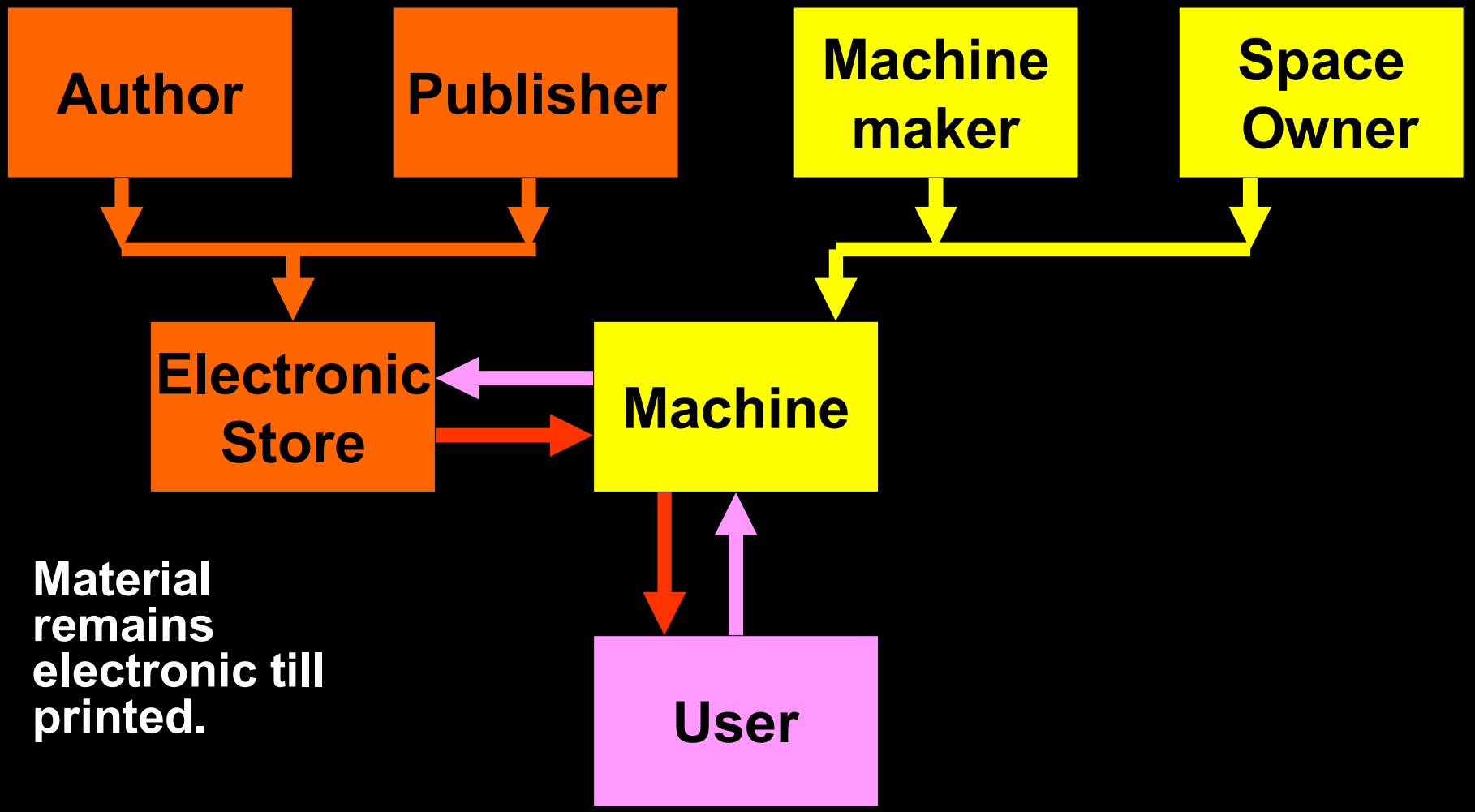
Print-On-Demand Business Model



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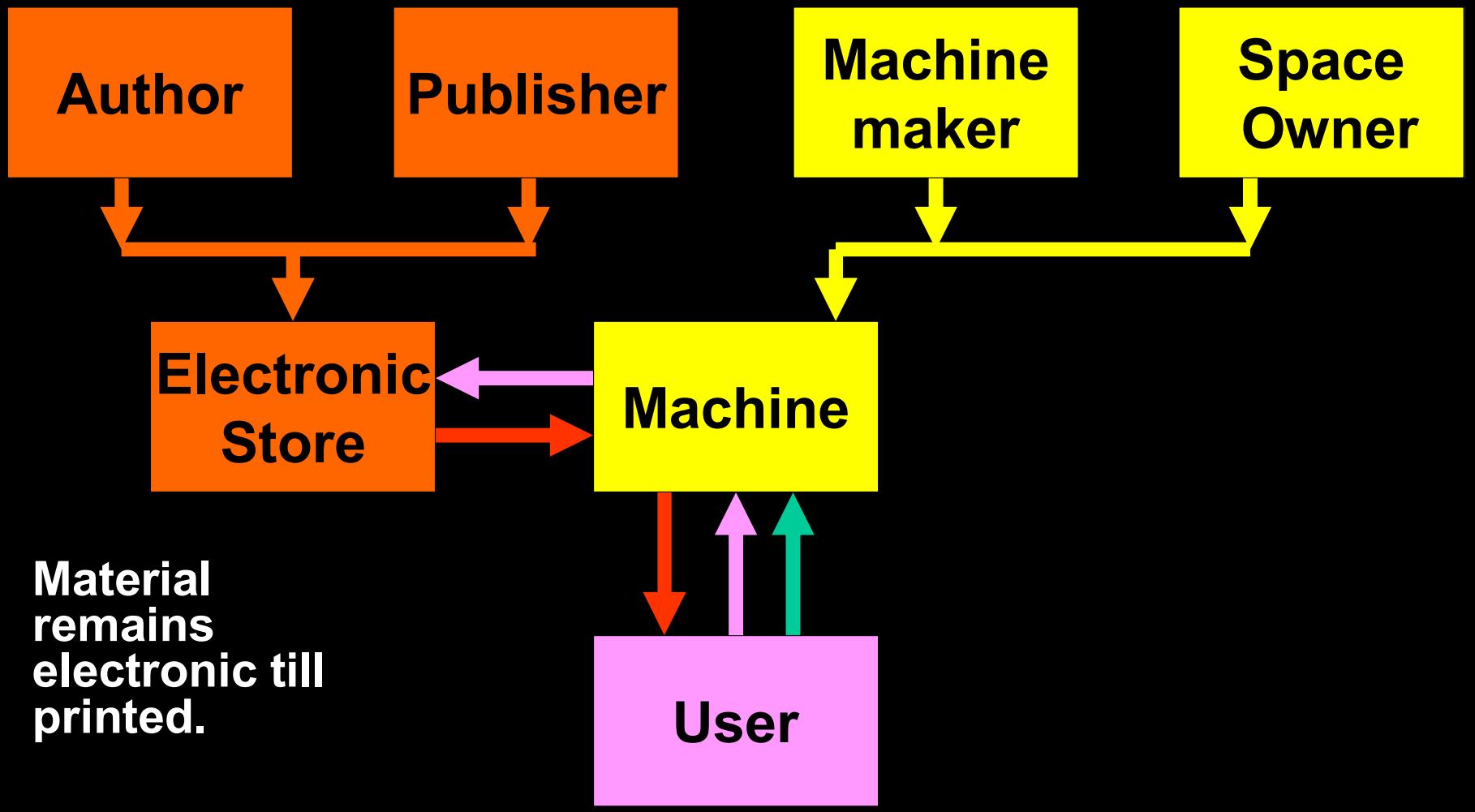
Print-On-Demand Business Model



