

*L 'arbre qui tombe est plus bruyant que la forêt
qui pousse*

ENS 28 02 13

Pierre Veltz

1. Le nouveau monde (hyper)industriel
2. Le contexte : grand rattrapage et mondialisation à maille fine
3. Pôles et réseaux. L'économie d'archipel
4. De l'entreprise à la communauté contributive

Economie hyperindustrielle

Une phase transitoire



FIGURE 7.10 Ford V-8 Engine Assembly, River Rouge Factory, 1930s. (Henry Ford Museum, The Ford Motor Company Archives. Neg. No. 833-68057-105.)

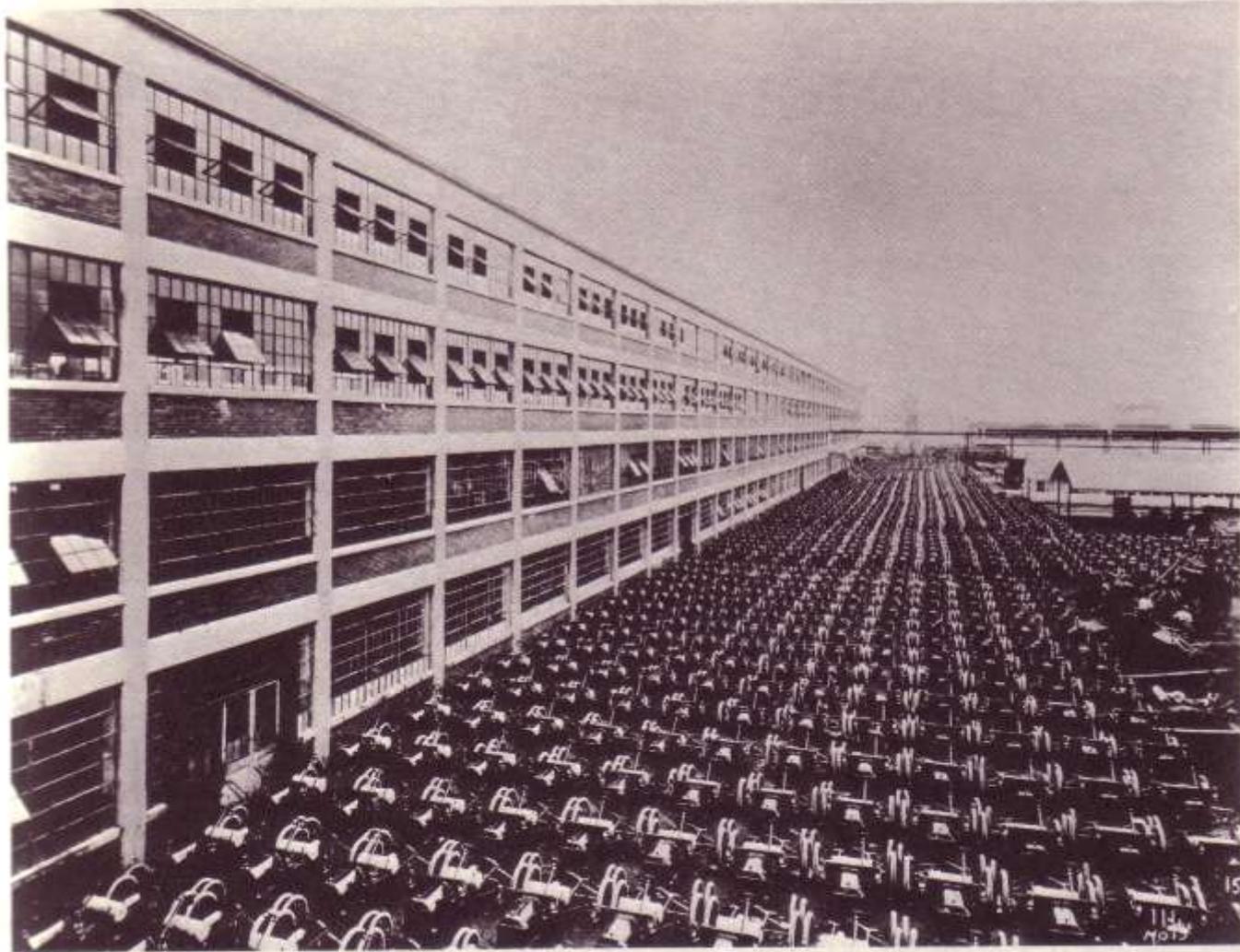
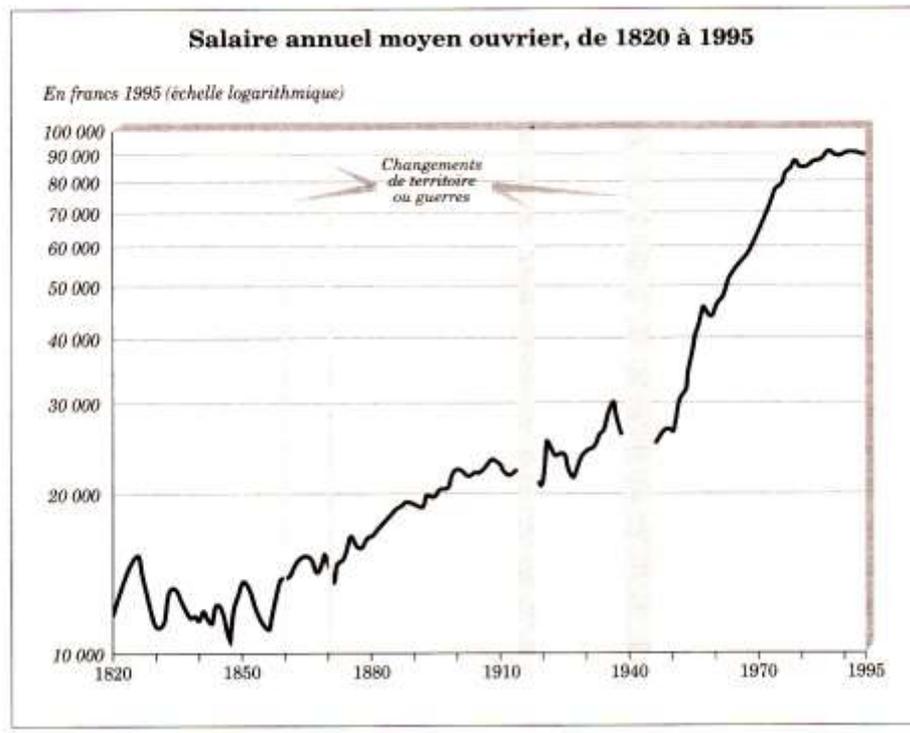


FIGURE 0.1. A Day's Output of Ford Model T's, Highland Park Factory, 1915. (Henry Ford Museum, The Edison Institute. Neg. No. 0-716.)







Une combinaison particulière de l'espace
et du temps de la production

Un mode dominant d'organisation

Un concept régulateur : la productivité (des
opérations)

Une combinaison particulière de l'espace
et du temps de la production
de l'usine au réseau

Un mode dominant d'organisation
de la hierarchie au réseau

Un concept régulateur : la productivité (des
opérations)
*de l'efficacité par la division du travail
à l'efficience relationnelle*

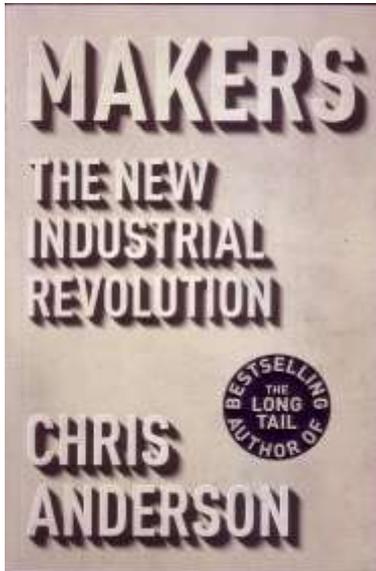
Hybridation Industrie/service

Hybridation numérique / manufacturier

Hybridation marchand/non marchand

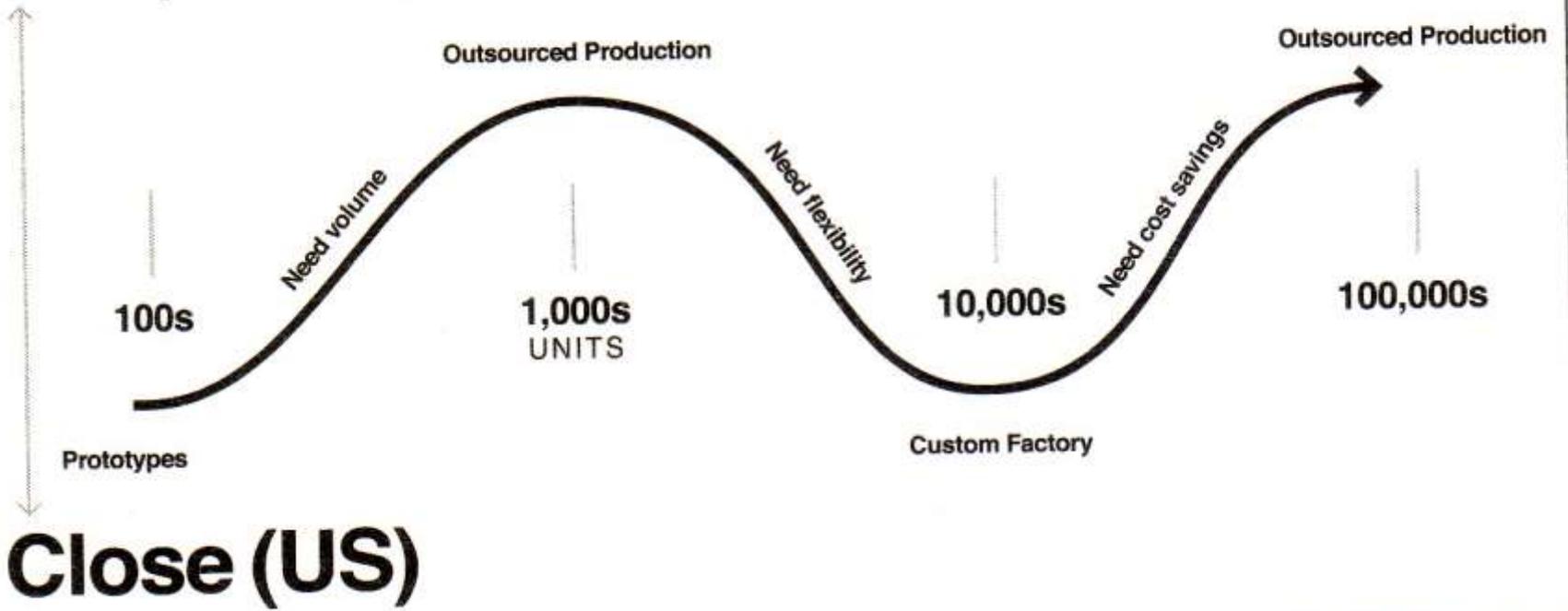
Hybridation science / technologie / industrie

Un nouveau modèle productif ?



De la « longue traîne » de la demande à la « longue traîne » de l'offre ?

Far (China)



