

information & economics

concepts of information

April 5, 2010

who owns information?

library science

philosophy

cognitive science

computer science

economics

social sciences, sciences

who owns?

bell labs

"basic results [of information theory]
are aimed in a very specific
direction ... not necessarily relevant
to such fields as psychology, economics,
and other social sciences."

--Shannon, "Bandwagon Effect"

overview

why economics

economics & information

a historical account

economics, information, & development

why economics?

information age gurus?

why economics?

information age gurus?

Charles Hamlin
William Harding
Daniel Crissinger
Roy Young
Eugene Mayer
Eugene Black
Marriner Eccles

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*"veritable rock-star economist"

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Ben Bernanke

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economics & the public sphere

econopundits

New York Times: Paul Krugman

New York Times: “the economic scene”

New Yorker: Malcolm Gladwell

New Yorker: James Surowieki

The Wisdom of Crowds

econoblogging:

Brad deLong, Tyler Cowan, Matthew Yglesias,
Marginal Revolution, Crooked Timber ...

economics & the public sphere

economic argument & contrarian glee

Steven Leavitt & Stephen Dubner,
Freakonomics, 2006

Superfreakonomics, 2009

economics and academia



BLOGS

Justin Fox

On: **Finance**, **Competition**,

Wresting the Economic Debate Away from the Economists

9:00 AM Wednesday March 31, 2010 | [Comments \(11\)](#)

David Brooks **wondered** in his *New York Times* column last week if economists shouldn't try to become more like historians. That was interesting to read, given that I had just spent time with a bunch of historians (and a few other humanities professors) who were wondering how they could become more like economists.

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economics and academia



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MODELED BEHAVIOR

A Stylized Foray Into the World of Highly Fashionable Ideas

[Home](#) [Karl Smith](#) [Adam Ozimek](#) [Niklas Blanchard](#)

Is economics a science?

Thursday ~ March 17th, 2011 in [Economics](#), [Global Warming](#), [Science](#) | by [Adam Ozimek](#)

This is a question that popped up on twitter last night and I want to address it somewhat. First, I want to say up front that there is more agreement economists than the blogosphere and popular media would suggest. [Here](#) is Tyler Cowen making the same point, and I'd venture that most of the economist bloggers, even those who disagree with the mainstream on a lot, would agree with that

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the title? let
can find an t
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superiority

"Economics has come nearer than any other social science to an answer to that central question of all social sciences, how the combination of fragments of knowledge existing in different minds can bring about results which, if they were to be brought about deliberately, would require a knowledge on the part of the directing mind which no single person can possess."

Hayek, "Economics and Knowledge," 1937

the social science

"Economics is far more versatile than its critics believe. It is a method of analysis and not just a field of study. The method is to combine two core assumptions—individual optimization and equilibrium—with various sets of specific assumptions adapted to different fields of application. **The method is applicable not only to the market system but also the social and political environment within which this system is embedded.** Social and psychological insights can be encapsulated in the specification of interdependent preferences, which hold the key to modelling all kinds of institutional behavior in rational terms."

Buckley & Casson. "Economics as an imperialist social science" 1993

neither irony nor shame?

"Economics is not only a social science, it is a genuine science ... refutable implications. ...By almost any market test, economics is the premier social science. The field attracts the most students, enjoys the attention of policy-makers and journalists, and gains notice, both positive and negative, from other scientists. In large part, the success of economics derives from its rigor and relevance as well as from its generality. The economic toolbox can be used to address a large variety of problems drawn from a wide range of topics."