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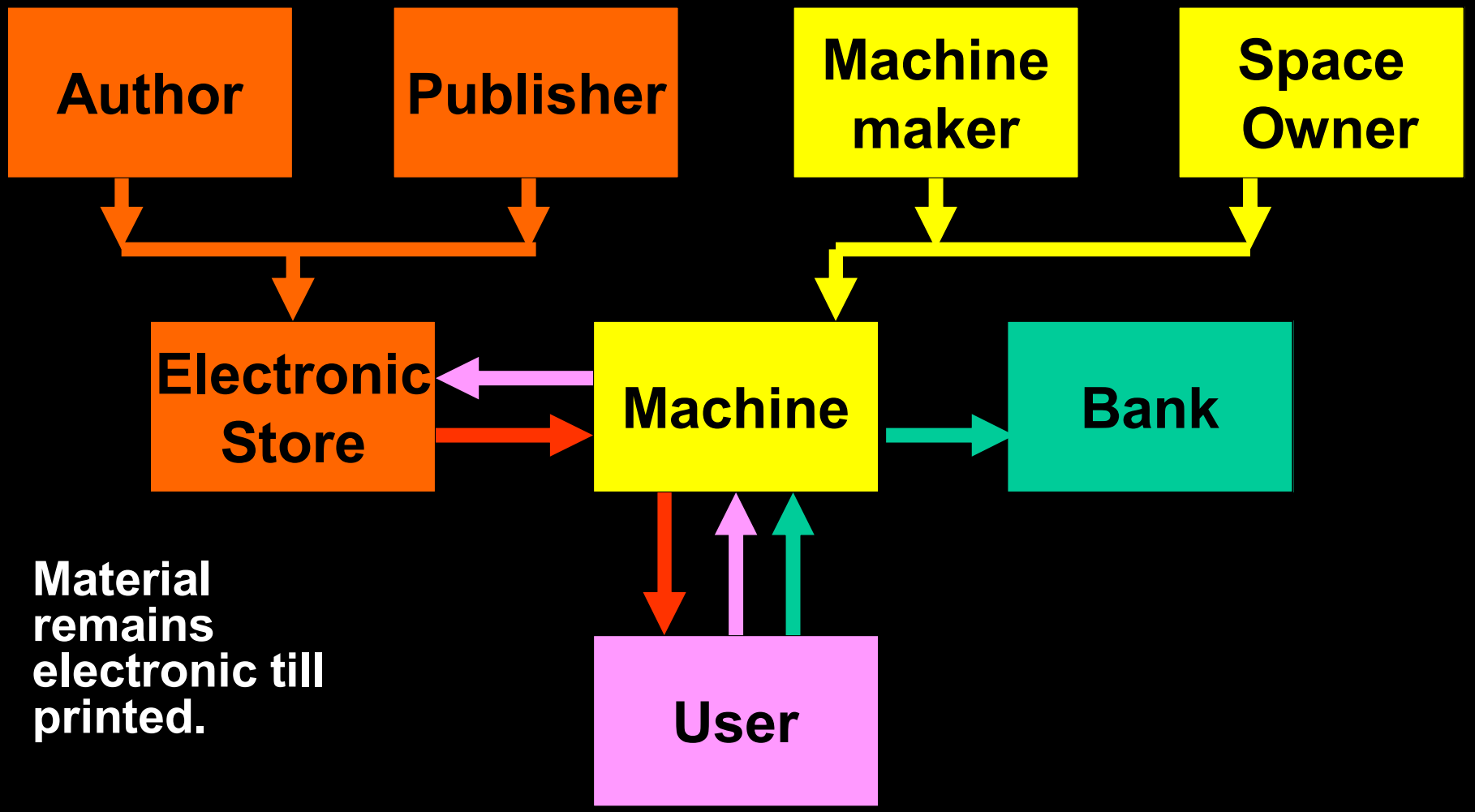
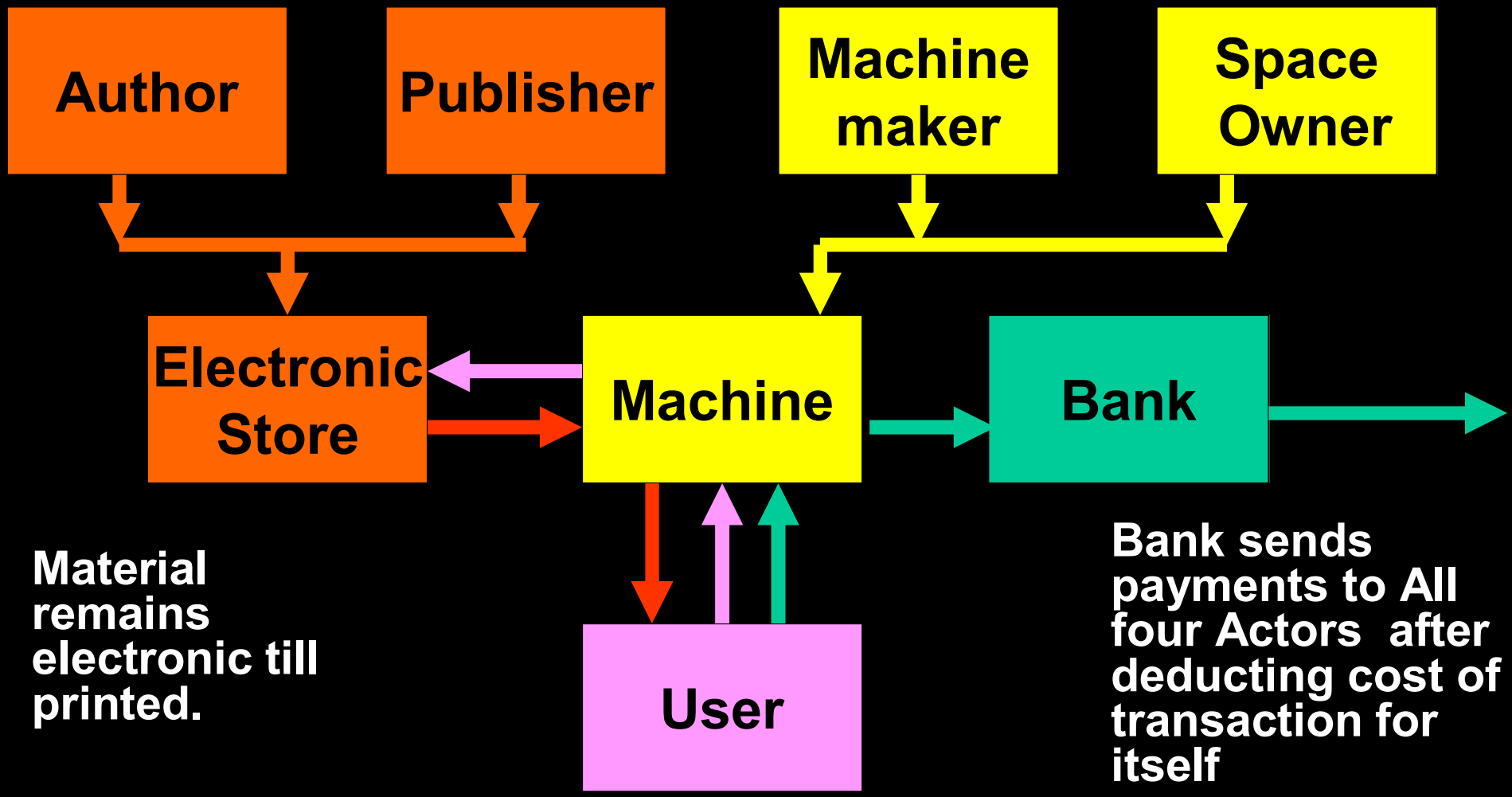
Print-On-Demand Business Model