Fond de tableau :
grand rattrapage
et mondialisation
à grain fin

Kenneth Pomeranz

Une grande divergence

*La Chine, l'Europe et la construction
de l'économie mondiale*



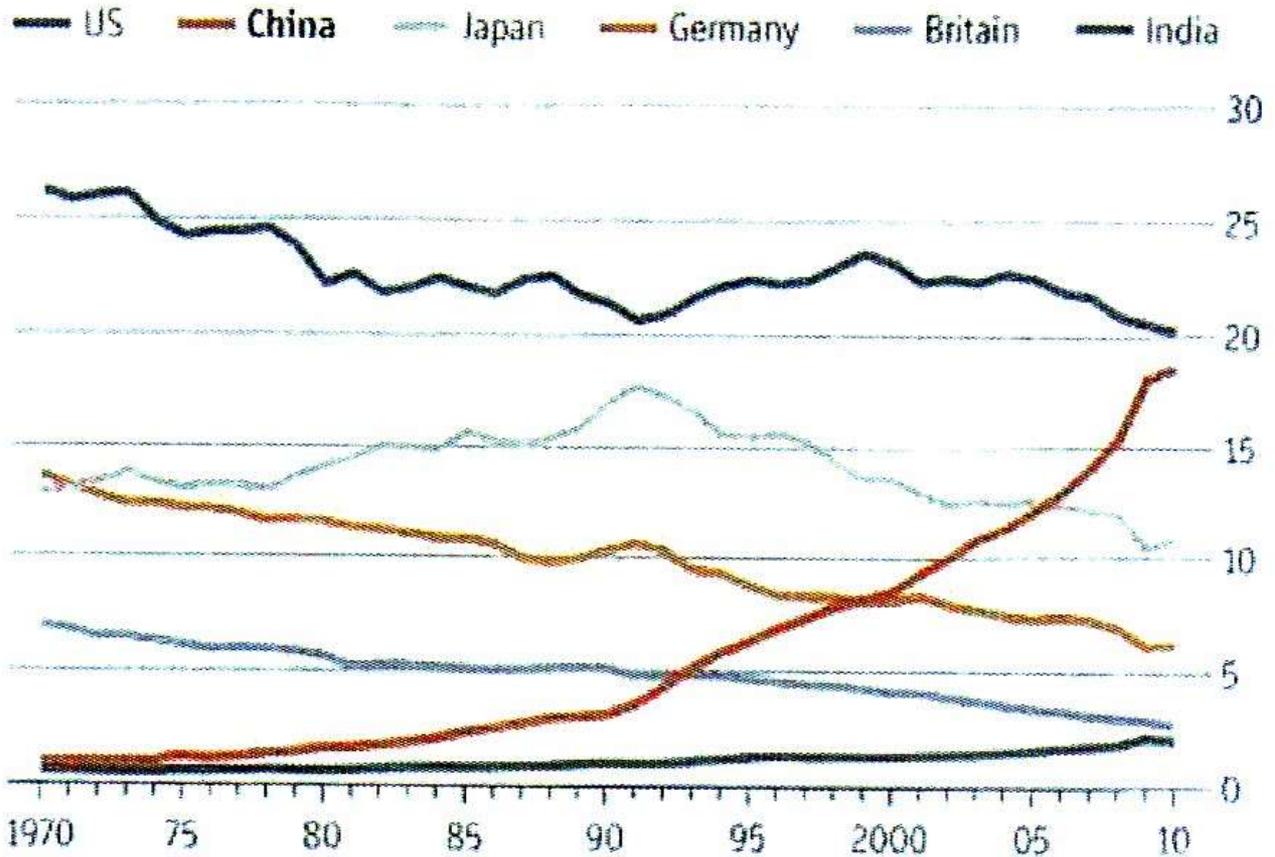
Albin Michel

L'évolution de l'humanité



The new world order

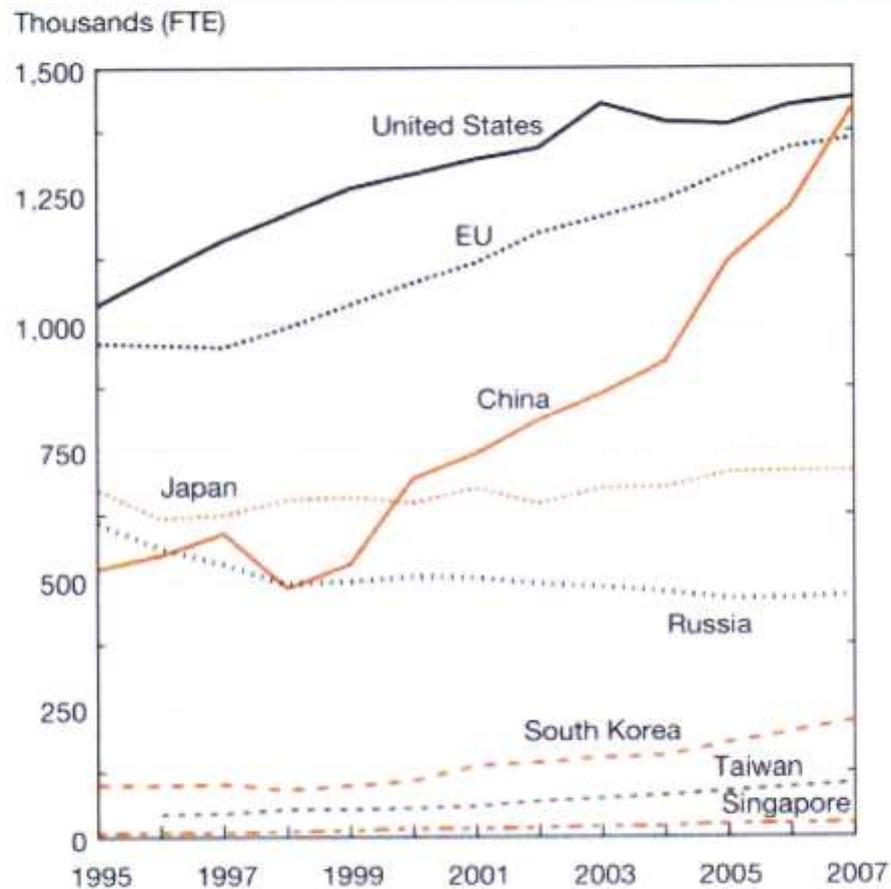
Manufacturing, 2005 prices, % of world output



Source: UNCTAD

The Economist April 21st 2012

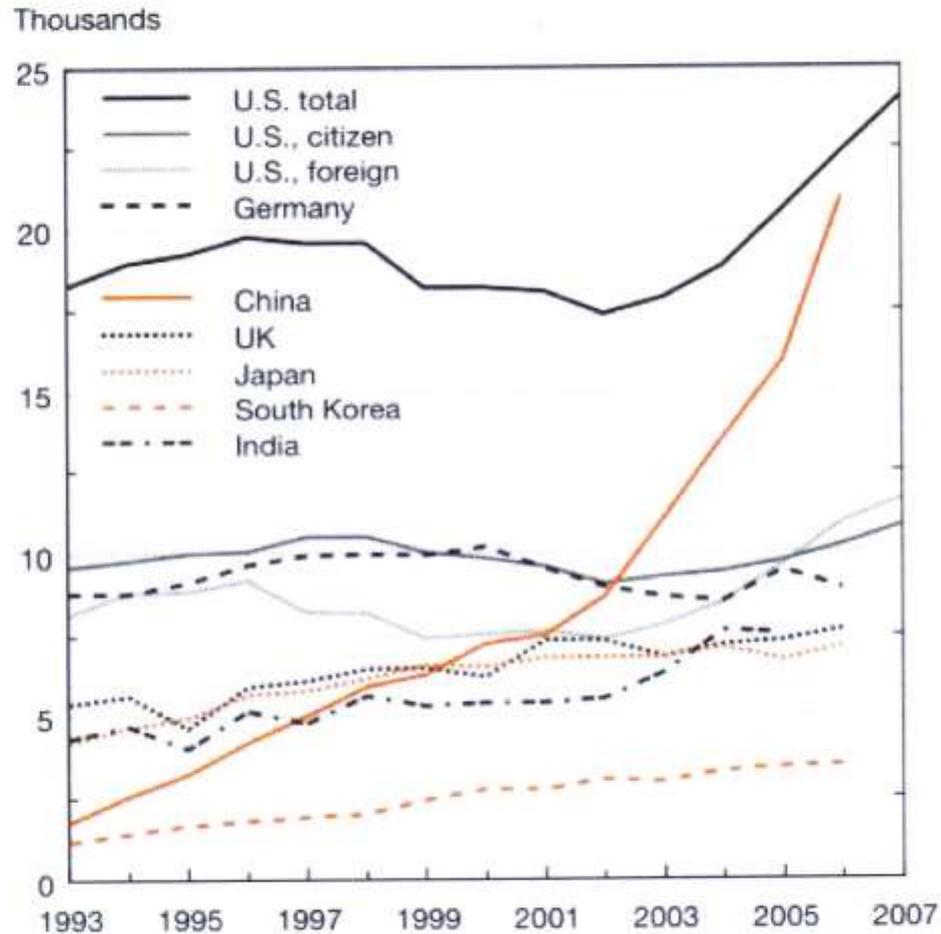
Researchers in selected regions/countries/economies: 1995–2007



EU = European Union; FTE = full-time equivalent

NOTES: U.S. data for 2007 estimated based on 2004–06 growth rate. EU includes all 27 member states.

Doctoral degrees in natural sciences and engineering, selected countries: 1993–2007

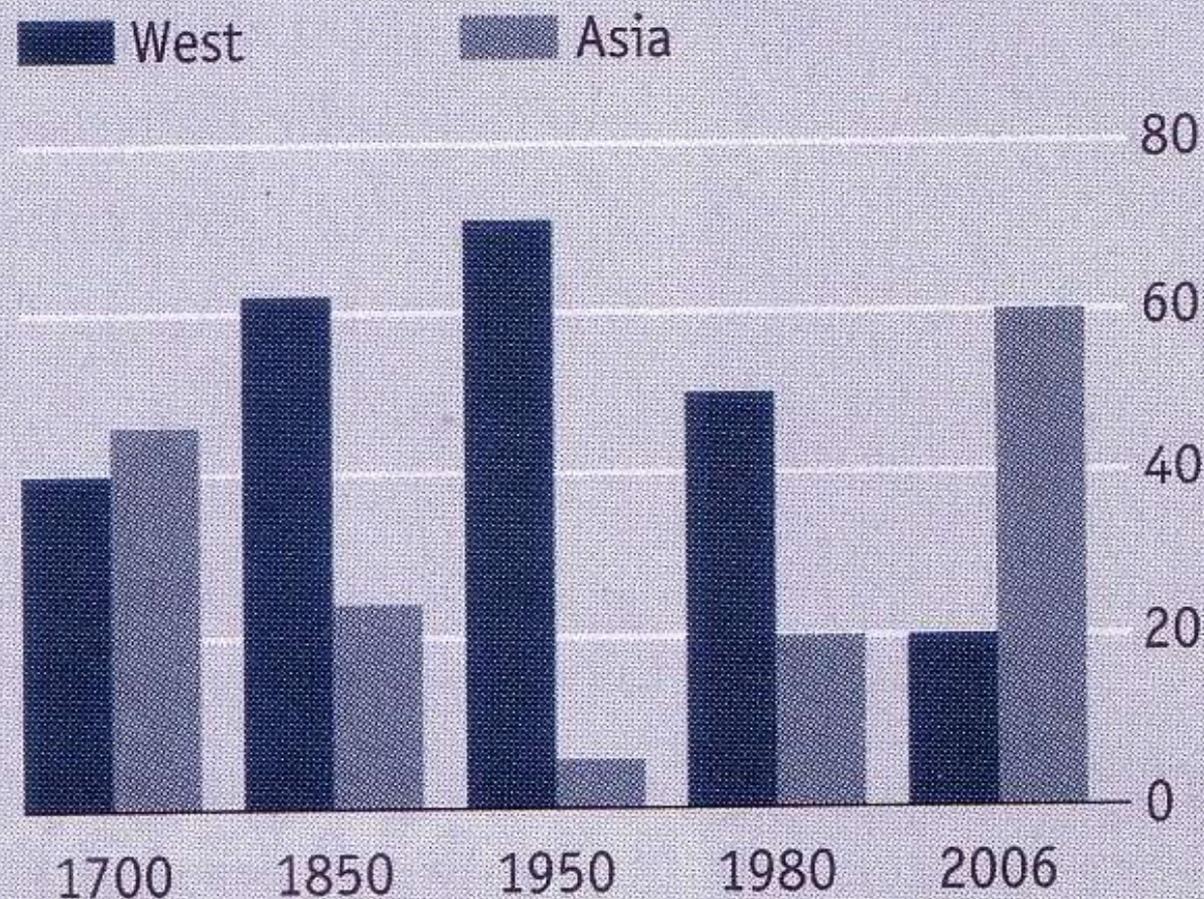


UK = United Kingdom

NOTE: Natural sciences include physical, biological, earth, atmospheric, ocean, agricultural, and computer sciences and mathematics.

Asia's return

Middle-class population as % of world total



Source: Surjit Bhalla, *"The Middle Class Kingdoms of India and China"* (forthcoming)

Rééquilibrage

où l'Ouest garde d'immenses atouts

Part de la prod manif mondiale

	Pays dév.	Chine Inde reste
1800	29	71
1900	87	13
1980	73	27
2000	66	34
2010	59	41

L'industrie : les troupes de choc de l'économie mondiale

En 2010, 328 millions sur 6,9 milliards, dont 40% en Chine

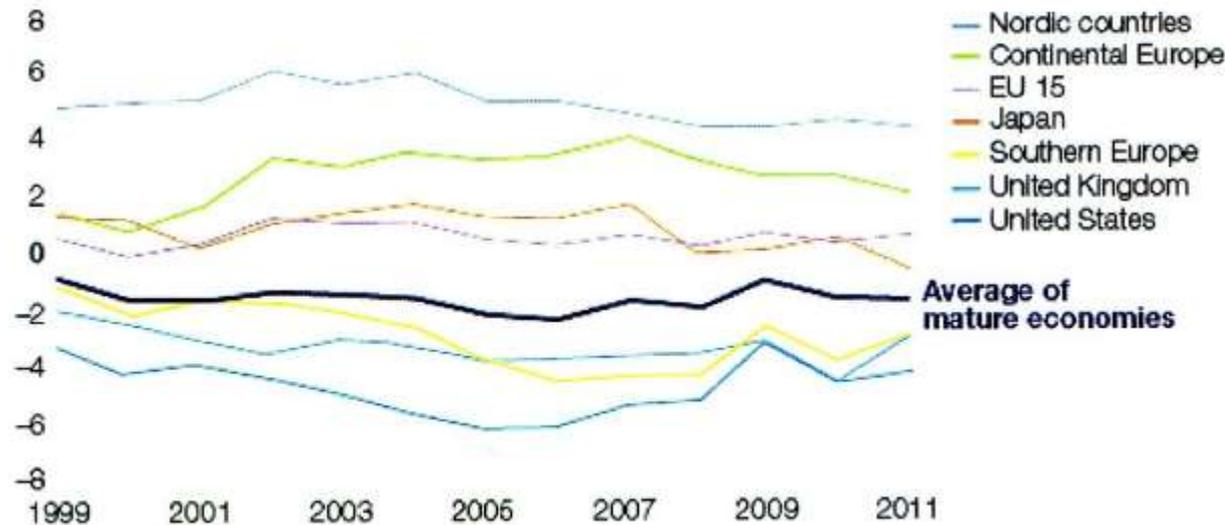
En 1800	4,7	
En 1900	2,8	
En 1990	4,6	
En 2000	4,6	
En 2010	4,8	(10% emploi)

De 1800 à 2010	Prod ind	+ 2,6
	prod tot	+ 2,0
	pop	+ 0,9

De quelques idées fausses

Average net exports of mature economies remained relatively stable over the past decade, though individual countries showed significant variations.