E.P. Lazear, "Economic Imperialism," 2000
Economics II

lest we forget

freedom, free information & free markets



Lou Rosetto, MBA

Kevin Kelly

Chris Anderson

... Esther Dyson

George Gilder

Newt Gingrich

Alvin Toffler

Economics 12

information Rules

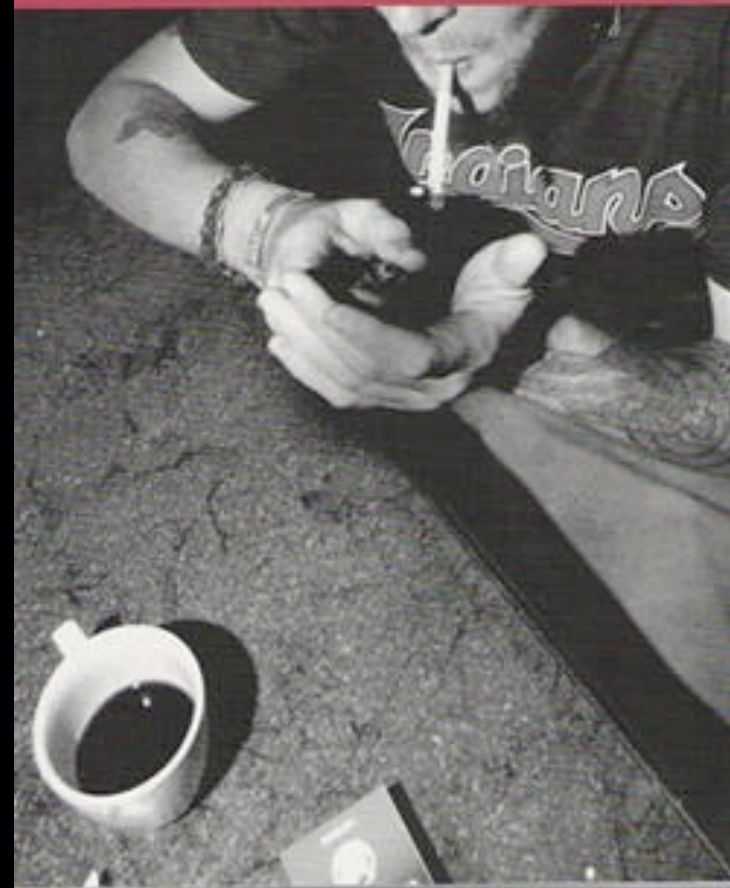


A Strategic Guide to the
Network Economy

*CARL SHAPIRO AND
HAL R. VARIAN*

information
Rules

PUNK RULES OK
CHRIS WALTER



*CARL SHAPIRO AND
HAL R. VARIAN*

attractiveness

broad explanatory power

robust modelling

whiggish history

- Mandeville's "harlot & highwayman"
- progress: rising height, weight, gdp

pareto efficiency

predictable future

"the competitive model virtually made economics a branch of engineering" -- Stiglitz

self-regulating systems

a field in step

political economy to economics

law and economics

academic consensus

conceptual consensus

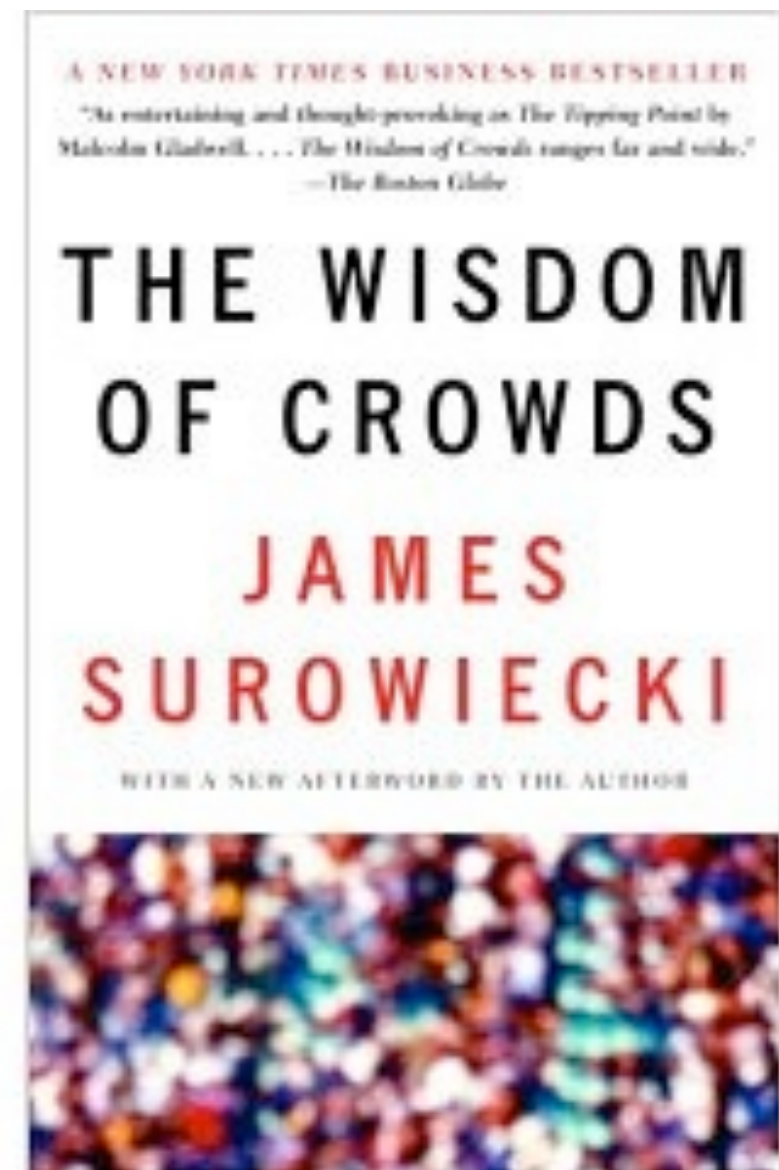
markets, preferences, equilibrium & rationality

modelling consensus

"do the math"

the decline of "high-development theory"

wisdom



THE TECHNIUM

Progression of the Inevitable

predictability

"These Late Scholastics observed the existence of economic law, inexorable forces of cause and effect that operate very much as other natural laws." <http://mises.org/etexts/austrian.asp>

The procession of technological discoveries is inevitable. When the conditions are right – when the necessary web of supporting technology needed for every invention is established – then the next adjacent technological step will emerge as if on cue. If inventor X does not produce it, inventor Y will. ...the paths of technologies are inevitable. They are 1) that quantifiable trajectories of progress don't waver despite attempts to shift them (**see my Moore's Law**).