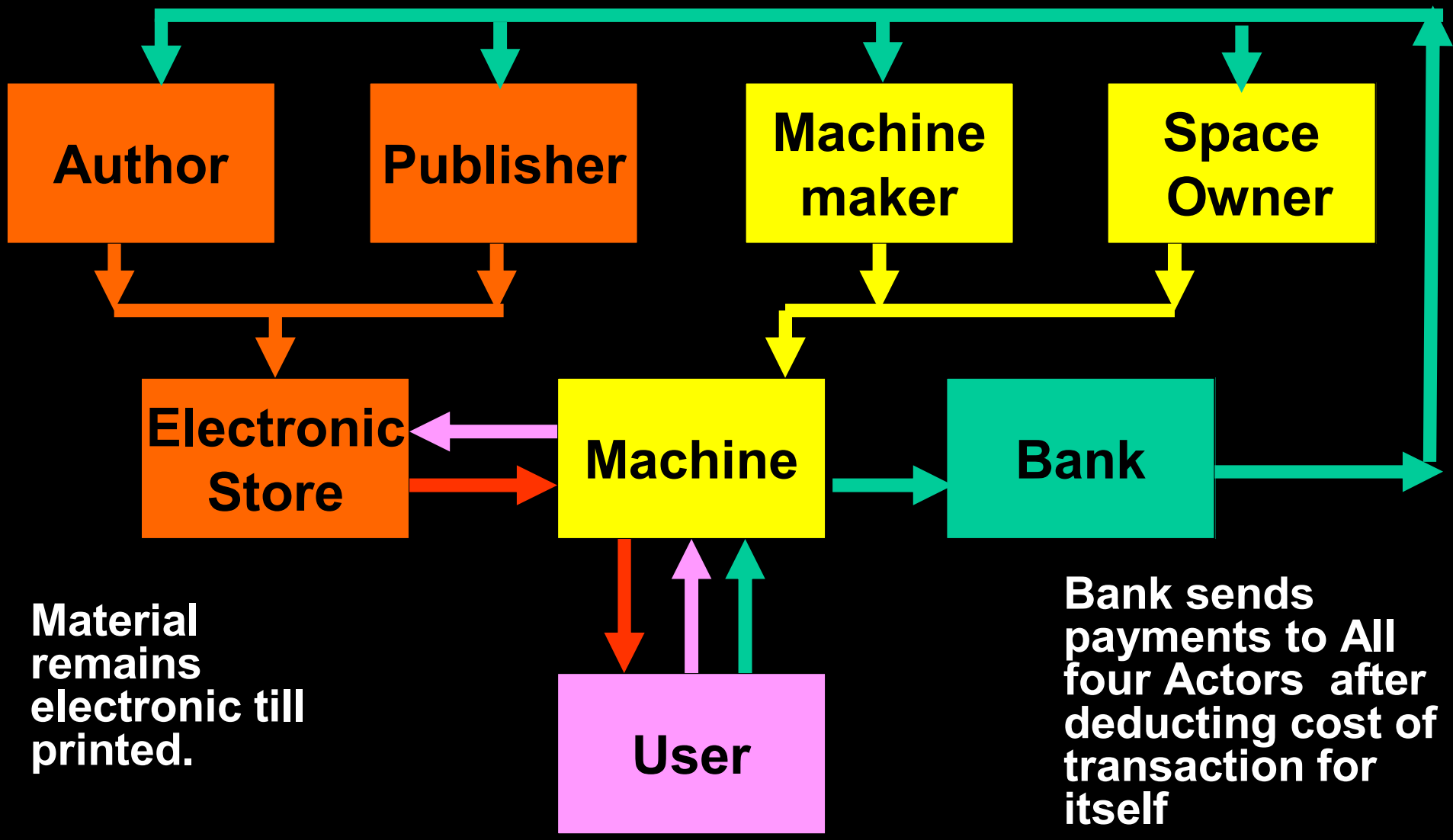


Material remains electronic till printed.

Print-On-Demand Business Model

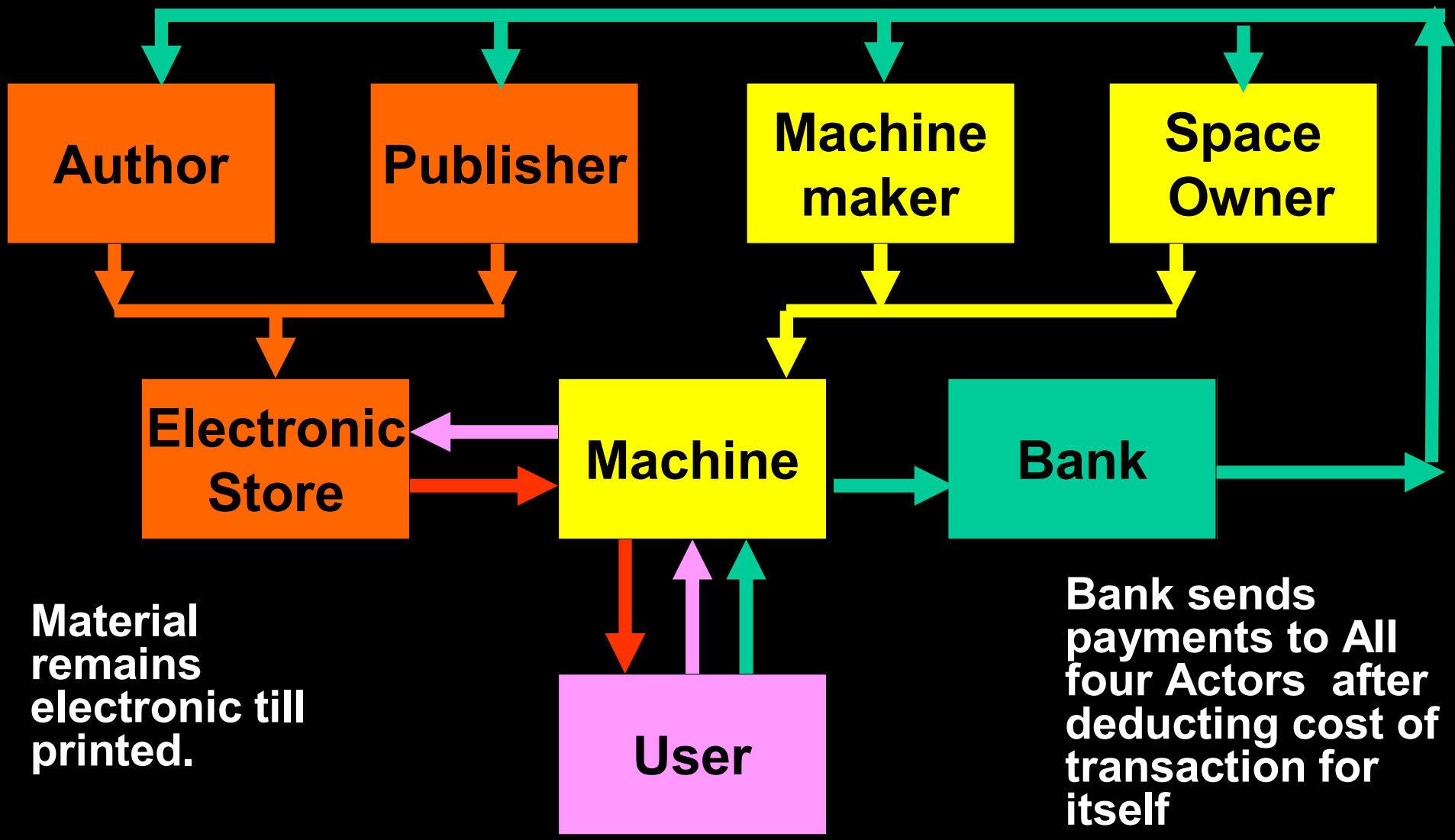


Print-On-Demand Business Model



Print-On-Demand Business Model

All four actors get a share of the User's dollar.

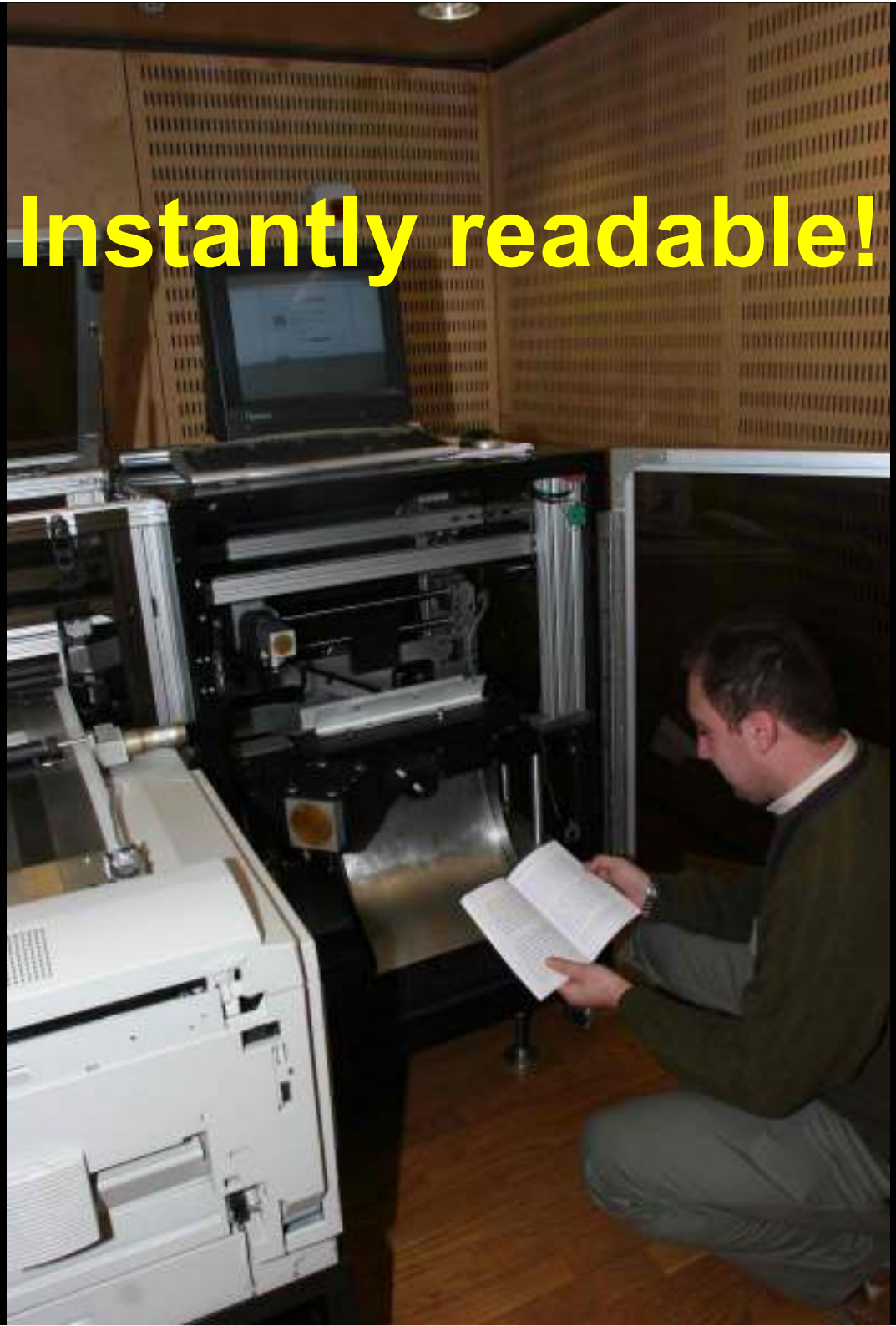


Material remains electronic till printed.