Net exports of mature economies,¹ % of GDP

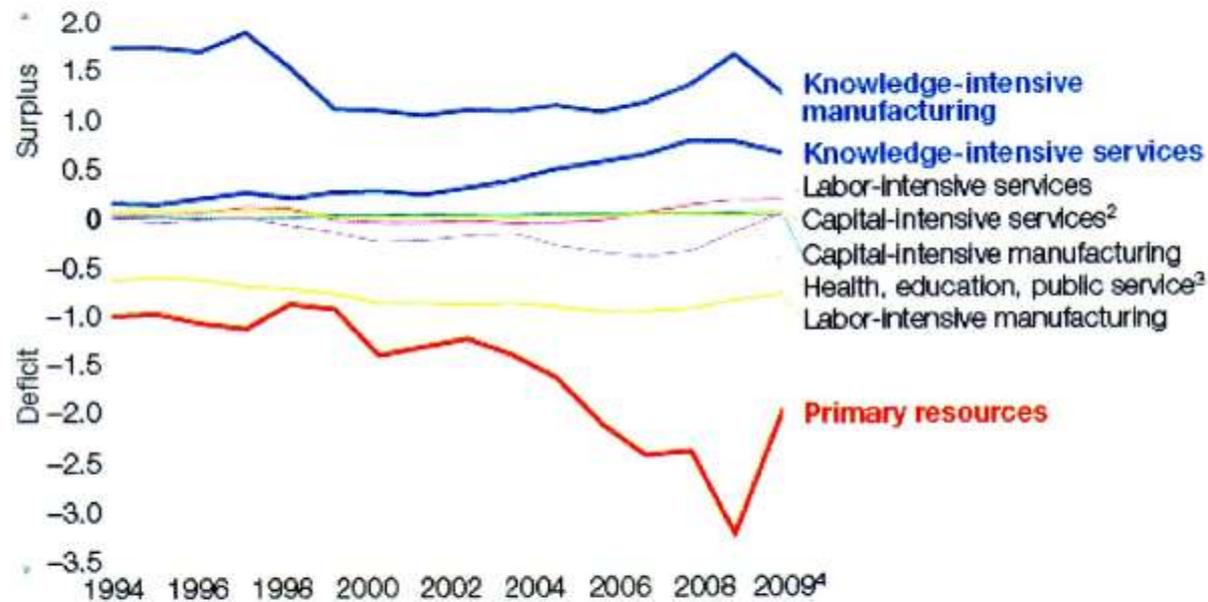


¹Nordic countries: Denmark, Finland, Sweden; Continental Europe: Austria, Belgium, France, Germany, Luxembourg, and Netherlands; EU 15: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and United Kingdom; Southern Europe: Greece, Italy, Portugal, and Spain.

Source: Organisation for Economic Co-operation and Development (OECD); McKinsey Global Institute analysis

Over the last 15 years, many mature economies have experienced trade deficits in primary resources that have canceled out trade surpluses from knowledge-intensive goods and services.

Net exports of mature economies,¹ % of GDP



¹United States, Japan, and EU-15 countries excluding Luxembourg: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, and United Kingdom; services exports do not include Belgium and Denmark, because historical data are unavailable.

²Excludes trade in utilities for Japan.

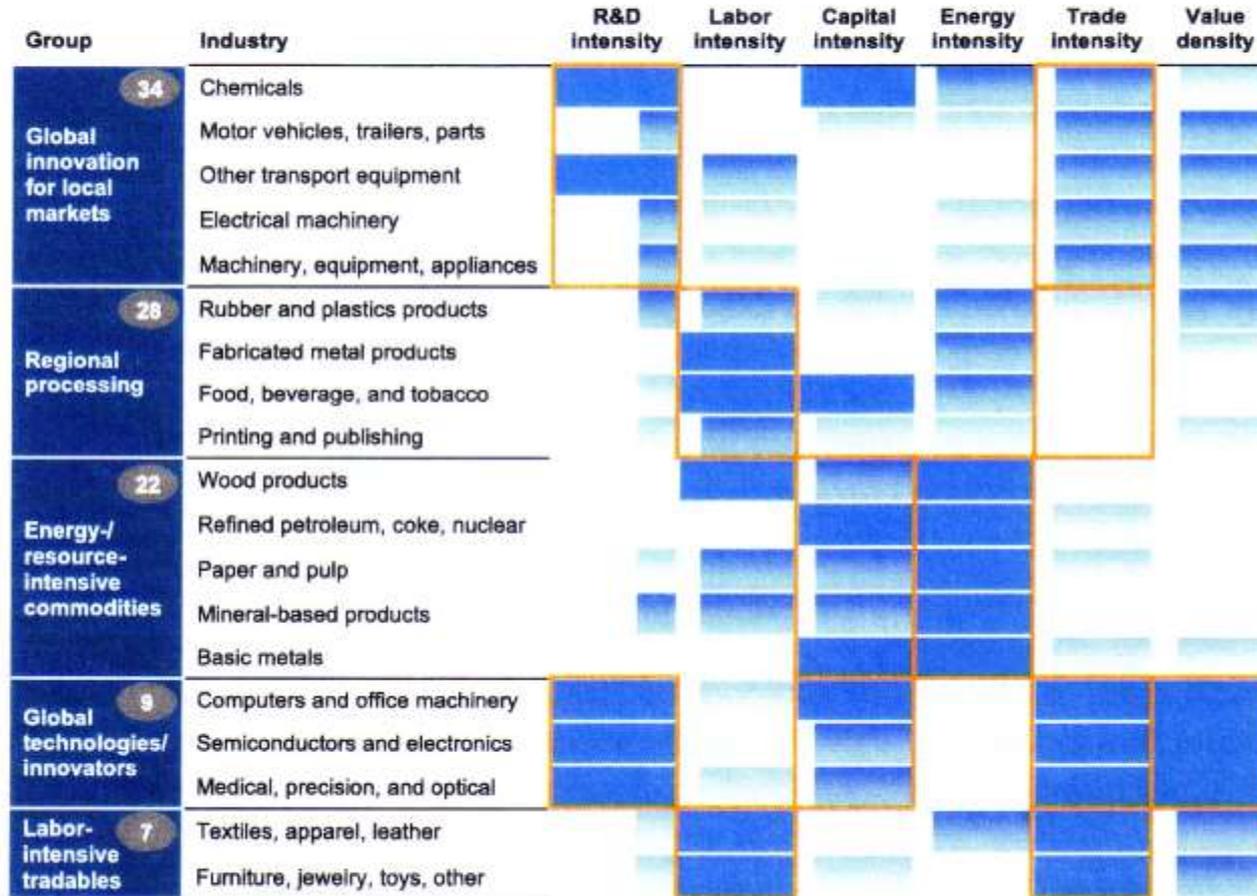
³Majority of trade for health and education services is accounted for as travel and therefore is included in labor-intensive services.

⁴Latest available data.

Source: Organisation for Economic Co-operation and Development (OECD); McKinsey Global Institute analysis

Exhibit E3

Manufacturing is diverse: We identify five broad groups with very different characteristics and requirements

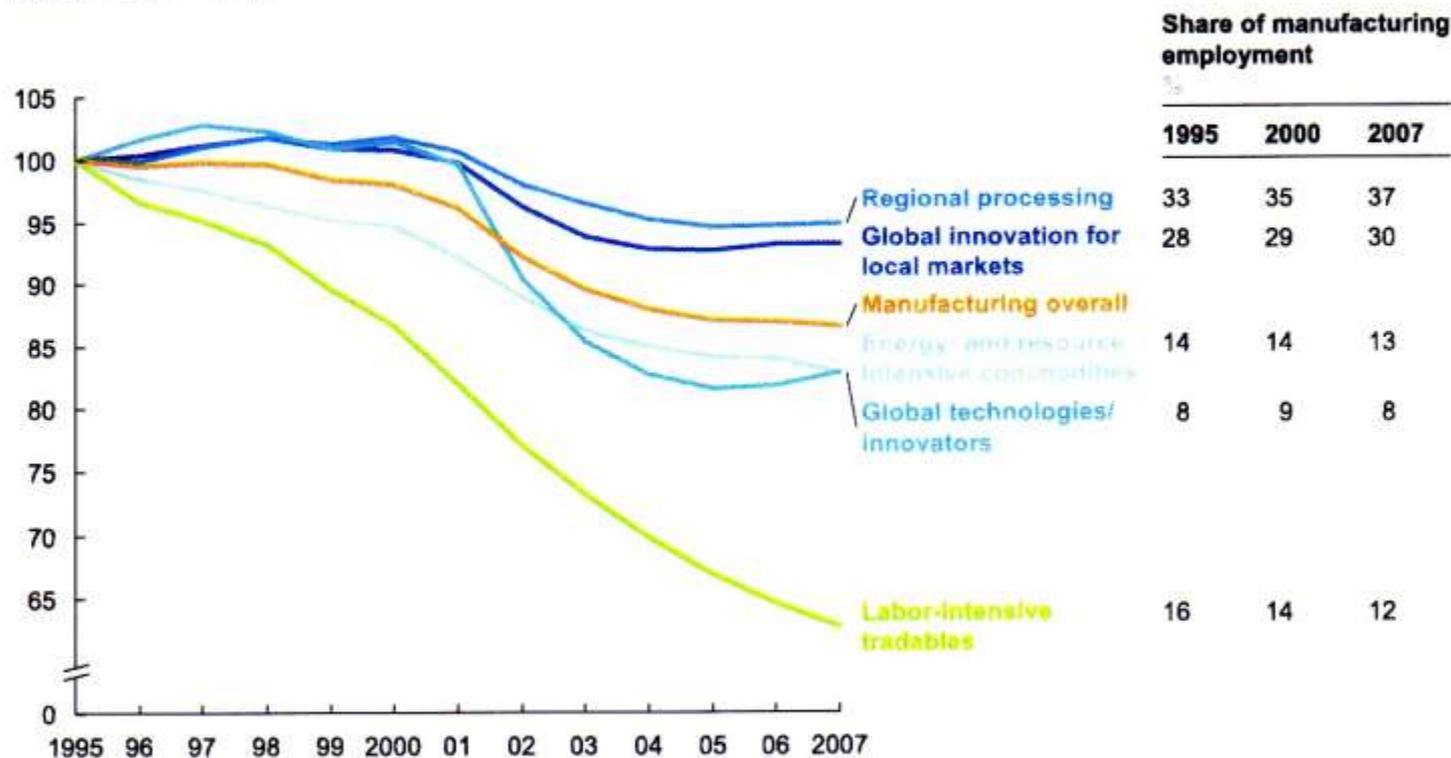


SOURCE: IHS Global Insight; OECD; Annual Survey of Manufacturers (ASM) 2010; US 2007 Commodity Flow Survey; McKinsey Global Institute analysis

Exhibit E4

Manufacturing employment in advanced economies has declined across all groups but has fallen most in the labor-intensive tradables group

Manufacturing employment by group in selected advanced economies, 1995–2007¹
 Index: 1995 = 100



¹ Sample of 17 advanced economies: EU-15, Japan, and United States.

NOTE: Numbers may not sum due to rounding.

SOURCE: EU KLEMS; OECD; McKinsey Global Institute analysis

MAD SCIENCE
8 Renegade
Researchers

The Great
Facebook
Do-Over

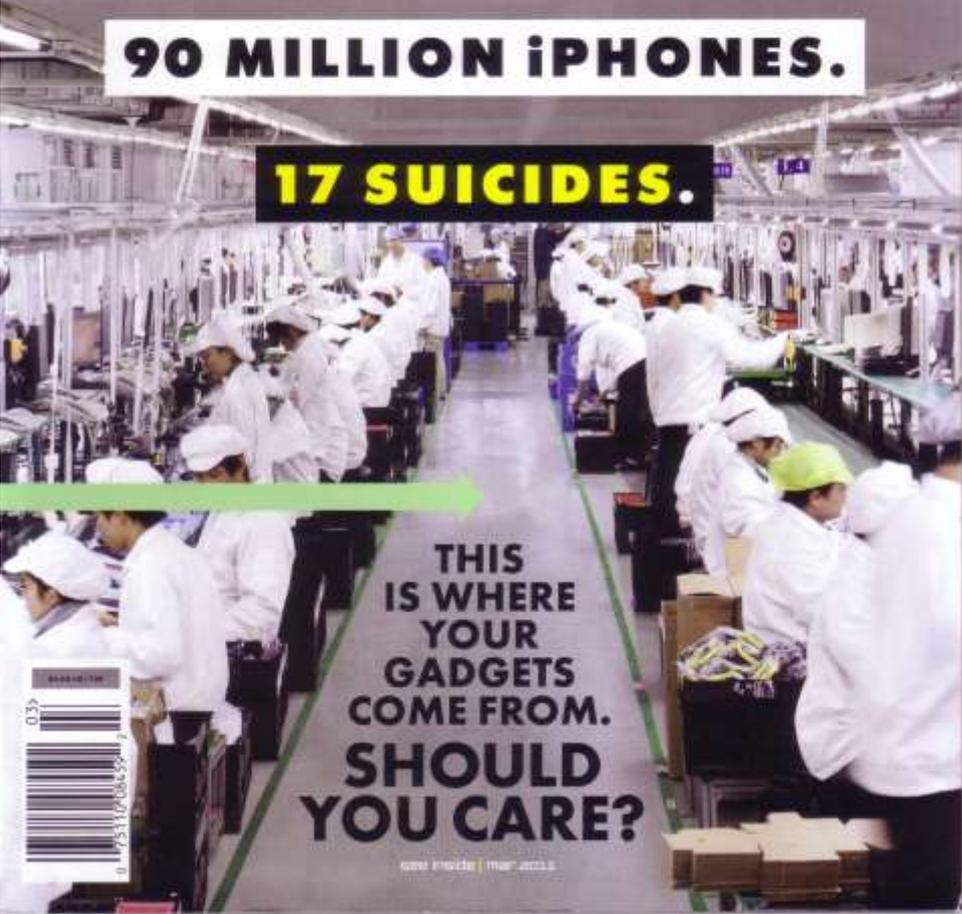
The Future
of Made in
America
PAGE 104

WIRED

1 MILLION WORKERS.

90 MILLION iPHONES.

17 SUICIDES.



THIS
IS WHERE
YOUR
GADGETS
COME FROM.
**SHOULD
YOU CARE?**

0000000000000 | MAR 2012 \$5



Emplois US **13 920**

Non US **27 500** (Chine 50%)

Salaires US **745** M\$ (prod 1,5)

Non US **318** M\$ (prod 90)