-- Kevin Kelly, 2009

hesitations

"A belief in spontaneous progress must make us blind to the role of government in economic life. This role consists often in altering the rate of change ... if we believe that rate to be unalterable--or even worse, if we deem it a sacrilege to interfere with it--then of course no room is left for intervention."

Karl Polanyi, *The Great Transformation*, 1944

lest Surowieki forgot

MEMOIRS
OF
EXTRAORDINARY POPULAR DELUSIONS
AND THE
Madness of Crowds.

OC
BY CHARLES MACKAY, LL.D.

AUTHOR OF "EGERIA," "THE SALAMANDRINE," ETC

1852

Mississippi Scheme

South-Sea Bubble

Tulipomania

...

Dot.com boom?

...

sub-prime mortgages

hesitations

goodhart not moore?

gresham not graham

moral hazard

herd behavior
and the Keynesian beauty contest

An Engine, Not a Camera

How Financial Models Shape Markets

Donald MacKenzie



2008 -- end of empire?

a field in crisis?

freshwater vs saltwater

old rebels

Stiglitz, new Keynesians

new rebels

Greenspan?

Posner??

return of the repressed?

marxists

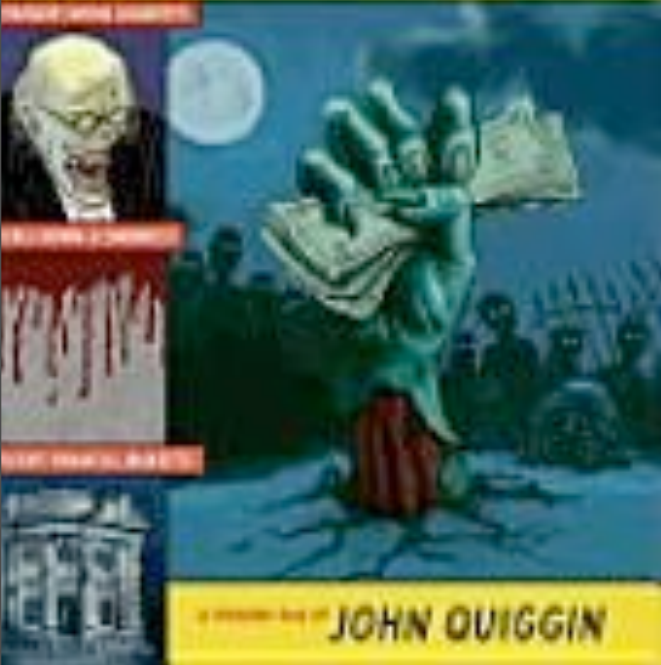
behaviorists

Samuelson

Richardson?

ZOMBIE ECONOMICS

HOW DEAD IDEAS STILL WALK AMONG US



The Great Moderation
Efficient Markets
Trickle Down
Privatization

or just a pause?

"The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist."

--Keynes

Zombie economics --John Quiggin, 2010



re-recantation?

"But the notion that somehow my views on regulation were predominant and effective at influencing the Congress is something you may have perceived. But it didn't look that way from my point of view."

Alan Greenspan, testimony, 4/7/2010

"Today's competitive markets, whether we seek to recognise it or not, are driven by an international version of Adam Smith's "invisible hand" that is unredeemably opaque. **With notably rare exceptions** (2008, for example), the global "invisible hand" has created relatively stable exchange rates, interest rates, prices, and wage rates."