Bank sends payments to All four Actors after deducting cost of transaction for itself

Select a book from the catalogue

Out pops the finished book!


Instantly readable!

Prof. Sebastian Thrun, Of Stanford gives (Intro to AI) course open to distant registration without the Stanford degree, just a certificate:

130,000 Students register!

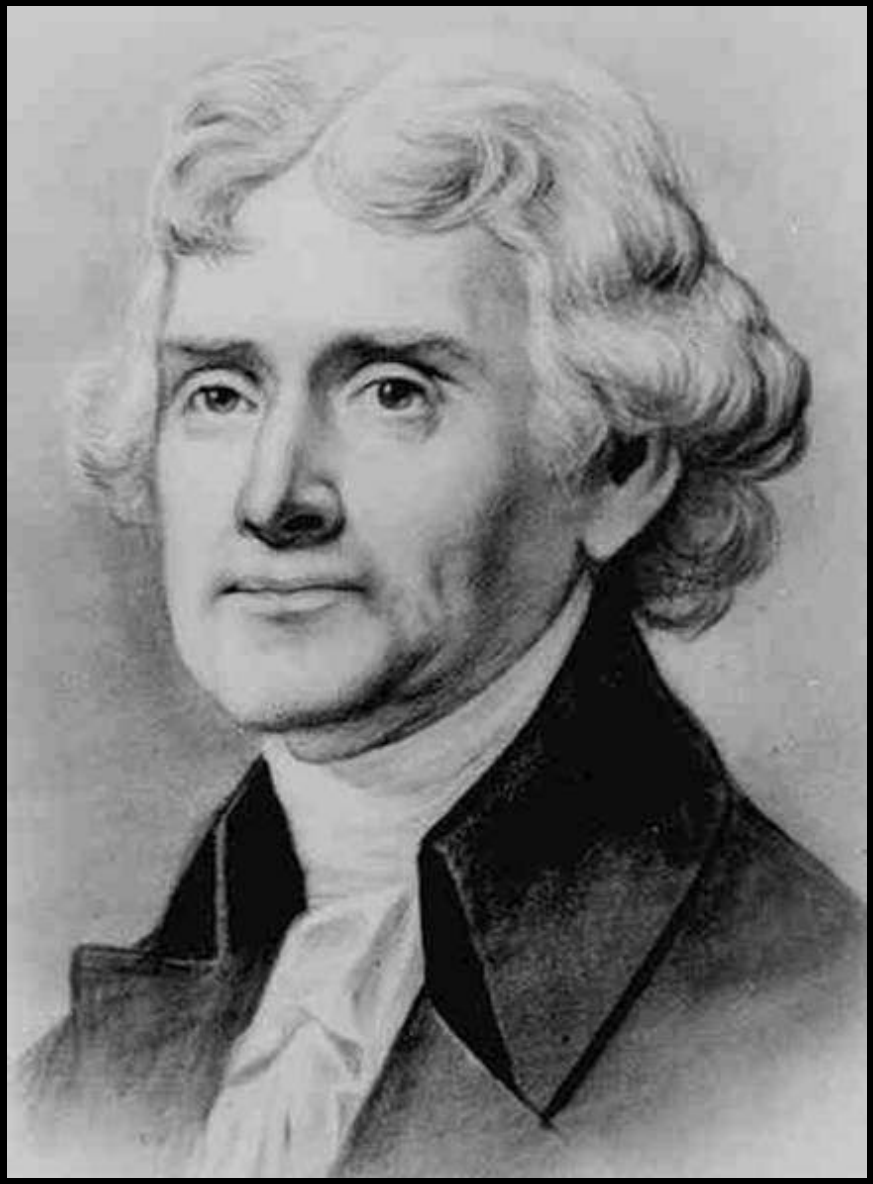
Creative Individuals And The Private Sector:

- New Business Models
- Private Registration And Documentation

Inventing The Future

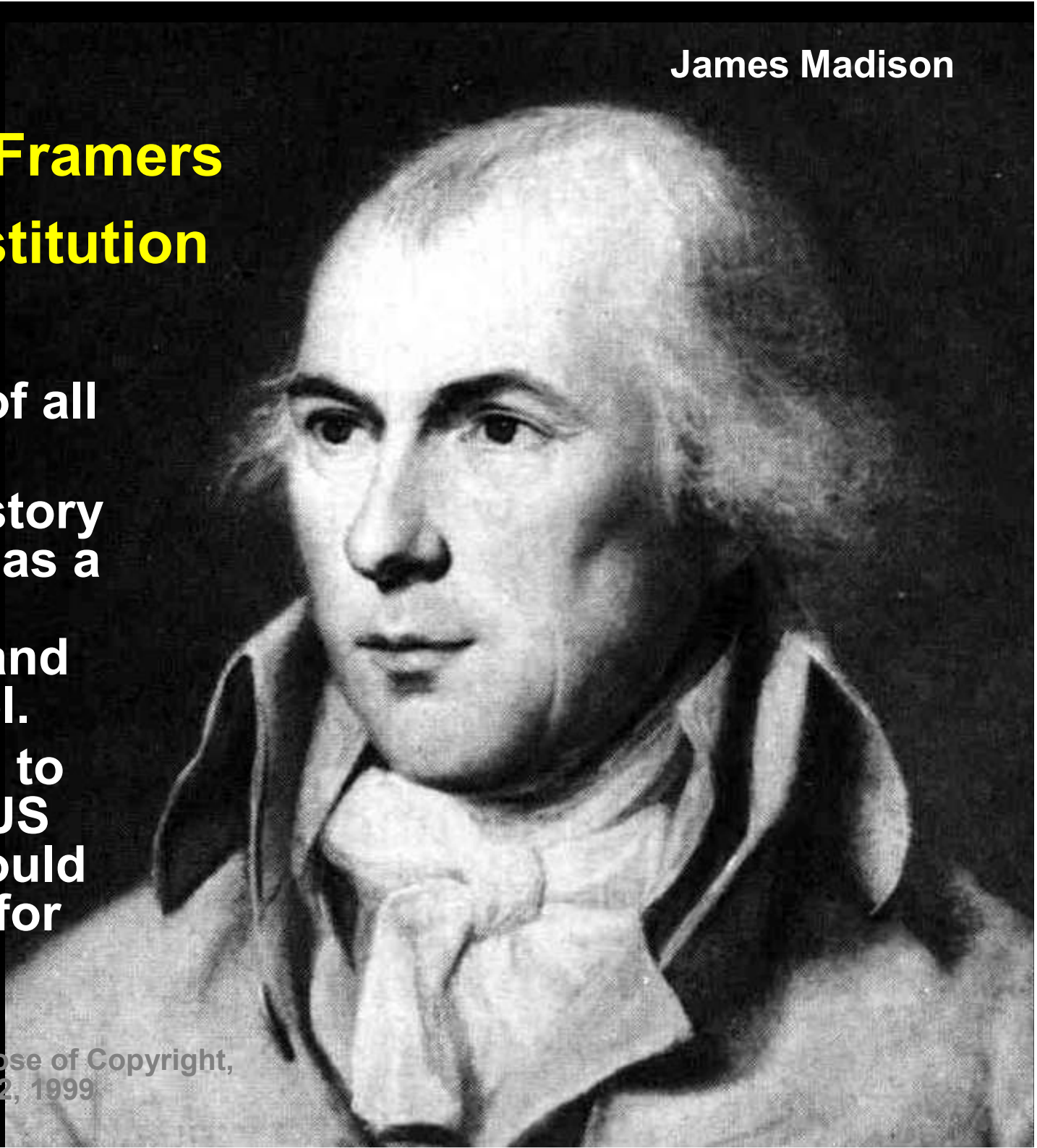
- Creative Individuals and the private sector
- New roles for government

"I have sworn upon the altar of God, eternal hostility against every form of tyranny over the mind of man."