Chine **24**

Touchy subject

Distribution of value for an Apple iPad
2010, % of total

Profits:

Apple

30

Other US

2

South
Korean

7

Taiwanese

2

Other

6

Costs:

Chinese labour

2

Non-
Chinese
labour

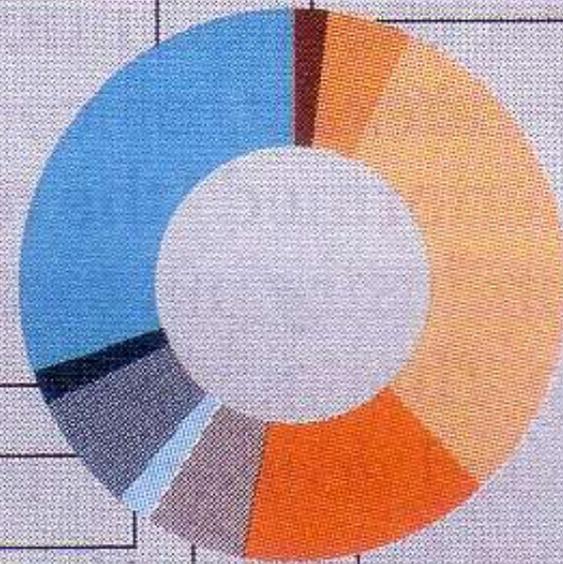
5

Cost of
materials

31

Distribution
& retail

15



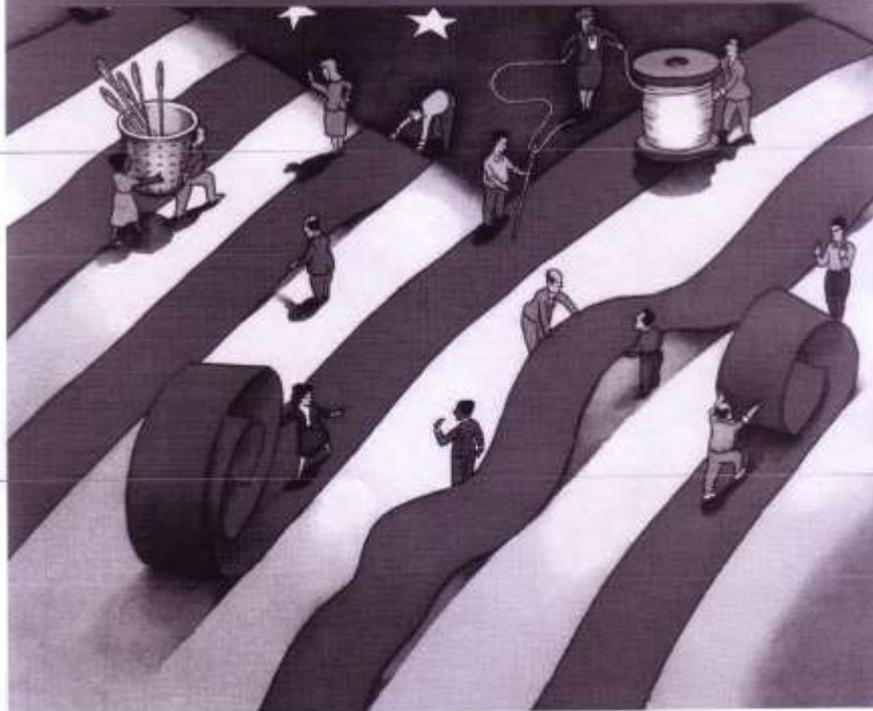
Source: Personal Computing Industry Centre

BCG

THE BOSTON CONSULTING GROUP

Made in America, Again

Why Manufacturing Will Return to the U.S.



Synchronisme technologique



Mondialisation à grain fin



Produktpuzzle

Produktions- und Zulieferorte für die „Sonicare Elite 7000“

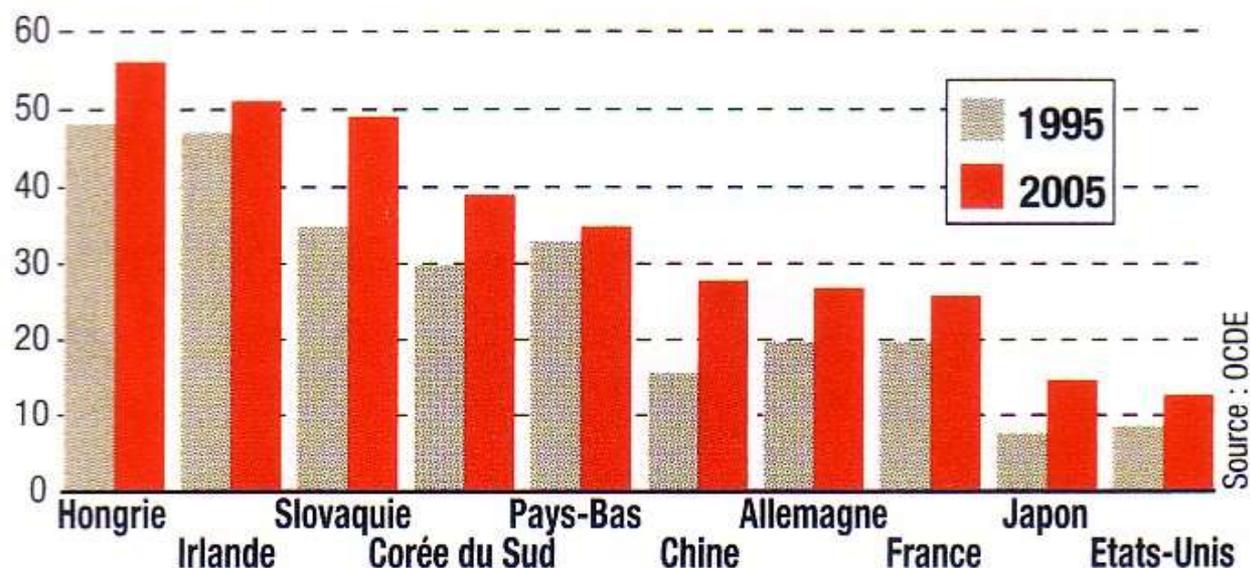


- 1** China (Shenzhen), Kupferspulen
- 2** Japan (Tokio), Nickel-Cadmium-Zellen
- 3** Frankreich (Rambouillet), Ladekomponenten
- 4** China (Zhuhai), Ätzung der Platinen
- 5** Taiwan (Nähe Taipei), Nickel-Cadmium-Zellen, Platinenkomponenten
- 6** Malaysia (Kuala Lumpur), Platinenkomponenten
- 7** Philippinen (Manila), Auflötung der Platinenkomponenten, Tests
- 8** Schweden (Sandviken), Produktion des Spezialstahls
- 9** Österreich (Klagenfurt), Vorschneiden des Stahls, Kunststoffteile
- 10** USA (Snoqualmie), Montage der Kunststoffteile
- 11** USA (Seattle), Verpackung

DER SPIEGEL

UNE INTÉGRATION VERTICALE DE PLUS EN PLUS POUSSÉE

Contenu en importations des exportations, en %



Lecture : les exportations contiennent de plus en plus de biens intermédiaires préalablement importés. Entre 1995 et 2005, la dépendance des exportations aux importations a progressé dans presque tous les pays. L'essor de ce commerce « vertical » va de pair avec des processus de production de plus en plus internationalisés.

Réseaux ouverts et virtualisation

Cloud

Crowd



IBM crowd sourcing could see employed workforce shrink by three quarters

Louisa Peacock 23 April 2010 16:53

Multinational firms saddled with huge people costs are considering downsizing their permanent workforce and hiring sub-contractors on a scale never seen before - presenting an "enormous" management task for HR.

IT giant IBM told *Personnel Today* that the firm's global workforce of 399,000 permanent employees could reduce to 100,000 by 2017, the date by which the firm is due to complete its HR transformation programme.

Tim Ringo, head of IBM Human Capital Management, the consultancy arm of the IT conglomerate, said the firm would re-hire the workers as contractors for specific projects as and when necessary, a concept dubbed 'crowd sourcing'.

"There would be no buildings costs, no pensions and no healthcare costs, making huge savings," he said.

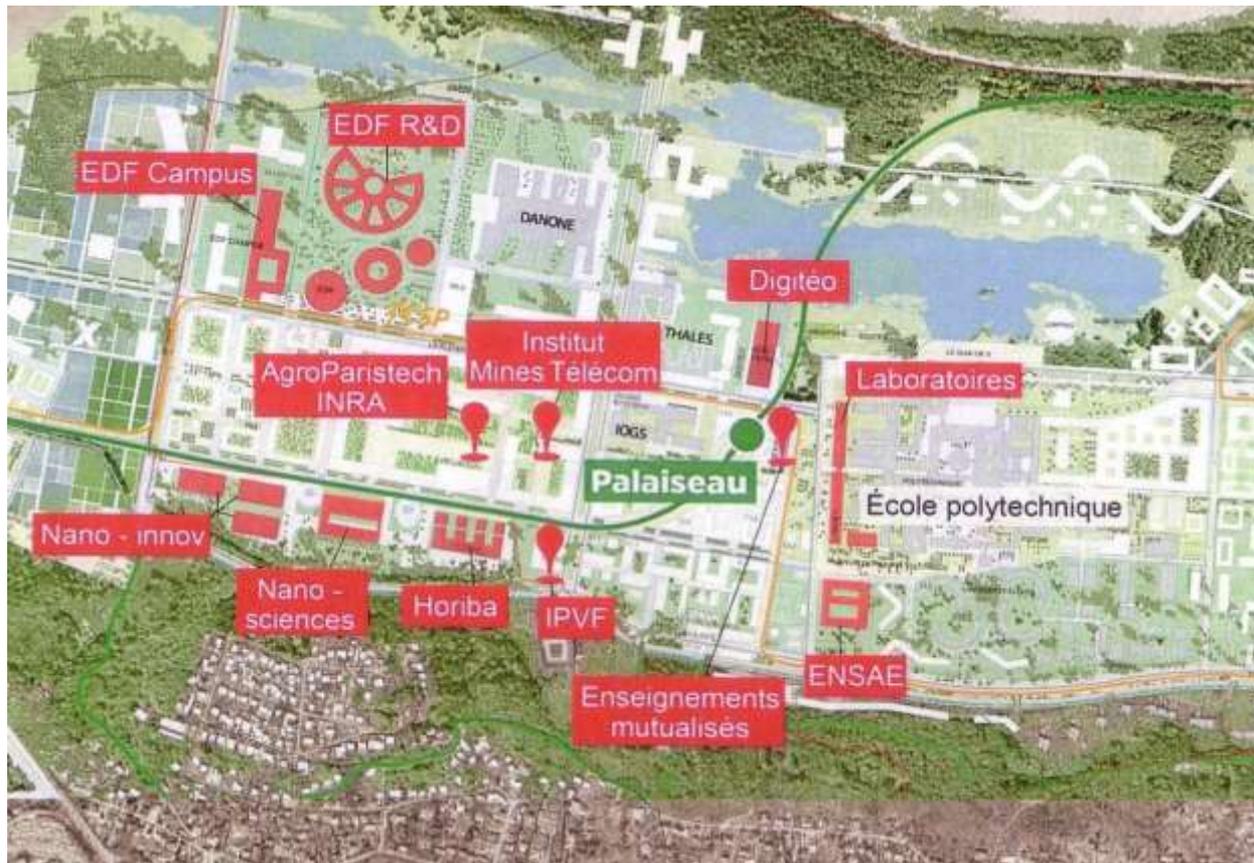
Outsourcing experts said employers from both the private and public sector were increasingly using the model as they looked to squeeze people costs post-recession.

What is crowd sourcing?

Crowd sourcing is the act of taking a job traditionally performed by an employee and outsourcing it to an undefined group of people on a project-by-project basis, in the form of an open call.

Innovation ouverte

No matter who you are, most of the smart people work for somebody else (Bill Joy)