Alan Greenspan, *FT*, 3/30/2011

Economics 24

with notably rare exceptions

Russian Roulette is a fun, safe game for all the family to play

Adolf Hitler was tolerant of diverse religions and cultures

Japanese nuclear reactors have been secure from earthquakes

the United States follows its treaty obligations

Newt Gingrich is a loyal and faithful husband

Germany remained at peace with its neighbors

Charles Manson has lived a peaceful life

Mrs. Lincoln enjoyed the play

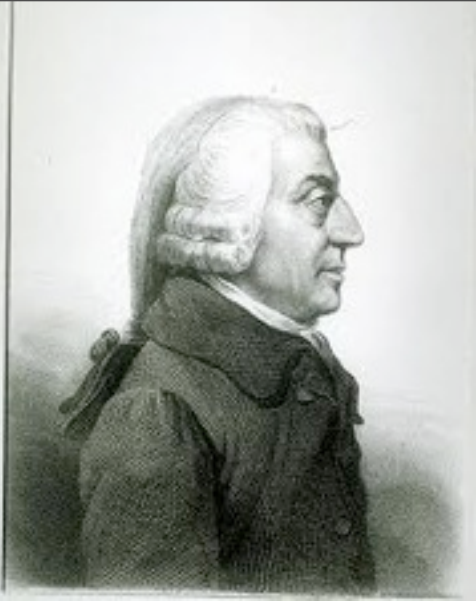
overview

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economics & information

a historical account

economics, information, & development



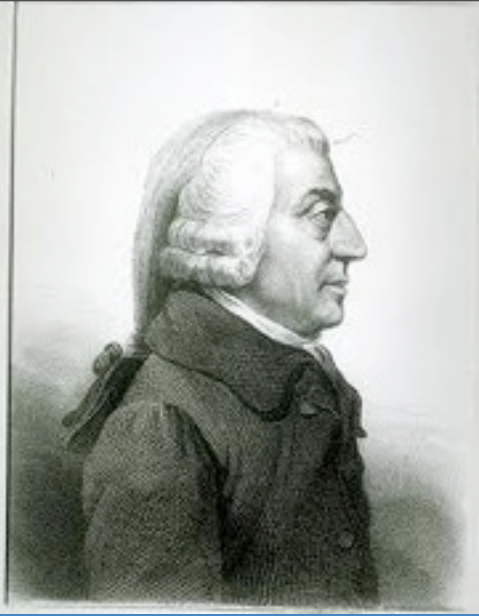
antecedents

gleaning

"English wool, is said indeed, during the course of the present century, to have fallen a good deal in proportion to its quality. Quality, however, is so very disputable a matter, that I look upon all **information of this kind as somewhat uncertain.**"

receiving

"By the **information which they received**, they judged whether it was worth while to make a settlement there, or if the country was worth the conquering."



antecedents

"the real interests of the servants
is by no means the same with that of
the country, and the
most perfect information
would not necessarily put an end to
their oppressions."
--Adam Smith, *Wealth of Nations*, 1776

shanon-esque or dretskean?

"the nerves which carry
the information ... to the brain"

--Thomas Malthus, *Principles
of Population*, 1830

"these machines have generally been
established for the purpose of
transmitting information during war"

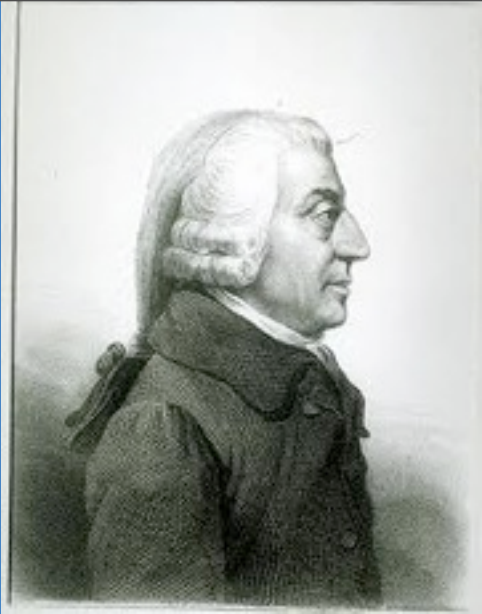
--Charles Babbage, *On the Economy of Machinery
and Manufactures*, 1832

going neural

"Perfectly reflex actions, such as that of breathing during sleep, are performed by the responsibility of the local nerve centres without any reference to the supreme central authority of the thinking power, which is supposed to reside in the cerebrum. But all deliberate movements require the attention of the chief central authority: **it receives information from the nerve centres** or local authorities and perhaps in some cases direct from the sentient nerves, and sends back detailed and complex instructions to the local authorities, or in some cases direct to the muscular nerves, and so co-ordinates their action as to bring about the required results"

--Alfred Marshall, *Principles of Economics*, 1890

Economics 30



minds to machines

"Systems in many respects resemble machines.

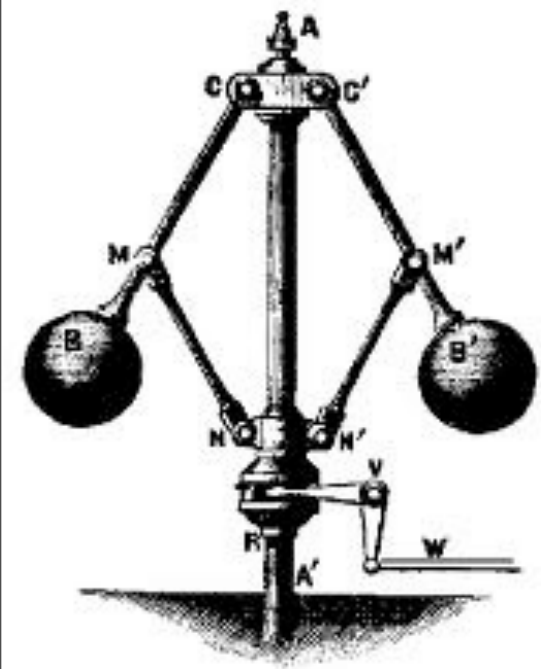
A machine is a little system, created to perform, as well as to connect together in reality, those different movements and effects which the artist has occasion for. A system is an imaginary machine invented to connect together in fancy those different movements and effects which are in reality performed."