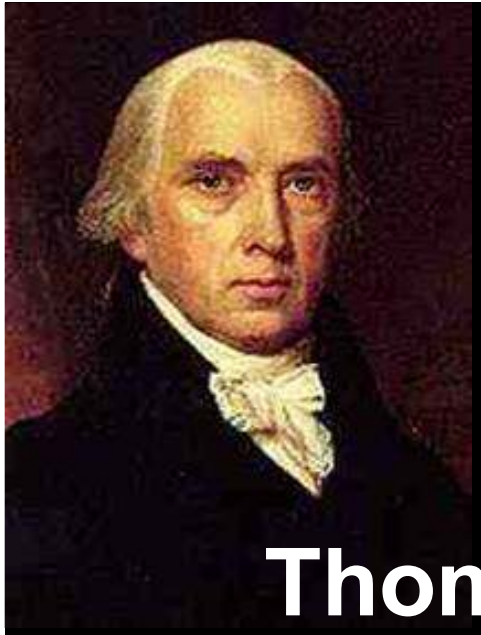
Jefferson Letter to Dr. Benjamin Rush ,September 23, 1800.

Attitude Of Framers of the Constitution



- Suspicious of all monopolies
- Knew the history of copyright as a tool of censorship and press control.
- They wanted to assure that US copyright would not be used for censorship

Source: L.P. Loren, The Purpose of Copyright, Open Spaces quarterly; 2:2, 1999



Madison & Jefferson

Thomas Jefferson based a proposed term for copyright on the principle that "the earth belongs in usufruct to the living", and computed it by means of actuarial tables, and recommended a maximum of 19 not 14 years.

(Jefferson letter to Madison September 6, 1789)

"To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries"

Art.1, Sec.8, Cl.8

First US Copyright Act: 1790

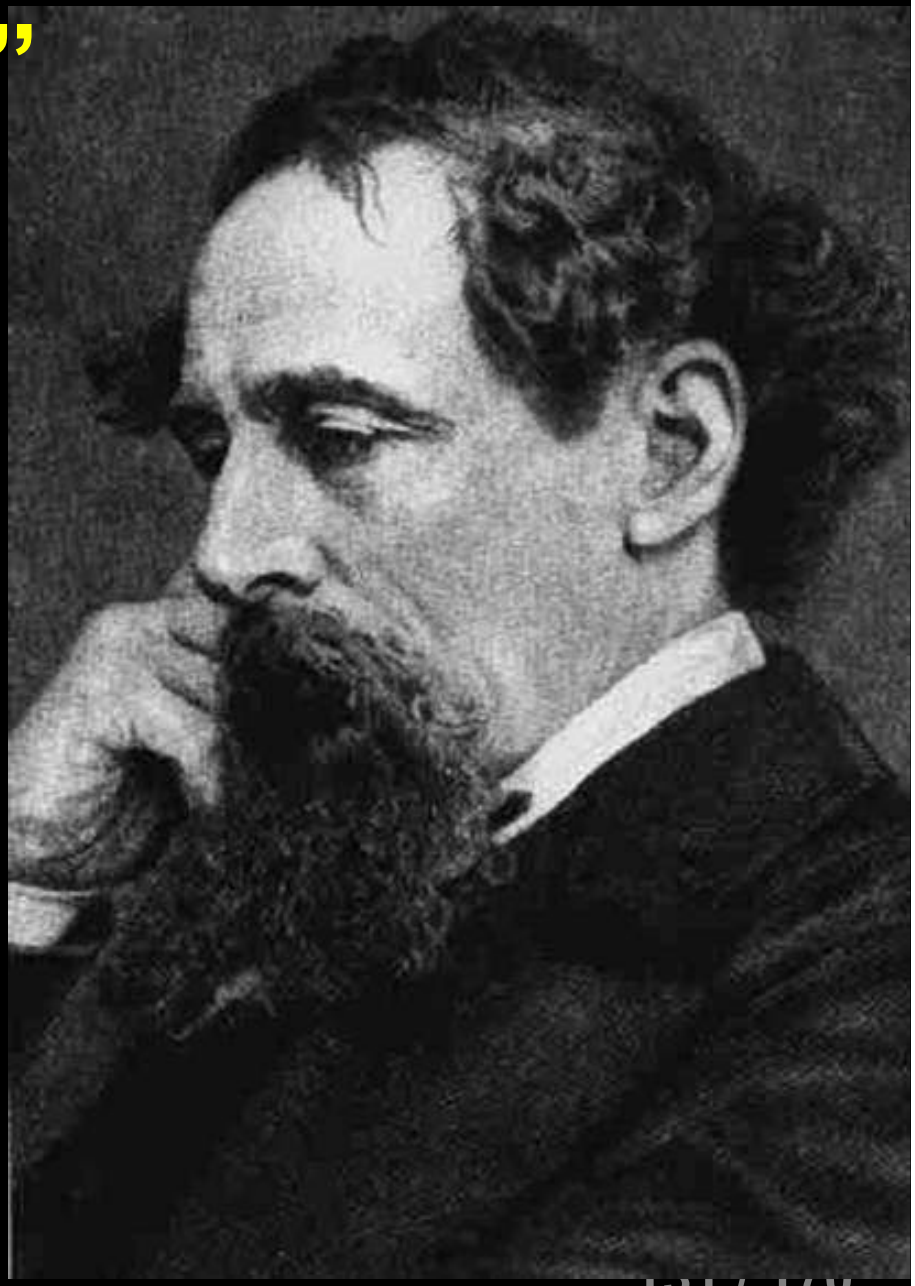
- Two years after ratification of the US Constitution, Congress passed the first Copyright Act of 1790: An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts and Books, to the Authors and Proprietors of such Copies, during the Times therein mentioned.

Time-Limited protection for Nationals

- The first national copyright law, passed in 1790, provided for a 14-year copyright ... but only for authors who were citizens or residents of the US. The US extended the copyright term to 28 years in 1831, but again restricted copyright protection only to citizens and residents.

Charles Dickens and "American Piracy"

- Intense competition leads to low prices.
- In 1843 Dickens's Christmas Carol sold for six cents in the US and $2.50 in England.



Source: Varian 1998

Continuing Extensions Of Duration

- 1831 to 28 years with renewal for another 14 years.
- 1909 to 28 years with renewal for another 28 years.
- 1976 – author's life plus 50 years.
- 1986 – author's life plus 70 years.

Limited Duration And Public Domain Are Essential

- The Constitution's framers, though suspicious of monopoly, considered copyright to be a bearable monopoly only because the term was to be limited; the expiration of copyright was considered indispensable for copyright's proper functioning.

New roles for government:

- Public Registration and legal deposit systems
- Regulation
  - Legislation
  - Orphan works
  - Libraries and archives
  - Educational materials
- Dispute settlement and enforcement