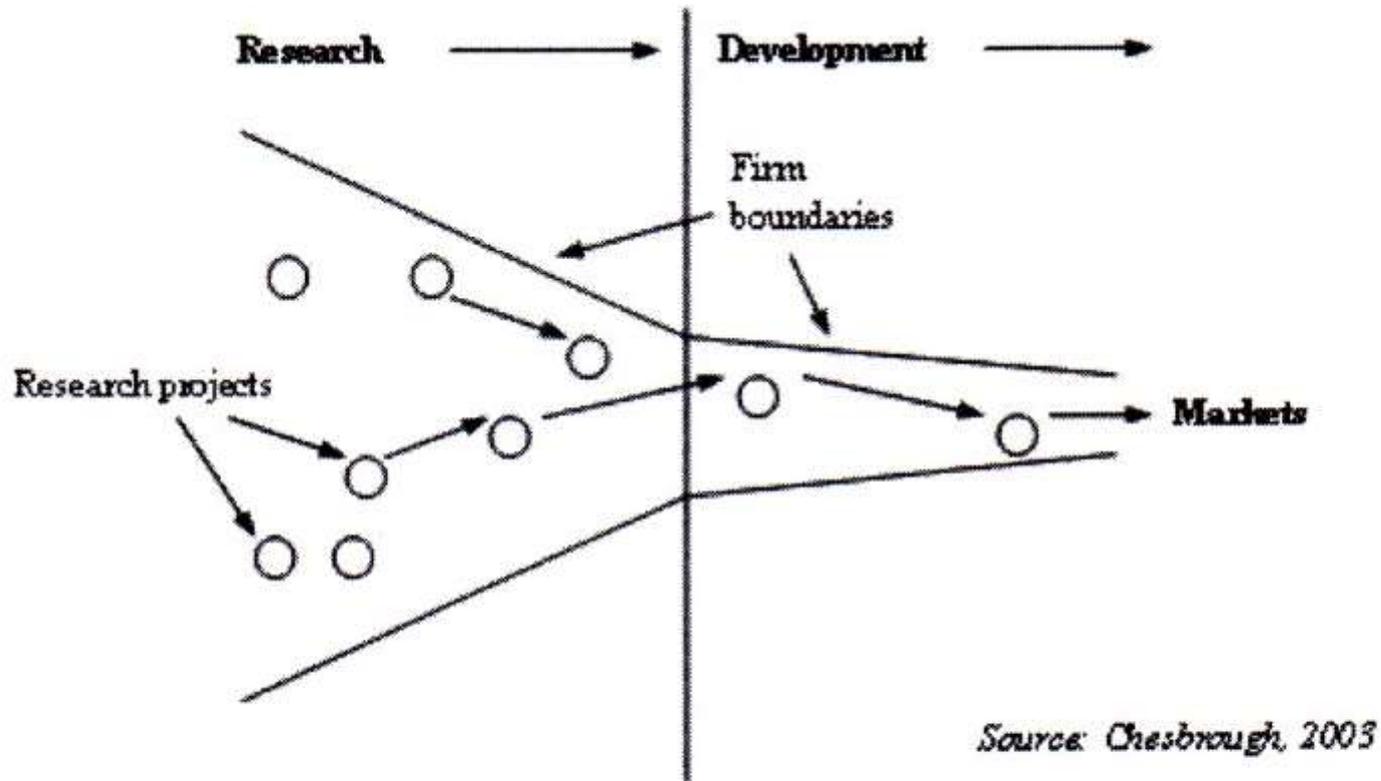


Figure 1 Closed innovation

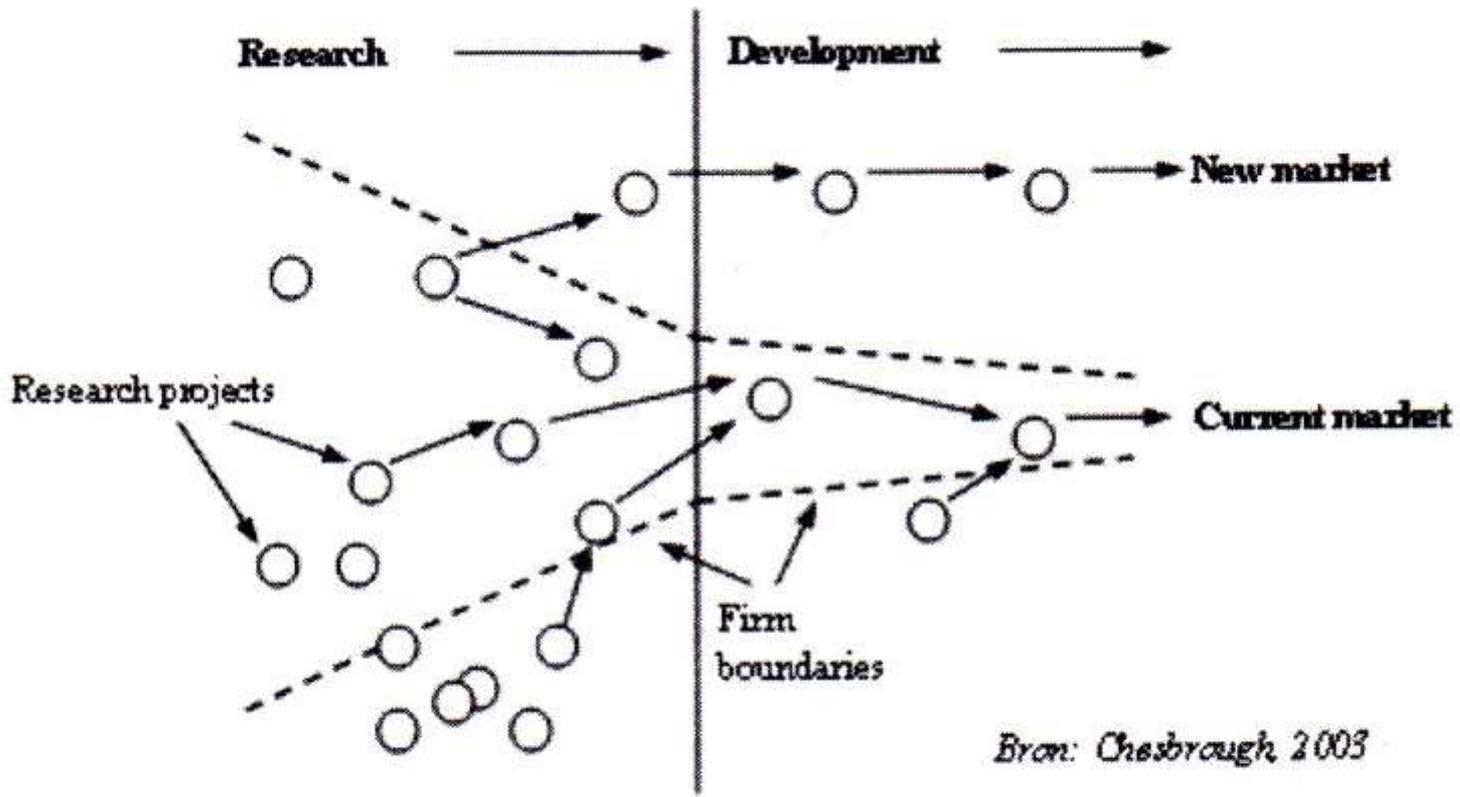


Figure 2 Open innovation

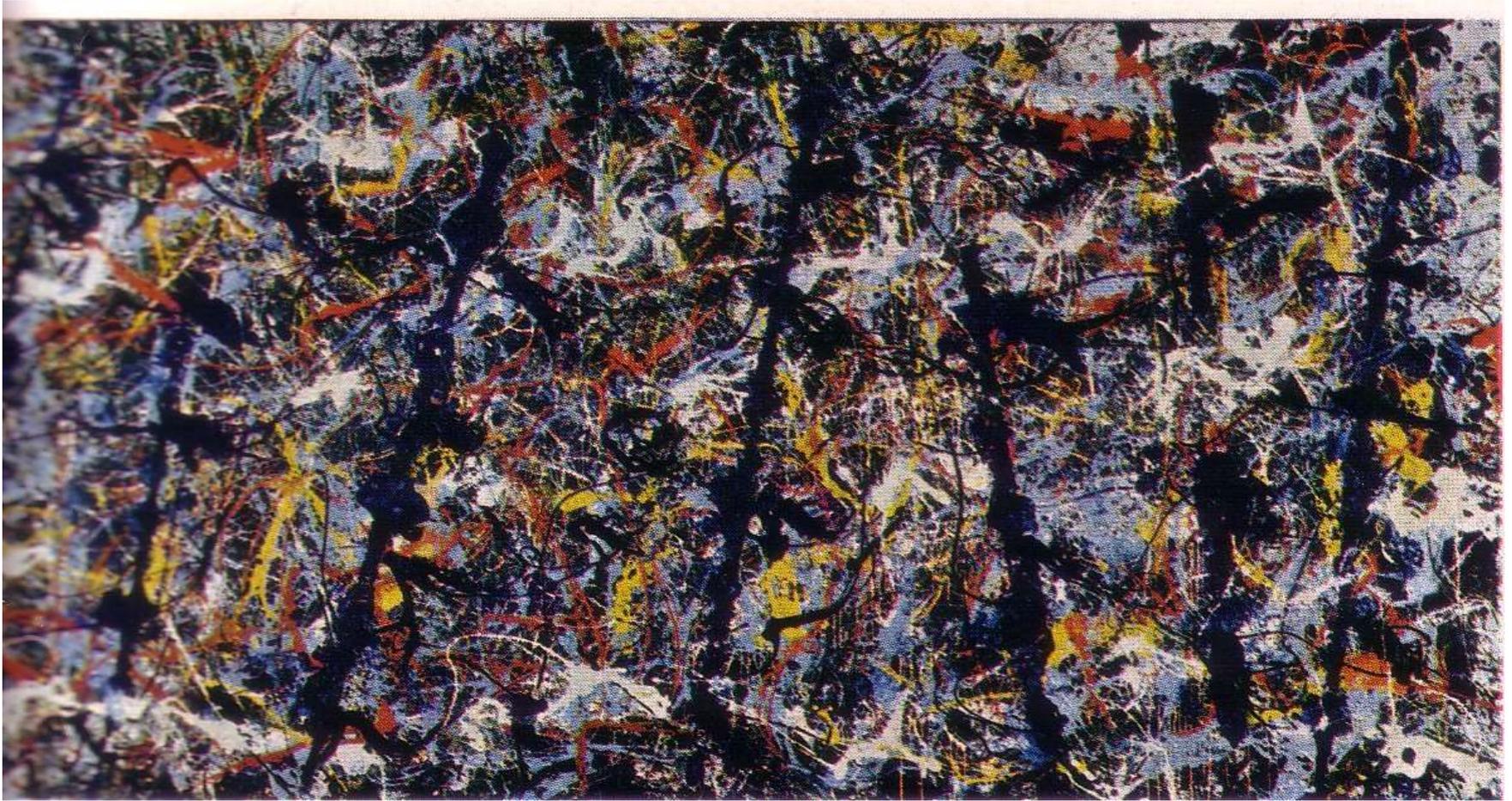
La scalabilité enjeu crucial



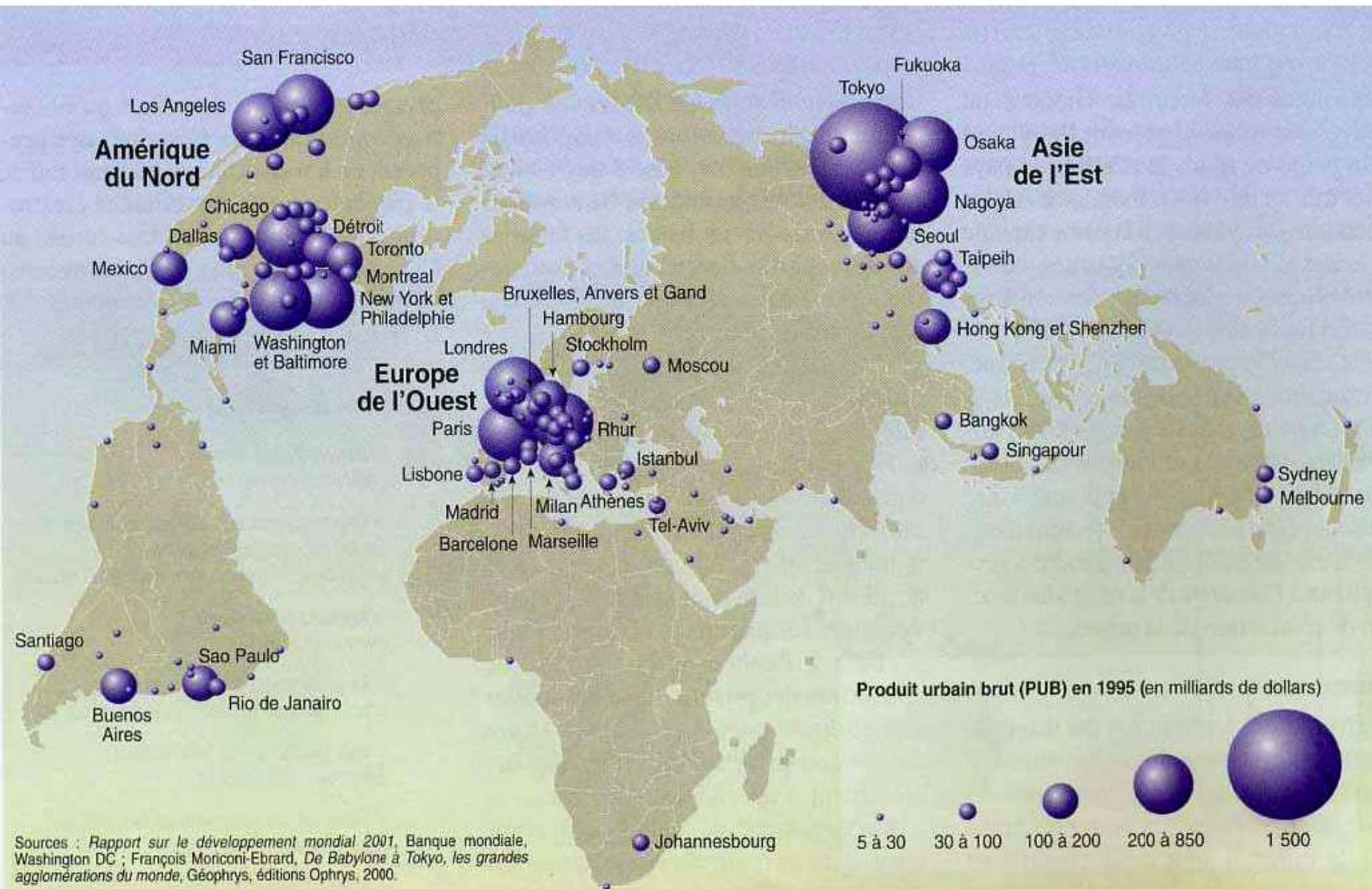
ENS VELTZ 28 02 2013

Economie d'archipel Pôles et réseaux





ENS VELTZ 28 02 2013



Sources : *Rapport sur le développement mondial 2001*, Banque mondiale, Washington DC ; François Monconi-Ebrard, *De Babylone à Tokyo, les grandes agglomérations du monde*, Géophys, éditions Ophrys, 2000.