--Adam Smith, *Wealth of Nations*, 1776

principia

"When I first saw the plan and superstructure of your very ingenious and very learned Treatise on the Wealth of Nations, it gave me the compleat idea of ... A System, that might fix some first principles in the most important of sciences, the knowledge of the human community and its operations. That might become ***principia*** to the knowledge of political economy as Mathematicks are to Mechanics, Astronomy, and the other Sciences."

--Thomas Pownall, *Letter ... to Adam Smith*, 1776



spectator to governor

REGULATING POWER.

"That beautiful contrivance the governor of the steam-engine, must immediately occur to all who are familiar with that admirable machine. Wherever the increased speed of an engine would lead to injurious or dangerous consequences, ... In the

dock-yard at Chatham, the descending motion of a large platform, on which timber is raised, is regulated by a

governor; but as the weight is very considerable, the velocity of this governor is still further checked by causing its motion

to take place in water."

--Charles Babbage, *Economy of Machinery* ... 1832

Economics 33

self-regulation

not state regulation

The Road to Serfdom, 1944

The Fatal Conceit, 1988

[cp Friedman, *Capitalism & Freedom*, 1962]

knowledge & information

“Economics and Knowledge,” 1937

“The Use of Knowledge in Society,” 1945



Friedrich von Hayek
1889–1992



economics & knowledge

"Clearly there is here a problem of the division of knowledge which is quite analogous to, and at least as important as, the problem of the division of labour. ... instead of showing what bits of information the different persons must possess in order to bring about the result, we fall in effect back on the assumption that everybody knows everything."

Hayek, "Economics and Knowledge," 1937



invisible hands

"... the spontaneous actions of individuals will under conditions which we can define bring about a distribution of resources ... as if it were made according to a single plan"

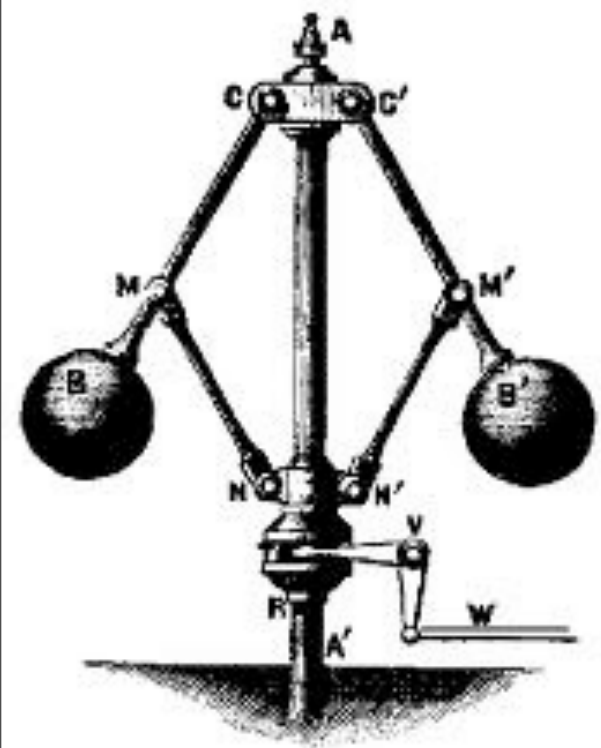


mechanisms again

"the price system ... a mechanism for communicating information"

"in a system where knowledge of the relevant facts is dispersed among many people, prices can act to coordinate the separate actions"

"the unavoidable imperfection of man's knowledge and the consequent need for a process by which knowledge is constantly communicated and acquired"



convergence

Shannon & Weaver to von Neumann & Morgenstern

(*Theory of Games*, 1944)

"perfect information"