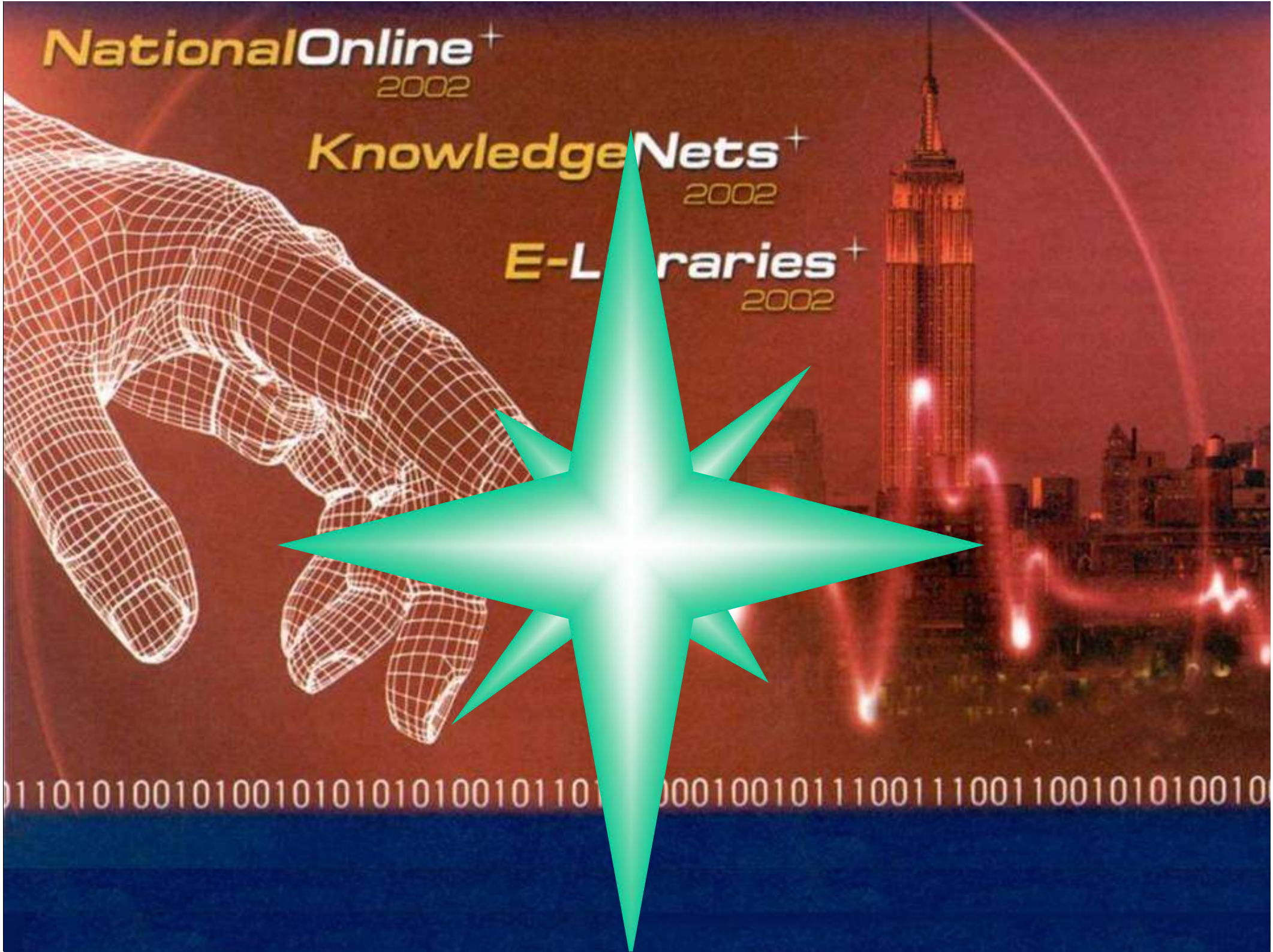
Inventing The Future

- Creative Individuals and the private sector
- New roles for government
- Infrastructure enabling Access to Knowledge

Infrastructure enabling Access to Knowledge:

- Open access and licensing


Open Content Alliance
Digitization Program


NationalOnline+
2002
KnowledgeNets+
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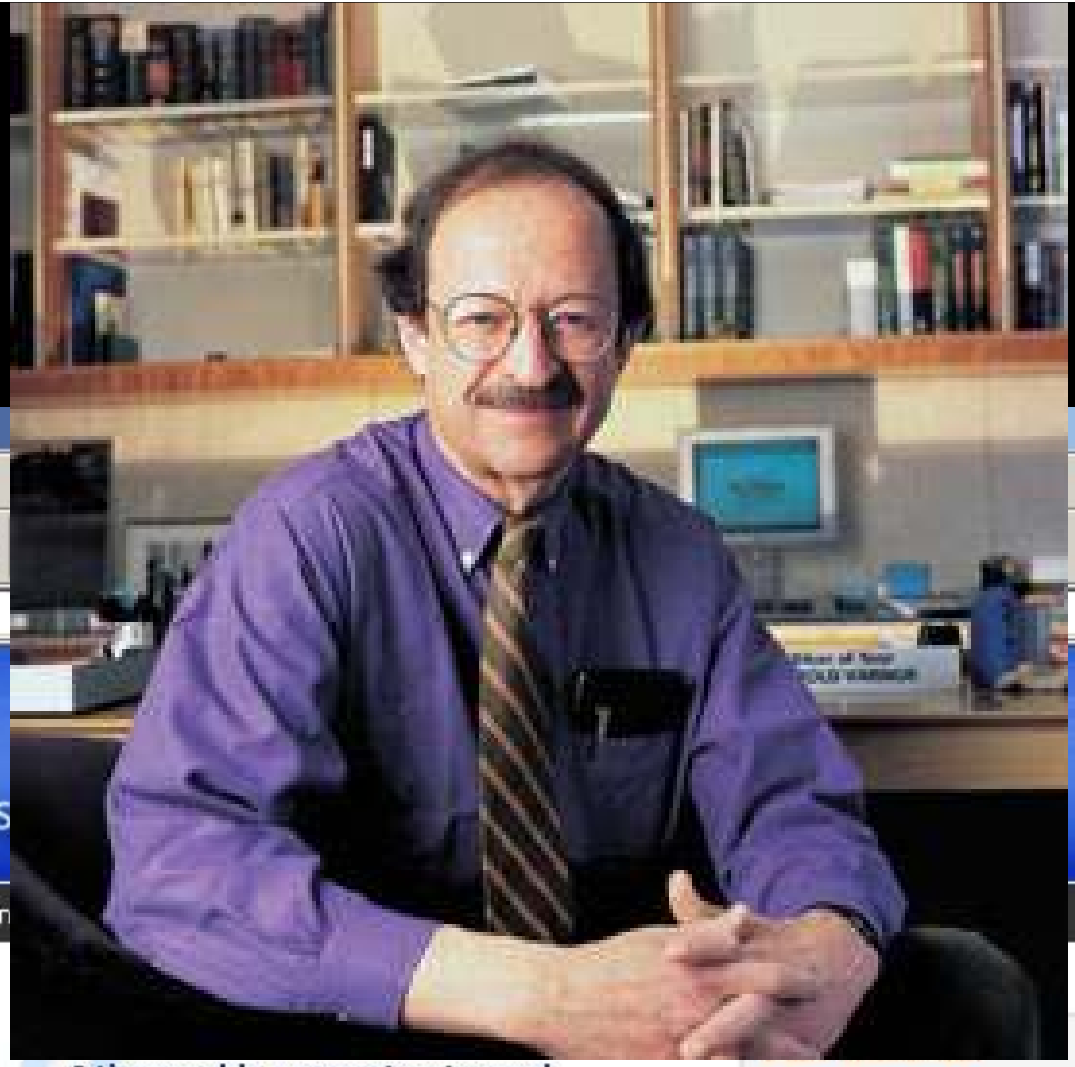
E-L raries+
2002

Harold Varmus and the Pubic Library Of Science



Public Library of Science: Home - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address http://www.plos.org/

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Open Access: Everything we

I thoroughly support universal free access to research. The wonderful thing about ideas is more people being exposed to more ideas leads to still more ideas."

— Dr. Richard Smith, former Editor of the *British Medical Journal*, member of the PLoS Board of Directors

PLoS Biology

PLoS Medicine

PLoS Computational Biology

PLoS Genetics

PLoS Pathogens

PLoS Clinical Trials

PLoS ONE

ANNOUNCEMENTS

Infrastructure enabling Access to Knowledge:

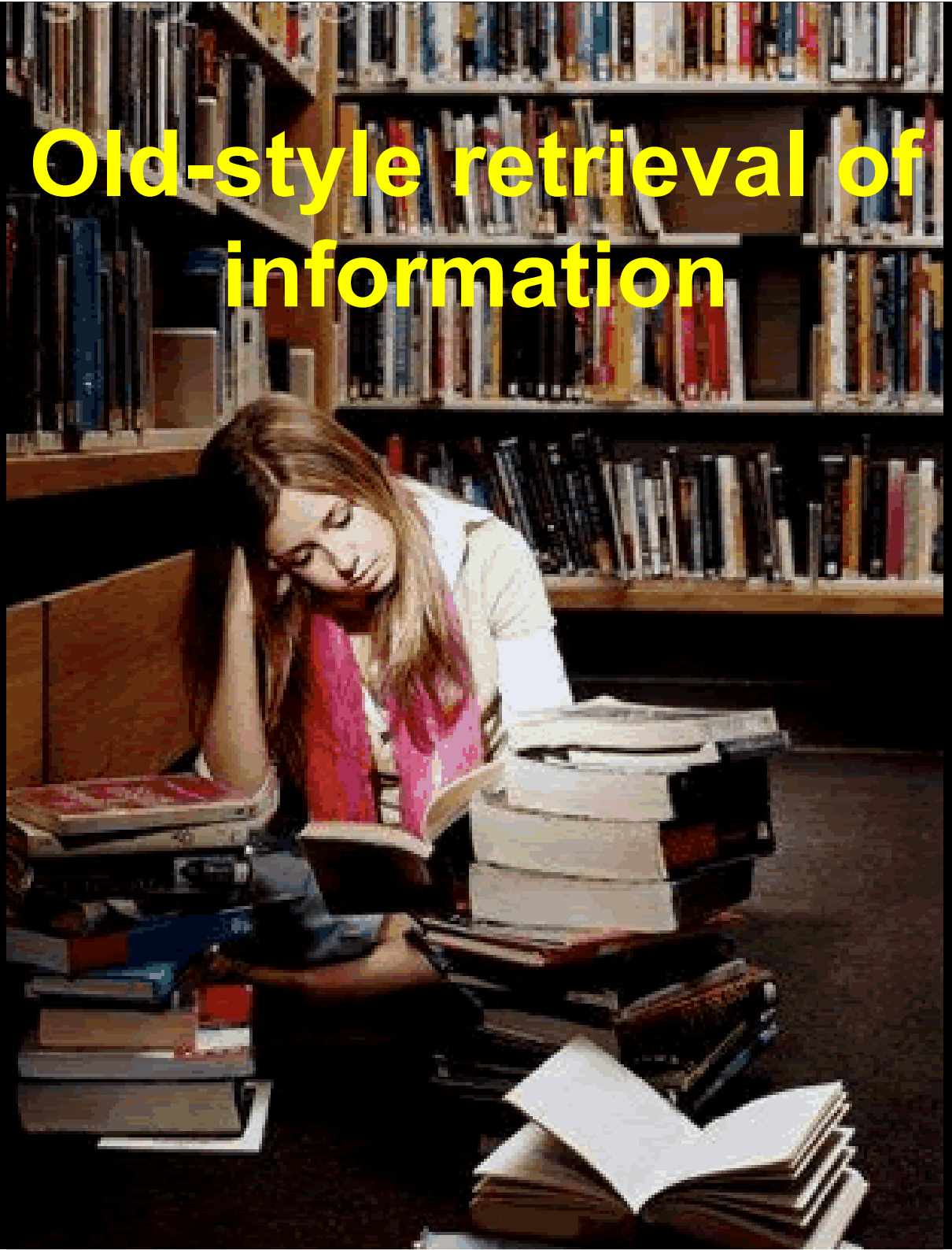
- Open access and licensing
- **Preservation of digital content**
  - **Technical obsolescence**
  - **Physical obsolescence**

Old-Style Storage of information


Each Rack
can take the text of
100 million books
(of 300 pages each)
or 12 million formatted books


New Forms Of Storage

Old-style retrieval of information



Retrieving Data In The 21st Century

Inventing The Future

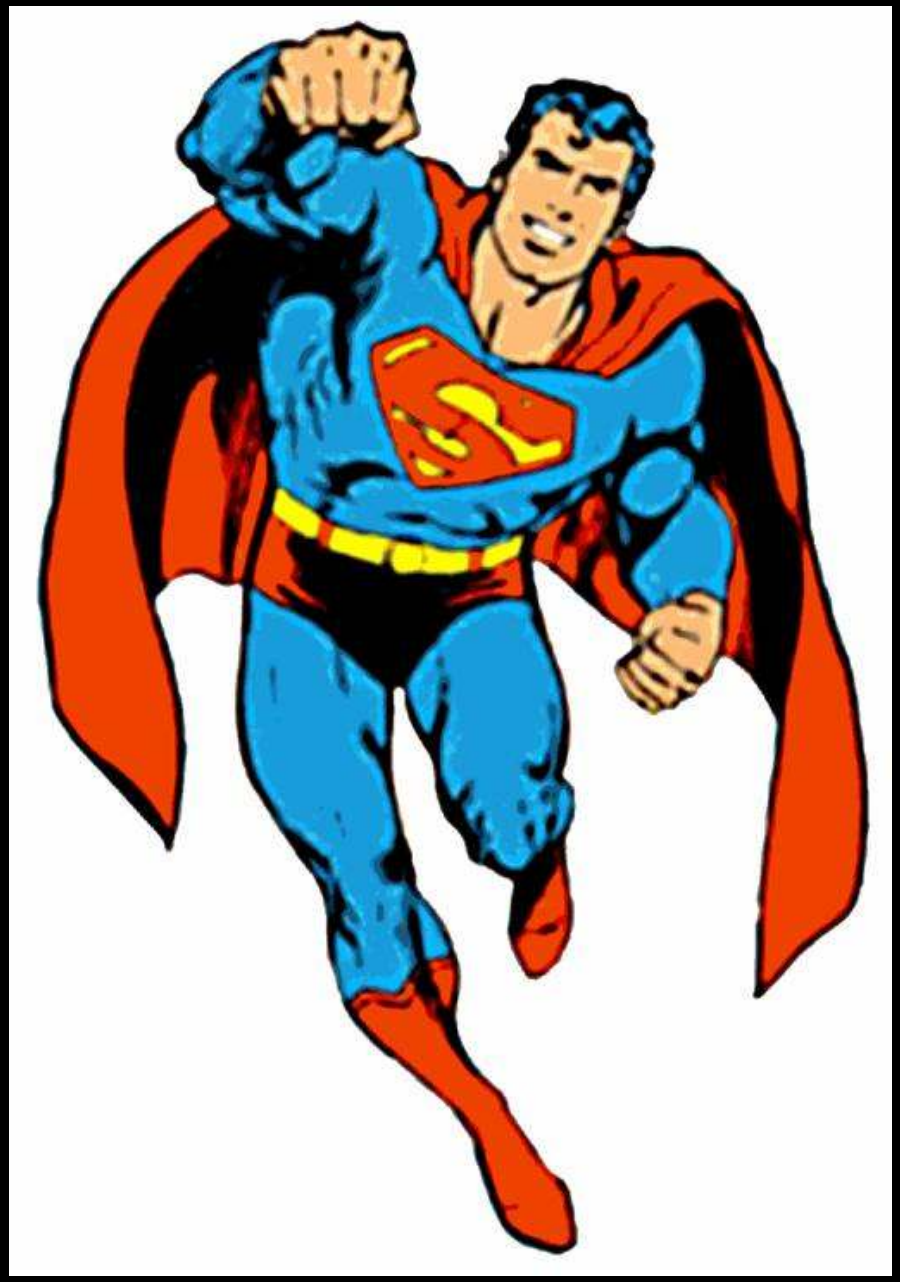
- Creative Individuals and the private sector
- New roles for government
- Infrastructure enabling Access to Knowledge
- International agreements

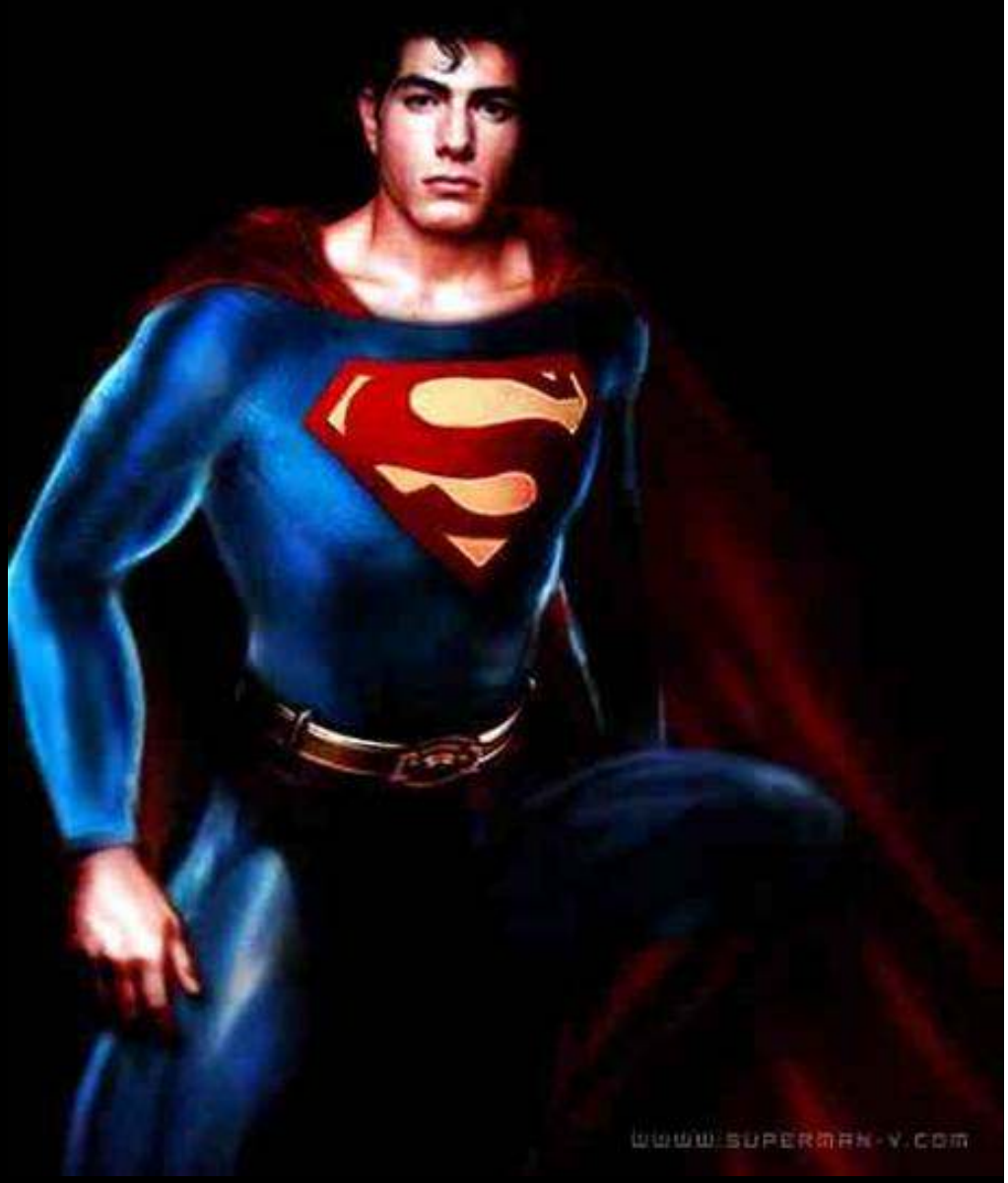
International agreements:

- Back to basics

Fundamental Principles

- Innovators, Authors and Artists must be primary beneficiaries



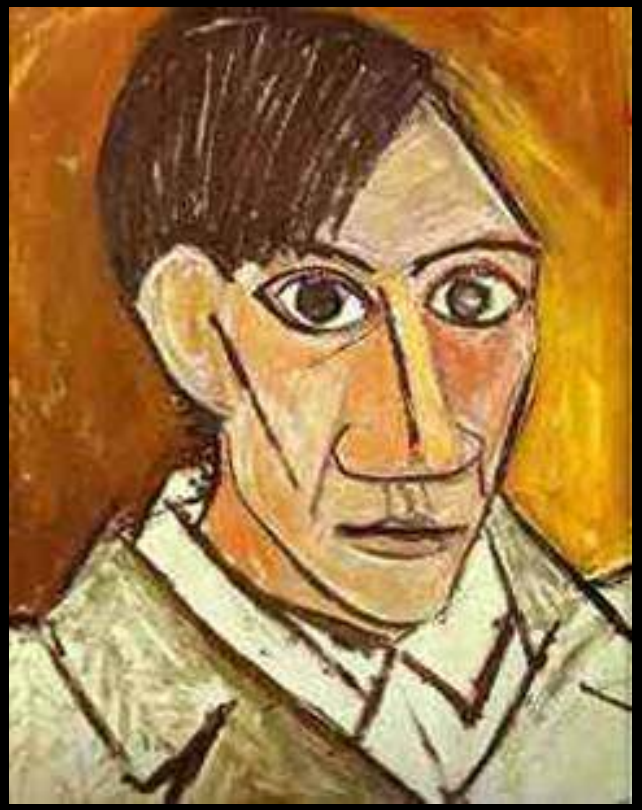

WWW.SUPERMAN-V.COM

The real inventors of Superman got nothing for their creation

- Joel Schumacher and Jerry Siegel and their families got nothing out of the superman bonanza
- Living in poverty
- No moral rights over their creation

Artists Rights in Subsequent resale of their work

- Why do transactions benefit the auction houses and dealers, but not the artists?
- They should receive a small percentage of each sale a long as they live.



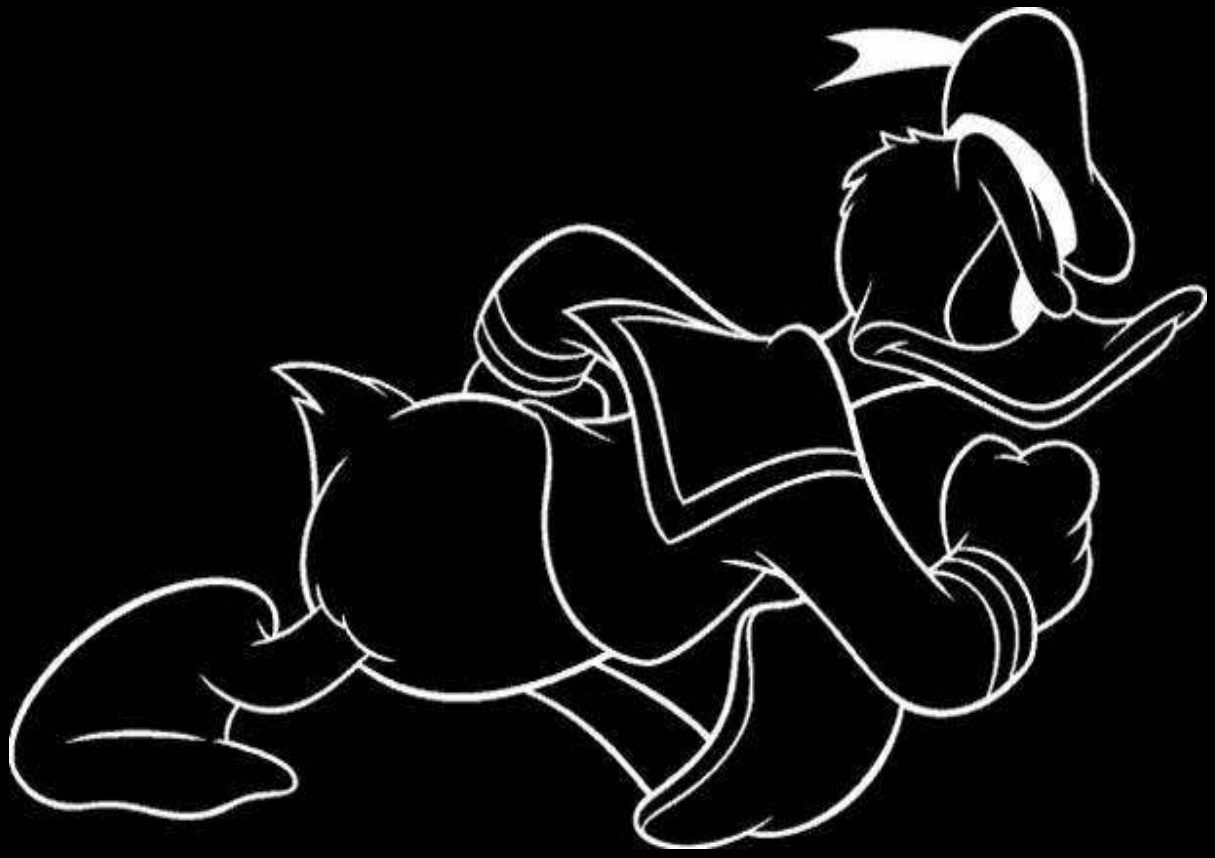
Fundamental Principles

- Innovators, Authors and Artists must be primary beneficiaries
- Producers, printers, traders and distributors must be remunerated for their services

Fundamental Principles

- Innovators, Authors and Artists must be primary beneficiaries
- Producers, printers, traders and distributors must be remunerated for their services
- **Material must enter public domain quickly to benefit society at large**

Disney Monopoly, Long after Creators death, does not encourage creativity at Disney



Creativity and Innovation Need new Corporate structures

Fundamental Principles

- Innovators, Authors and Artists must be primary beneficiaries
- Producers, printers, traders and distributors must be remunerated for their services
- Material must enter public domain quickly to benefit society at large
- **Open Source Alternatives must be nurtured**

Fundamental Principles (Cont'd)

- Fair Use for non-commercial exploitation must be recognized and legally protected

Fundamental Principles (Cont'd)

- Fair Use for non-commercial exploitation must be recognized and legally protected
- Artistic use must be nurtured, with guidance to avoid plagiarism

Louis Armstrong in 1959

- Reinterpreted music around him
- Mixing and recreating
- Hailed as a genius


Armstrong's
Heir?

Electronic Music & Mixing

- Pirate or Creative genius?

Fundamental Principles (Cont'd)

- Fair Use for non-commercial exploitation must be recognized and legally protected
- Artistic use must be nurtured, with guidance to avoid plagiarism
- New technologies need new solutions

Fundamental Principles (Cont'd)

- Fair Use for non-commercial exploitation must be recognized and legally protected
- Artistic use must be nurtured, with guidance to avoid plagiarism
- New technologies need new solutions
- Global Connectivity is here to stay

International agreements:

- Back to basics
- The Limits and exceptions
- Developing countries

Envoi


The Digital Future is here!

Change is happening with incredible speed


Working All Together

There is so much we can do for a whole generation

For The Whole World…


Thank You

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