10 premières régions urbaines

6% pop mondiale

43% PIB mondial

70 à 80% Science et technologie

enclaves

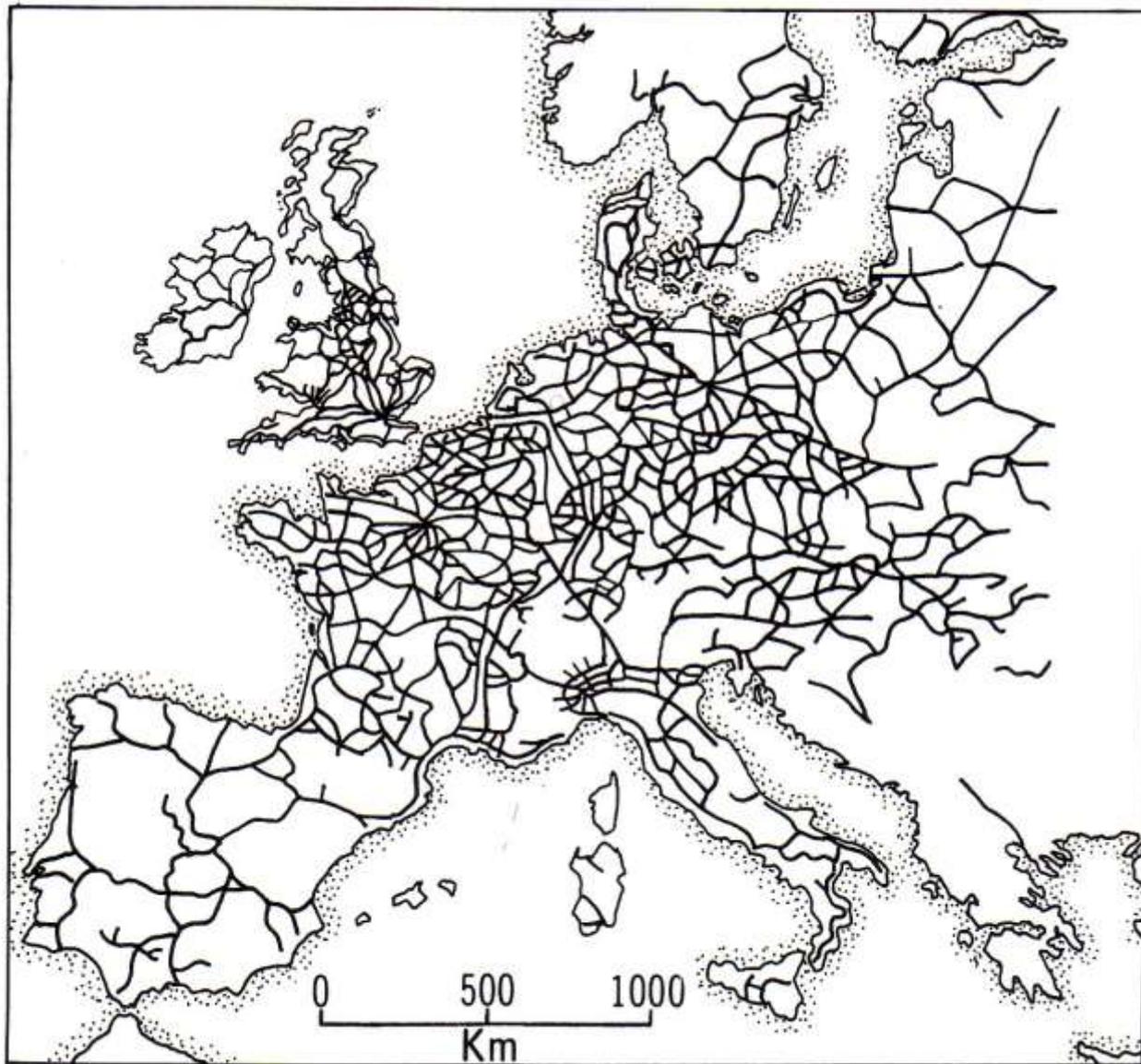
districts spécialisés globalisés

Métropoles

Grandes régions urbaines

cités-Etats : la tendance lourde

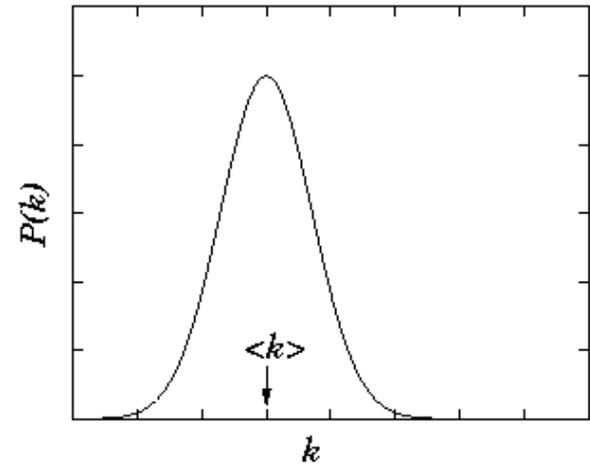
nations/métropole-réseau



11.63. Railway development in Europe, 1880

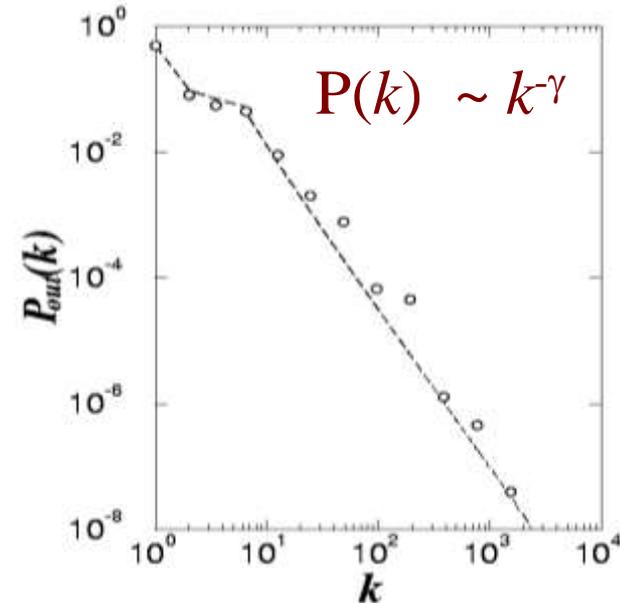
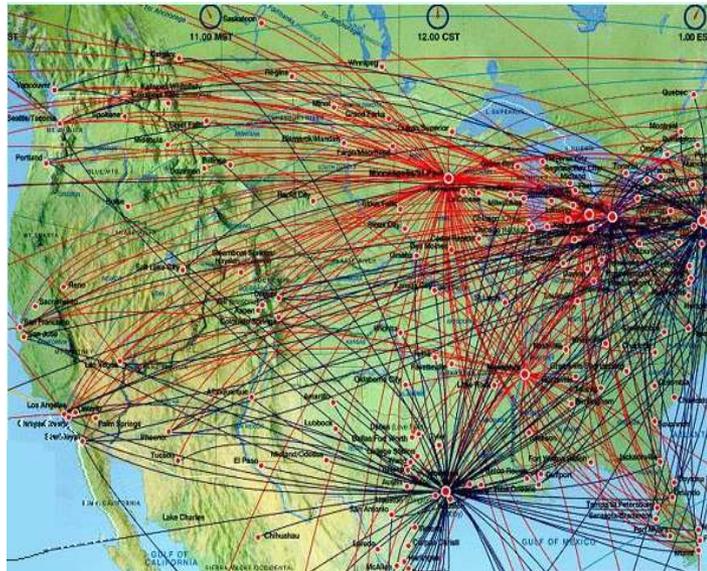
World Wide Web

Exponential Network



Expected

Scale-free Network



Found

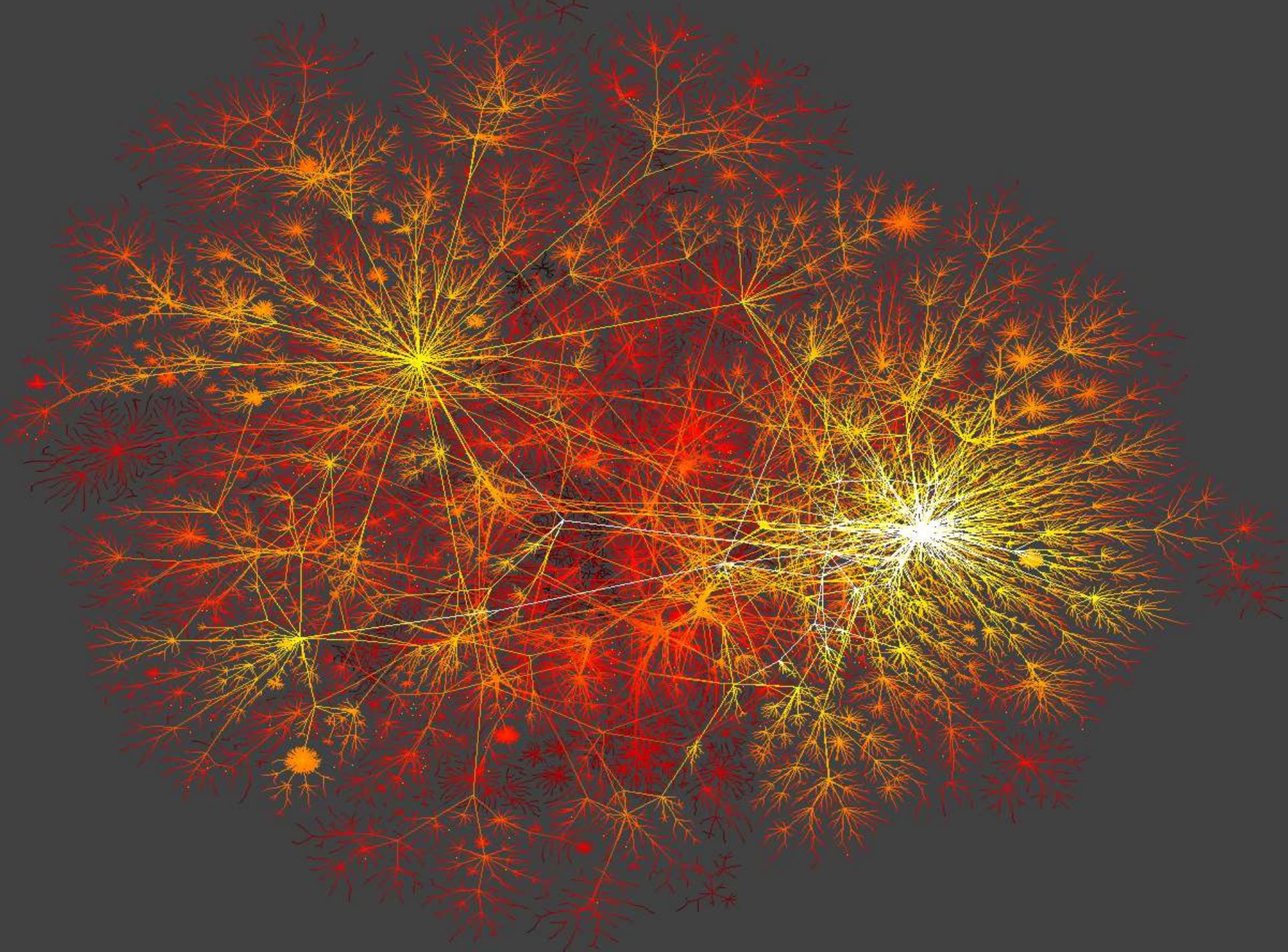
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R. Albert, H. Jeong, A-L Barabasi, *Nature*, **401** 130 (1999).

Many real world networks have a similar architecture:

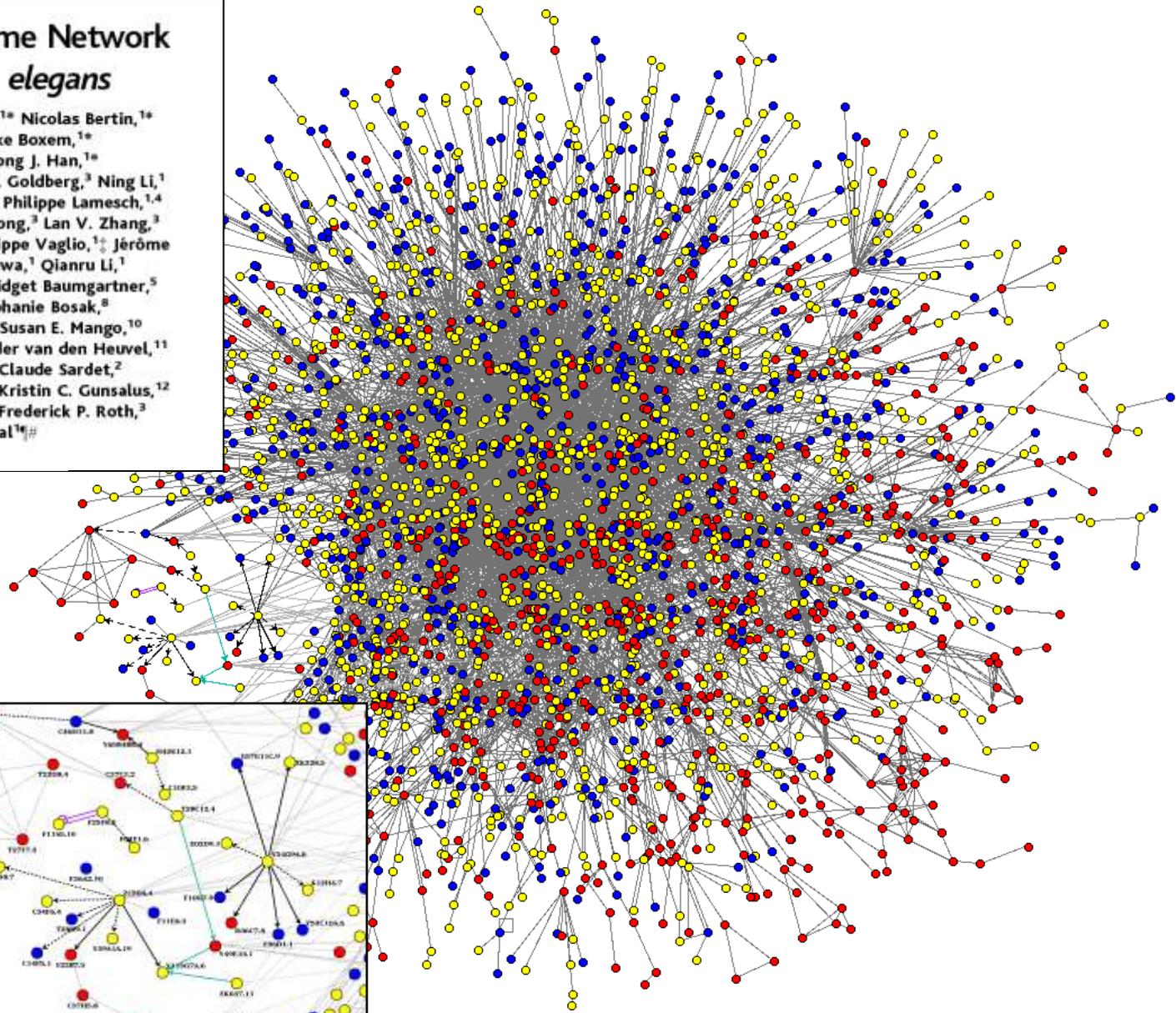
Scale-free networks

WWW, Internet (routers and domains), electronic circuits, computer software, movie actors, coauthorship networks, sexual web, instant messaging, email web, citations, phone calls, metabolic, protein interaction, protein domains, brain function web, linguistic networks, comic book characters, international trade, bank system, encryption trust net, energy landscapes, earthquakes, astrophysical network...