Babbage to Wiener

*Cybernetics, or Control and Communication
in the Animal and the Machine*, 1948

Bateson

Herb Simon

AI and economic decision making

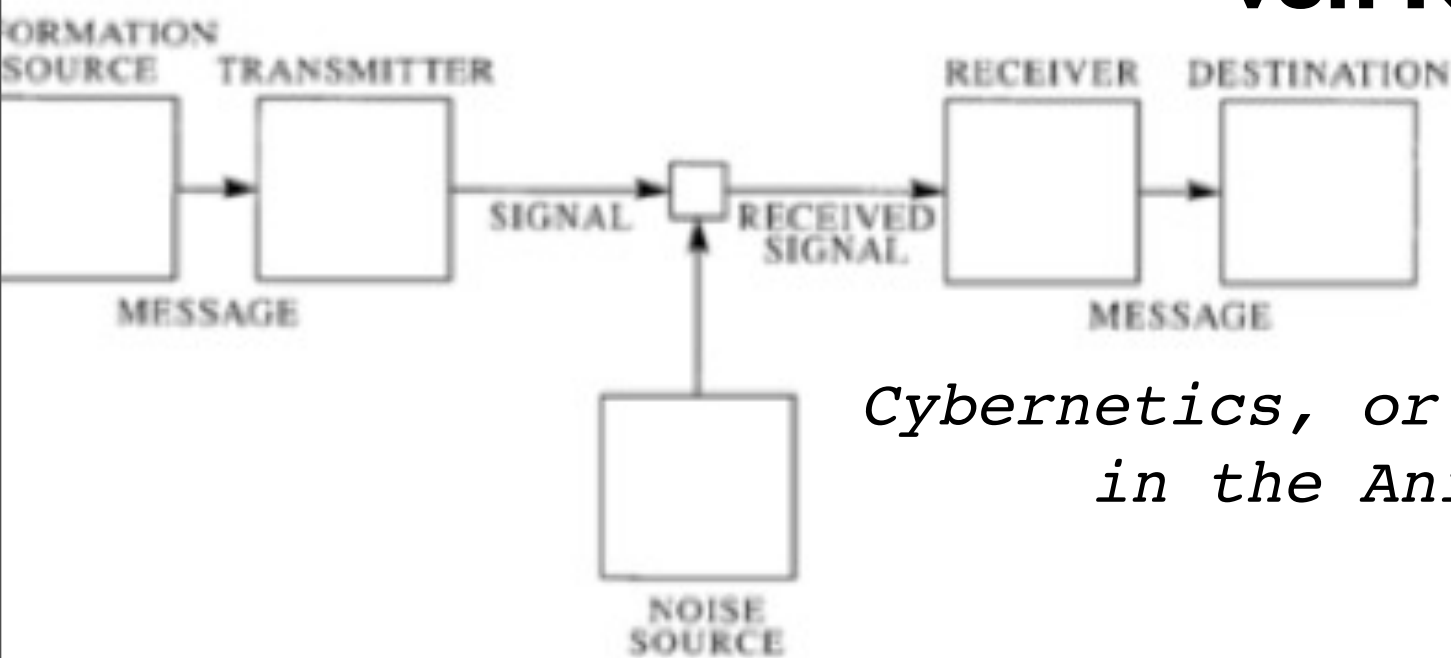


Fig. 1—Schematic diagram of a general communication system.

becoming established

"One should hardly have to tell academicians
that information is a valuable resource:
knowledge is power"

information, search, uncertainty,
advertising, signalling

George Stigler, "The Economics of
Information," 1961

embracing knowledge

"information as that which is
being communicated becomes
identical with 'knowledge' in the
sense of that which is known"

--Fritz Machlup,
*The Production and Distribution of
Knowledge*, 1963

problem solved

"Chicago School ...
one simply analyzed
the special factors
determining the
demand for and
supply of
information, just
as one might
analyze the factors
affecting the
market for wheat."

--Stiglitz

"All the aspects of knowledge--its creation,
its storage, its retrieval, its treatment as
property, its role in the functioning of
societies and organizations--can be (and have
been) analyzed with the tools of economics.

Knowledge has a price and a cost of
production; there are markets for knowledge,
with their supply curves, and marginal rates
of substitution."

--Herbert Simon,

"The many shapes of knowledge," 1999

Economics 41

information's place

"Stigler ... argued that once the real costs of information were taken into account, the standard results would still hold. Information was just a transaction cost. ... Stigler was wrong."

--Stiglitz

"As the market grows in these dimensions, there will appear a set of firms which specialize in collecting and selling information. They may take the form of trade journals or specialized brokers ... there is a strong tendency towards monopoly ... a 'standard' source for trade information".

--Stigler,

"The Economics of Information," 1961

voices of dissent

" 'knowledge' is rarely reducible
to information"

by neglecting the whole problem of
information, the perfect competition model
condemns itself not only to unrealism but to
inadequacy even as a hypothetical system"

G.B. Richardson,
Information & Investment, 1960

[or "the economics of imperfect knowledge"]

later dissent

"When there is uncertainty, there is usually the possibility of reducing it by the acquisition of *information*.

Indeed, information is merely the negative measure of uncertainty. ...

--Kenneth Arrow

"Information & Economic Behavior," 1973

alternatives

"I will think rather of information as a general descriptive term for an economically interesting **category of goods** which has not hitherto been accorded much attention by economic theorists....information is like a commodity ... But ... only to a limited extent"
--Arrow, "Information & Economic Behavior," 1973

non-excludible; non-rivalrous

differential information

adverse selection

Economics 45

nihilistic acts

the Denning assumption

dissent from methodological individualism "implies that the behavior of men is directed by mysterious forces that defy analysis and description."

Ludwig von Mises, *The Ultimate Foundation of Economic Science*, 1962

"Many resource-based theorists reject formal modelling altogether, and adopt the nihilistic stance that in a complex world any model of the firm will distort more than it illuminates."

Mark Casson, *Information and Organization*, 1997

limits to organization

"Economy arises only if the signals transmitted are summaries of the information received . . . the costs of transmission are much lower than those of acquisition, and it is possible that joining the observers into a single organization can represent a net economy. . . . Once learned, however, it is cheaper to reuse the same system than to learn a new one . . . If external conditions change, an originally optimal communication system may no longer be the one that would be chosen. . . . Eventually the communication system may be very inefficient at handling signals, and the firm may vanish." -- Arrow

more problems?

"There is an incentive for sellers to market
poor quality merchandise ...

The difficulty of distinguishing good quality
from bad is inherent in the business world.

An asymmetry in available information has
developed: for the sellers now have more knowledge
about the quality of a car than the buyers
...Gresham's law has made a modified
reappearance."

George Akerlof, "The Market for Lemons: Quality,
Uncertainty, and the Market Mechanism," 1970

information plugs a gap?

"I was struck by the imperfections of information ... asymmetries ... between those governing and those governed ."

"peculiar implications of the model ... it seemed not to address issues such as incentives and motivation. But much of the research was directed not at these big gaps."

--Stiglitz

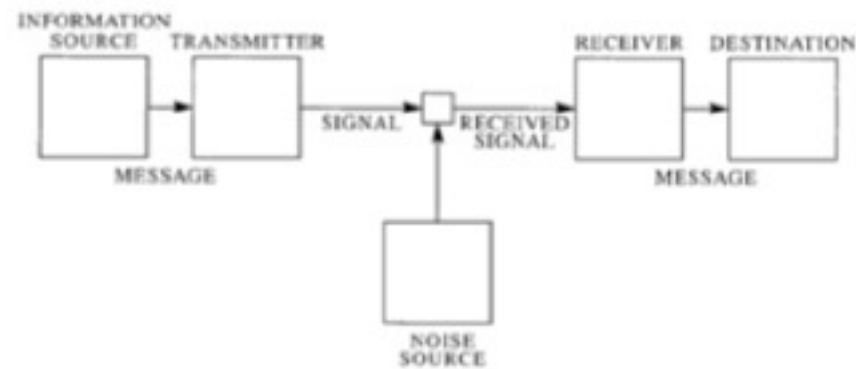


Fig. 1—Schematic diagram of a general communication system.

perfection

what do we mean by
full, im/perfect, in/complete, or a/symmetrical
information?

and how do we perfect, complete, or make full or
symmetrical?

"it is hard to imagine what a world with
perfect information would be like"

--Stiglitz

Economics 50

range or binary?

"While there is a single way in which information is perfect, there are an infinite number of ways in which information can be imperfect."

Stiglitz

moreover

"perfect information ... free, complete, instantaneous, and universally available ... [is] one of the defining features of the perfect market ...

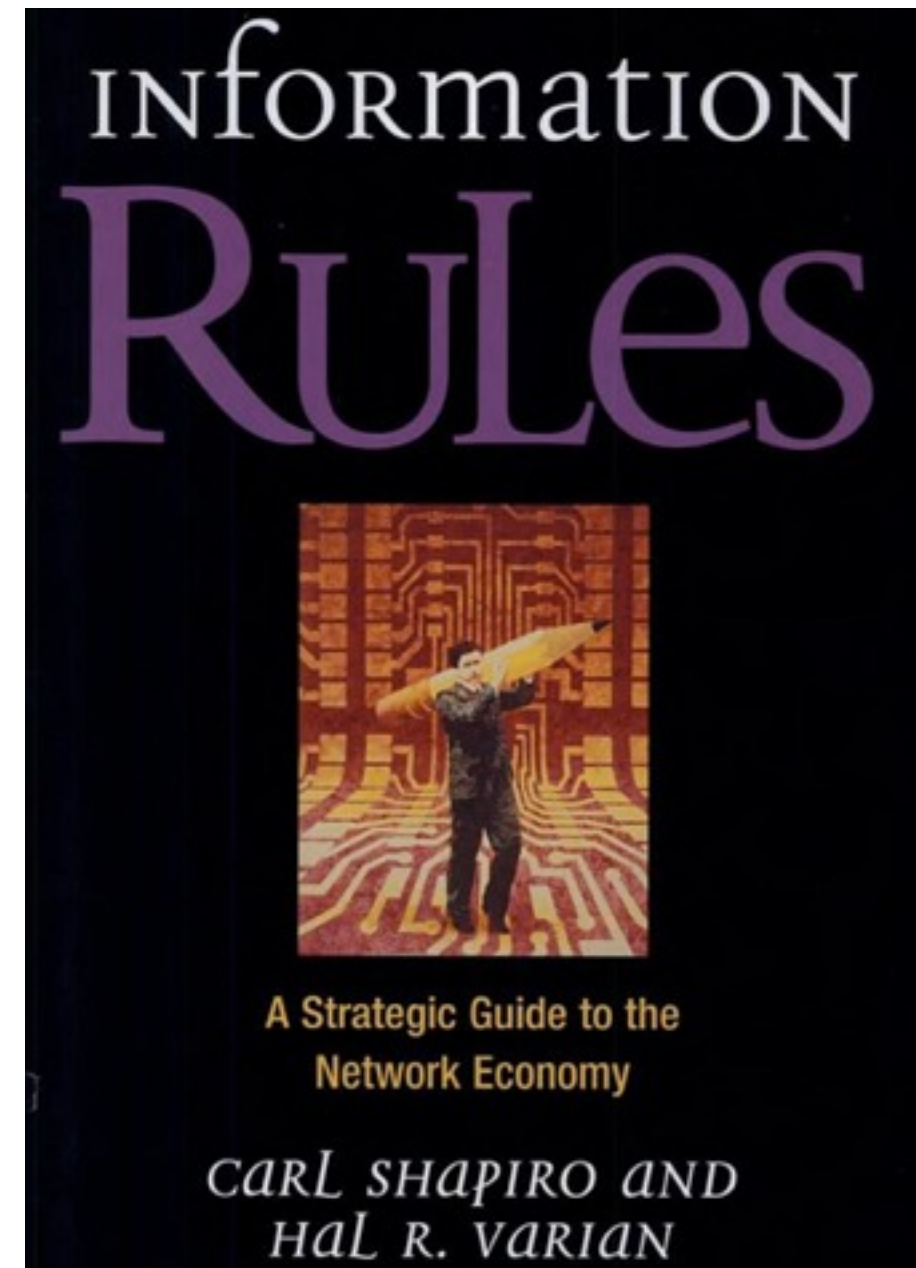
"at the same time, both the perfect and the actual market structure ... depend on information being a commodity, ... costly, partial, and deliberately restricted"