A Map of the Interactome Network of the Metazoan *C. elegans*

Siming Li,^{1*} Christopher M. Armstrong,^{1*} Nicolas Bertin,^{1*}
Hui Ge,^{1*} Stuart Milstein,^{1*} Mike Boxem,^{1*}
Pierre-Olivier Vidalain,^{1*} Jing-Dong J. Han,^{1*}
Alban Chesneau,^{1,2*} Tong Hao,¹ Debra S. Goldberg,³ Ning Li,¹
Monica Martinez,¹ Jean-François Rual,^{1,4} Philippe Lamesch,^{1,4}
Lai Xu,^{5,†} Muneesh Tewari,¹ Sharyl L. Wong,³ Lan V. Zhang,³
Gabriel F. Berriz,³ Laurent Jacotot,^{1,‡} Philippe Vaglio,^{1,‡} Jérôme
Reboul,^{1,§} Tomoko Hirozane-Kishikawa,¹ Qianru Li,¹
Harrison W. Gabel,¹ Ahmed Elewa,^{1||} Bridget Baumgartner,⁵
Debra J. Rose,⁶ Haiyuan Yu,⁷ Stephanie Bosak,⁸
Reynaldo Sequerra,⁸ Andrew Fraser,⁹ Susan E. Mango,¹⁰
William M. Saxton,⁶ Susan Strome,⁶ Sander van den Heuvel,¹¹
Fabio Piano,¹² Jean Vandenhaute,⁴ Claude Sardet,²
Mark Gerstein,⁷ Lynn Doucette-Stamm,⁸ Kristin C. Gunsalus,¹²
J. Wade Harper,^{5,†} Michael E. Cusick,¹ Frederick P. Roth,³
David E. Hill,^{1¶} Marc Vidal^{1¶#}



Primauté du réseau ? De la « mare aux grenouilles »
au commutateur global

Relative égalisation des conditions économiques
et différenciation « résidentielle »

Mobilités humaines vs mobilités du capital

Les échelles métropolitaines : les grands marchés
l'ultraproximité . Du fonctionnel au relationnel

La ville comme infrastructure globale, au-delà des
Infrastructures spécialisées

De l'entreprise à la communauté contributive

La force de la société industrielle a été de faire des choses extraordinaires avec des hommes ordinaires

Par la médiation de l'organisation

Vers la dés-intermédiation ?

De nouvelles formes ouvertes et collaboratives ?

Free/ Open source software

Linux

Wikipedia

peer production

social production

hybrides marchand/non marchand

rôle central de la PI

plates formes

135,000+ Solvers | 175 Countries | 40 Industry Disciplines and G

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- Math and Computer Science
- Physical Sciences

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Search Keywords

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Only pay once you are 100% satisfied.

24 Hour Online Support

Get help from our experts whenever you need it.

As Featured In

How would your business change if you had virtually unlimited labor at next to no cost?

Did you know you can outsource just about anything to someone on the other side of the world?

Posting a project takes seconds and in minutes you will begin to receive bids.

Our secure milestone payment system means you only pay for the work you are happy with.

1,929,696 freelance professionals

\$68,369,372 USD user earnings

856,117 projects completed

Everything from the composition of a rap song to help teach English to Chinese students to designing for a luxury hotel in Barbados.

The Economist

Search: HITs

GO!

Complete simple tasks that people do better than computers. And, get paid for it. [Learn more.](#)

Choose from thousands of tasks, control when you work, and decide how much you earn.

If you are a software developer and would like to learn more about using Amazon Mechanical Turk APIs, [click here.](#)

Get Started Now

 Step 1 - Find - Find HITs to work on

What is a HIT?

HIT stands for Human Intelligence Task. These are tasks that people are willing to pay you to complete. For example a HIT might ask: "Is there a pizza parlour in this photograph?" Typically these tasks are extraordinarily difficult for computers, but simple for humans to answer.

How do I find HITs to work on?

Just click the "Get Started Now" button to browse thousands of available HITs, without any obligation.

 Step 2 - Finish - Work & submit your HIT

How do I work on a HIT?

Once you have chosen a HIT to complete, click the "Accept HIT" button to have it assigned to you.

Follow the instructions on how to complete the HIT and when you are done, click the "Submit" button to save your answer.

 Step 3 - Earn - Get paid for your work

How do I get paid?

You are paid when your answer is approved by the person that listed the HIT.

The money you earn is deposited into your Amazon.com account, where you can turn it into cash at any time by transferring it to your personal checking account.

Choose from thousands of tasks, control when you work, and decide how much you earn.

If you are a software developer and would like to learn more about using Amazon Mechanical Turk APIs, [click here](#).



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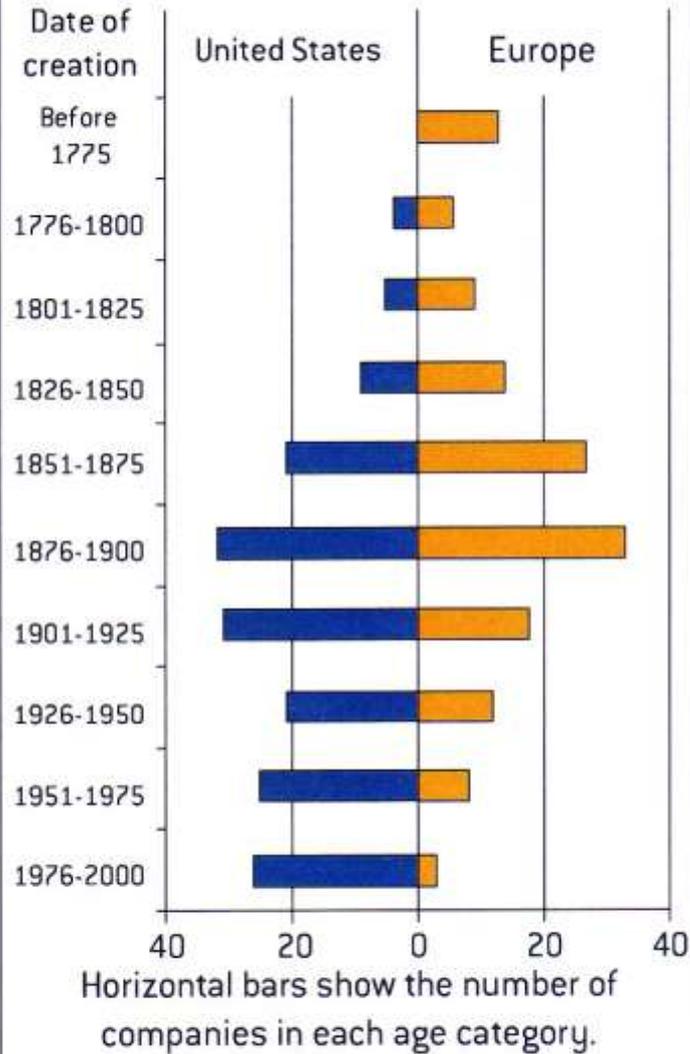
How do I get paid?
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The money you earn is deposited into your Amazon.com account, where you can turn it into cash at any time by transferring it to your personal checking account.



Questions en débat

Fig 1: 'Population pyramid' for largest US/European companies



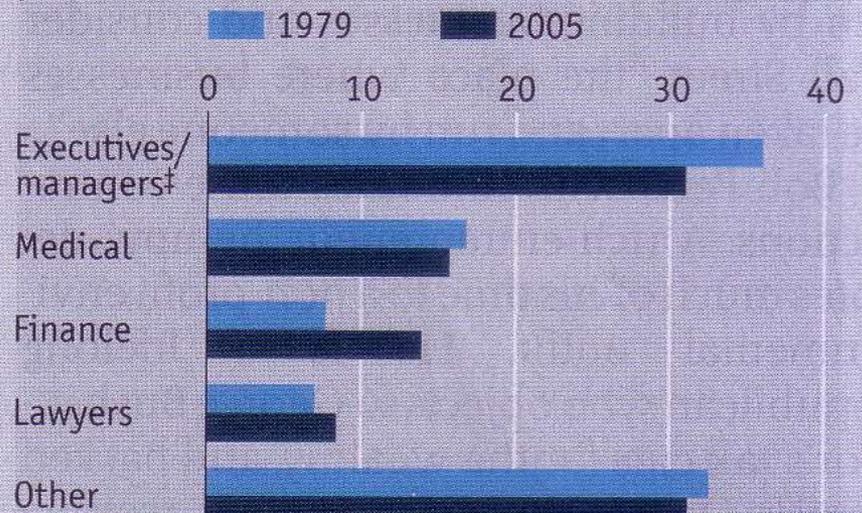
Source: Bruegel, based on FT Global 500 ranking of the world's largest listed companies, 30 September 2007.

The age of Mammon

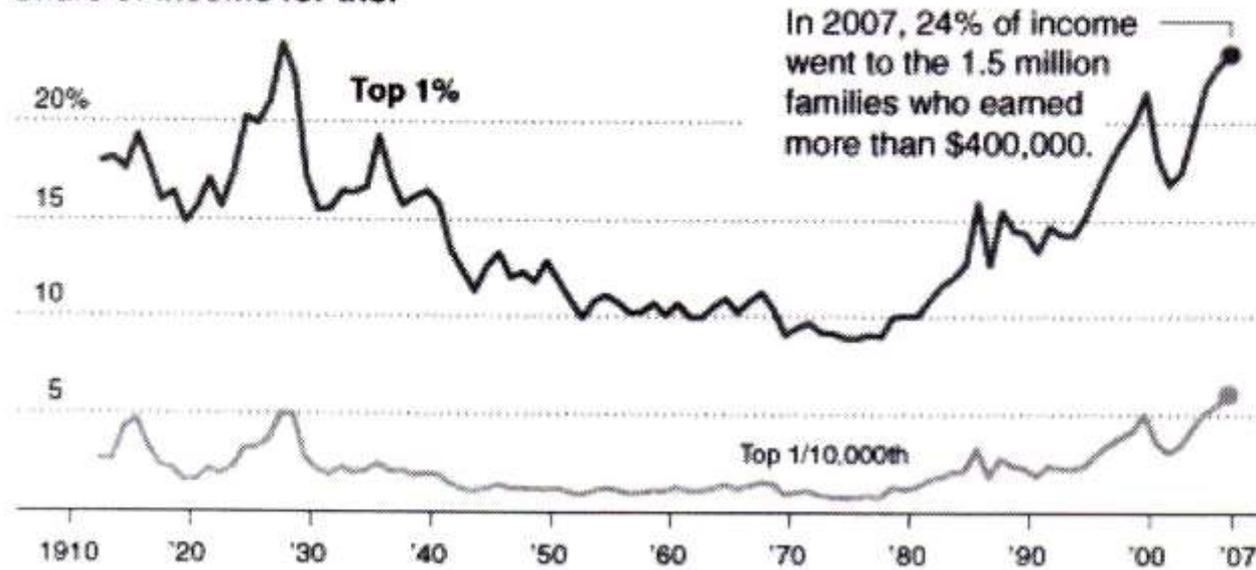
Percentage of total income earned by America's*:



Percentage of earners in top 1% income bracket by profession*



Share of income for the:



Share of income for the bottom 90%

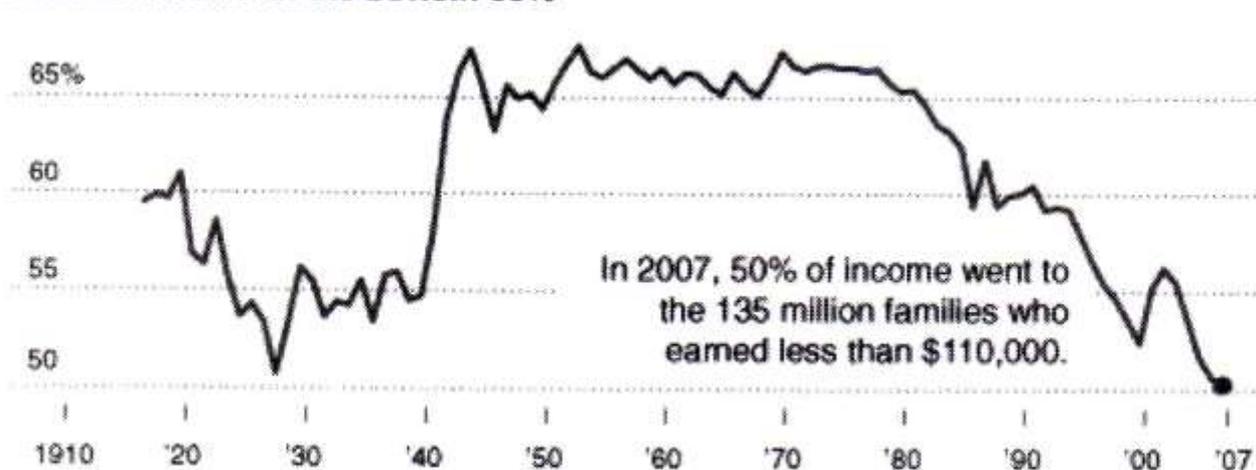
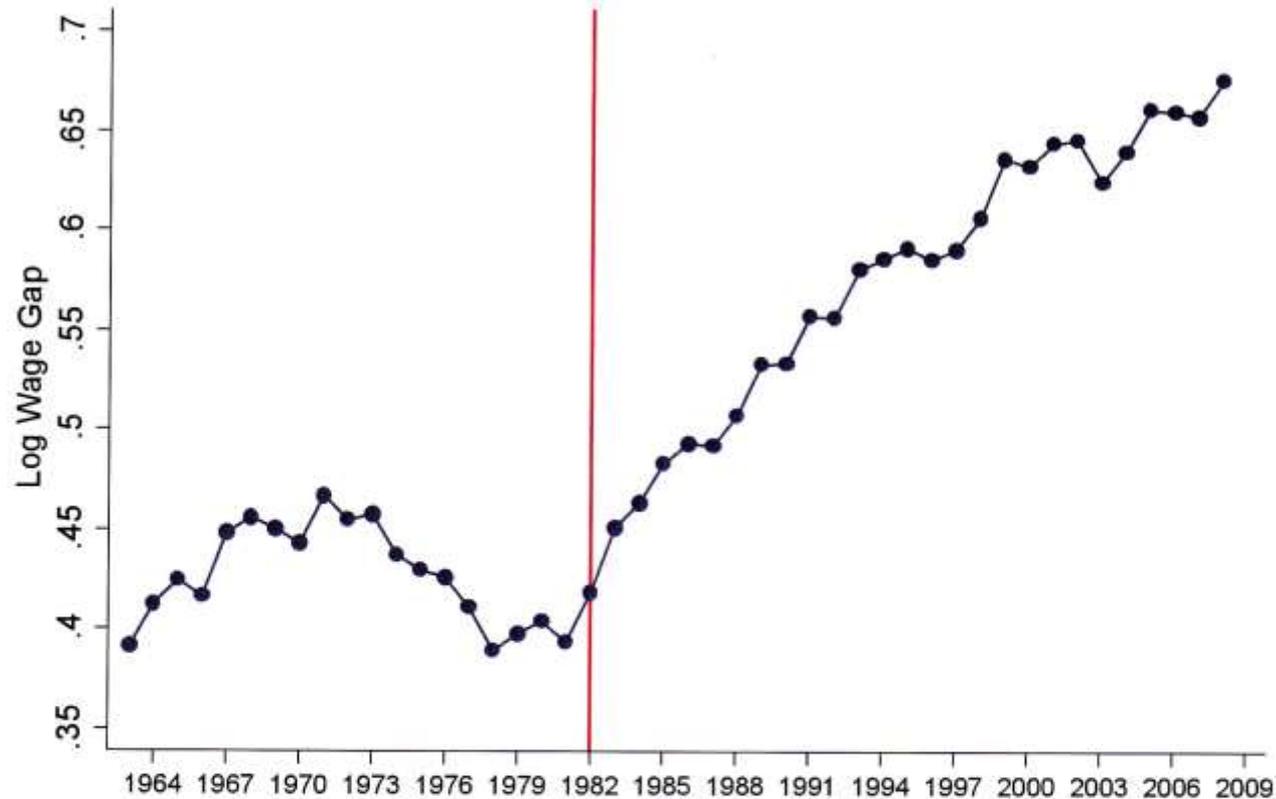


Figure 1

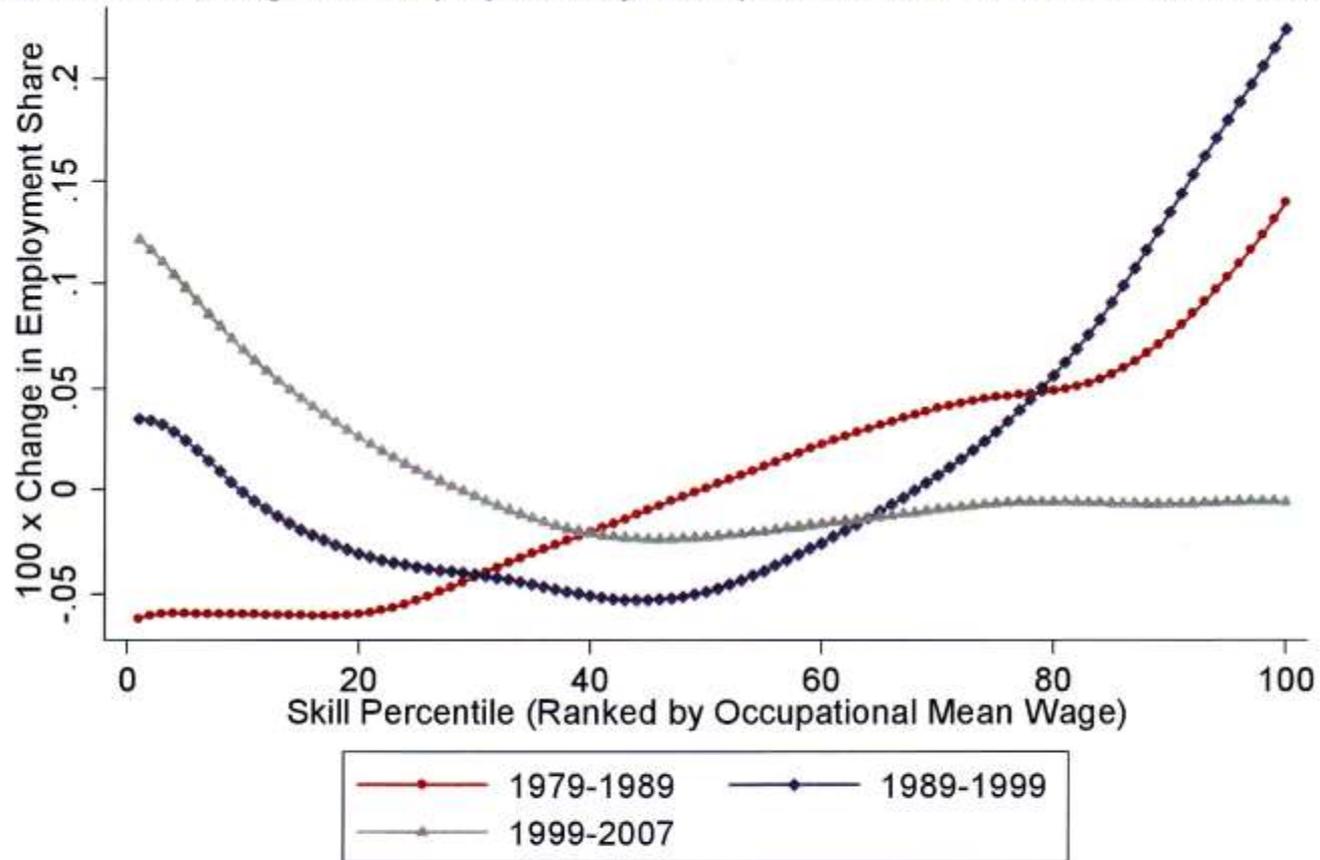
Composition Adjusted College/High-School Log Weekly Wage Ratio, 1963-2008



Source: March CPS data for earnings years 1963-2008. Log weekly wages for full-time, full-year workers are regressed in each year on four education dummies (high school dropout, some college, college graduate, greater than college), a quartic in experience, interactions of the education dummies and experience quartic, and two race categories (black, non-white other). The composition-adjusted mean log wage is the predicted log wage evaluated for whites at the relevant experience level (5, 15, 25, 35, 45 years) and relevant education level (high school dropout, high school graduate, some college, college graduate, greater than college). The mean log wage for college and high school is the weighted average of the relevant composition adjusted cells using a fixed set of weights equal to the average employment share of each group. The ratio of mean log wages for college and high school graduates for each year is plotted. See Data Appendix for more details on treatment of March CPS data.

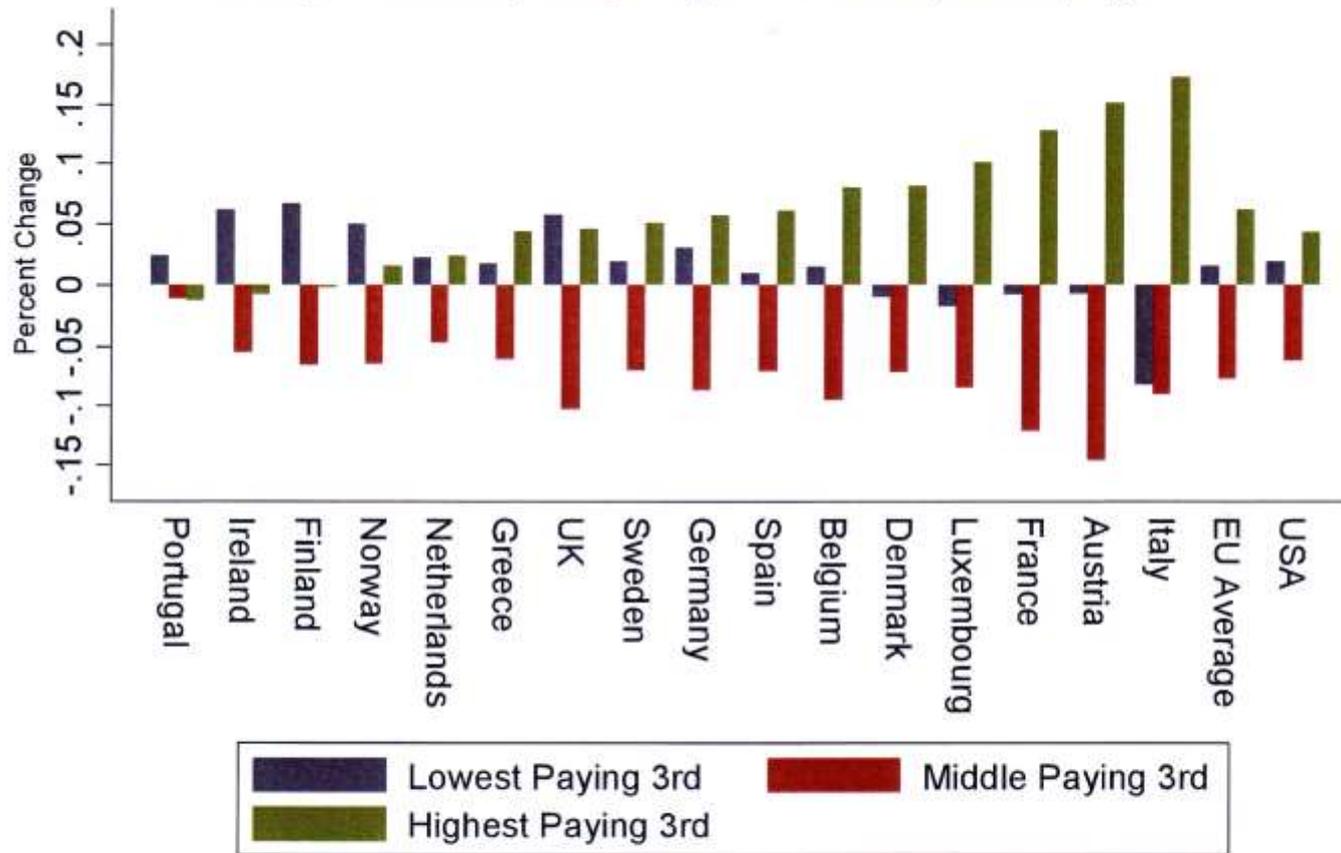
Figure 10

Smoothed Changes in Employment by Occupational Skill Percentile 1979-2007



Source: Census IPUMS 5 percent samples for years 1980, 1990, and 2000, and Census American Community Survey for 2008. All occupation and earnings measures in these samples refer to prior year's employment. The figure plots log changes in employment shares by 1980 occupational skill percentile rank using a locally weighted smoothing regression (bandwidth 0.8 with 100 observations), where skill percentiles are measured as the employment-weighted percentile rank of an occupation's mean log wage in the Census IPUMS 1980 5 percent extract. Mean education in each occupation is calculated using workers' hours of annual labor supply times the Census sampling weights. Consistent occupation codes for Census years 1980, 1990, and 2000, and 2008 are from Autor and Dorn (2009a).

Change in Employment Shares by Occupation 1993-2006 in 16 European Countries
Occupations Grouped by Wage Tercile: Low, Middle, High



Source: Data on EU employment are from from Goos, Manning and Salomons, 2009a. US data are from the May/ORG CPS files for earnings years 1993-2006. The data include all persons ages 16-64 who reported having worked last year, excluding those employed by the military and in agricultural occupations. Occupations are first converted from their respective scheme into 326 occupation groups consistent over the given time period. These occupations are then grouped into three broad categories by wage level.

Tendances lourdes:
synchronisme technologique
mondialisation à grain fin
mini FMN
métropolisation et clusterisation

Risques, déstabilisation, mais aussi opportunités pour l'Europe
et les US (+ pour ces derniers : démographie, immigration, taille de
marché)

impasse post-industrielle /sablier, recréer de la compétence

I-économie : un modèle transitoire

raisons du retour manufacturier : compétence, qualité, flexibilité /marché
focalisation

intégrer économie de l'innovation et de la production

Emploi manufacturier en France

- 500 000 depuis 10ans

De 24% du PIB à 14% (Allemagne 30%; zone euro 22%)

EBE 2000-2007 + 67% en Allemagne

- 14% en France

depuis 2008, la crise cible l 'industrie

	2009	2010	2011
industrie	-80	-14	-5
ensemble	-114	+12	+18

(source : trendeo)