--James Boyle,

Shamans, Software & Spleen, 1996

Economics 52

economic information?

The Google logo is displayed in its characteristic multi-colored font (blue, red, yellow, green, red) on a white background.

back to the news

Habermas

news as commodity

vs

news as informing the public sphere

overview

why economics

economics & information

a historical account

economics, information, & development

moving knowledge?

knowledge management

the HP conundrum

sticky vs leaky

resolution

spatial divisions

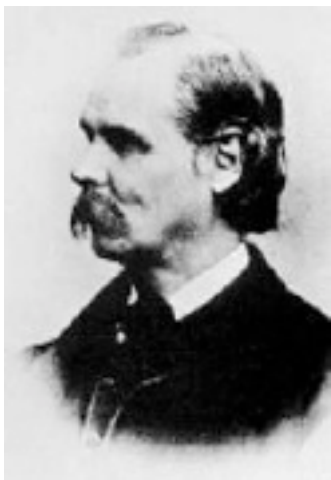
"somewhere in the world a new opportunity
for the use of some raw material, say
tin, has arisen ..." --Hayek, 1945

divisions of

commodities

labor

knowledge



localization

[T]he mechanical faculty of Lancashire is said to be due to the influence of Norman smiths who were settled at Warrington by Hugo de Lupus in William the Conqueror's time. And the greater part of England's manufacturing industry before the era of cotton and steam had its course directed by settlements of Flemish and other artisans; many of which were made under the immediate direction of Plantagenet and Tudor kings. These immigrants taught us how to weave woollen and worsted stuffs, They taught us how to cure herrings, how to manufacture silk, how to make lace, glass, and paper, and to provide for many other of our wants.

Alfred Marshall, *Principles of Economics*, 1920 [1890]

mysteries

When an industry has thus chosen a locality for itself, it is likely to stay there long: so great are the advantages which people following the same skilled trade get from near neighbourhood to one another. **The mysteries of the trade become no mysteries; but are as it were in the air,** and children learn many of them unconsciously. Good work is rightly appreciated, inventions and improvements in machinery, in processes and the general organization of the business have their merits promptly discussed: if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus it becomes the source of further new ideas. And presently subsidiary trades grow up in the neighbourhood, supplying it with implements and materials, organizing its traffic, and in many ways conducing to the economy of its material. -- Marshall

limits to localization?

Every cheapening of the means of communication, every new facility for the free interchange of ideas between distant places alters the action of the forces which tend to localize industries. Speaking generally we must say that a lowering of tariffs, or of freights for the transport of goods, tends to make each locality buy more largely from a distance what it requires; and thus tends to concentrate particular industries in special localities: but on the other hand everything that increases people's readiness to migrate from one place to another tends to bring skilled artisans to ply their crafts near to the consumers who will purchase their wares. --Marshall

mobility

The Great Transformation

im/mobility

commodities

finance

people?

ideas, ethics

nationally (19c)

internationally (20c)

gaps

"human capital .. could be studied using the economic tools developed for objects"

"Must economic theory recognize a different kind of good--ideas--if it is to explain .. growth?... If there are only object gaps, the implications for poor countries are much more pessimistic than if there are also idea gaps"

--Paul Romer

gap bridging

"Idea gaps, in contrast are relatively easy to solve. ... an important fraction of worldwide poverty may be due to an idea gap that can be reduced at relatively low cost. ... the world already possess the knowledge needed to provide a decent standard of living for everyone on Earth ... crucial pieces of specialized, highly trained human capital can be put to work domestically by inviting in managers and technicians."

--Romer

Economics 63

gap bridging

the object gap disappears?

"Access... through unimpeded flows of the capital goods that are produced in industrialized nations."

..."absorption capacity ..."

disequilibrium?

economic discourse

communication theory

information/knowledge

the place of information