

# information & economics

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**concepts of information**

**Feb 26, 2015**

# final paper

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**Choose a book or seminal paper from what you see as your primary field or area of interest and analyze its use of “information.” You might consider whether the work is internally consistent with regard to “information,” whether its use is similar to the use in other work within the field, or whether use within either the work or the field as a whole differs from how “information” is used elsewhere. Consider the implications of the similarities and distinctions that you discuss.**

**Length: 15-20 pages**

**Deadlines: March 13, submit a topic**

**March 31, present preliminary outline**

**May 7, final presentations**

**May 15, finished paper due**

today

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**how we got here**

**why economics?**

**economics as a field**

**economics & information**

**what does this tell us about “information”?**

**information & symmetry**

# how we got here

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**problematizing “information”**

**historicizing “information”**

**contrasting with “data” and with “knowledge”**

*ahead*

**“information” within certain fields**

*economics*

*education*

*politics*

*development*

*cognitive science*

*communication*

# overview

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# why economics

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## information age gurus?

Charles Hamlin

William Harding

Daniel Crissinger

Roy Young

Eugene Mayer

Eugene Black

Marriner Eccles

Thomas McCabe

William McChesney Martin

Arthur Burns

G. William Miller

Paul Volker

Alan Greenspan\*

Ben Bernanke

Janet Yellen

\*“veritable  
rock-star  
economist”

# economics, information, & the public sphere

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## **econopundits**

*New York Times*: Paul Krugman

*New Yorker*: Malcolm Gladwell

*New Yorker*: James Surowieki (*The Wisdom of Crowds*)

## **econoblogging:**

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

# overmodest?

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“When I hear or read dramatic portrayals of economists’ enormous influence on policy, I don’t know whether to laugh or cry. On the one hand, it is flattering to be thought so influential. On the other hand, I can’t help remembering economist George Stigler’s contrary verdict, delivered in 1976: ‘Economists exert a minor and scarcely detectable influence on the societies in which they live.’”

—Alan Binder “What’s the Matter with Economics,” *NYRB*, Dec 2014.

“If economists could manage to get themselves thought of as humble, competent people on a level with dentists, that would be splendid.”

—J.M. Keynes

today

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**broad explanatory power**

**robust modelling**

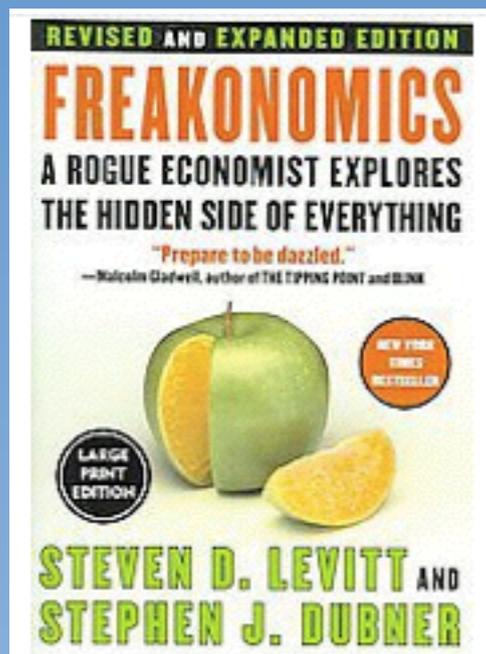
"the competitive model virtually made economics a branch of engineering" -- Stiglitz

**whiggish history**

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

**political economy to economics**

law and economics; Coase Theorem



# a field in step

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**academic consensus**

**conceptual consensus**

markets, preferences, equilibrium & rationality

**modelling consensus**

"do the math" "*anecdotes!!!*"

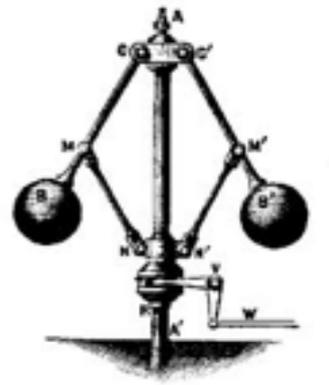
**repelling monsters**

the decline of "high-development theory"

“By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention.”

“Human and machine are alike; as machines so people seek a stable state.”

H. Ross Ashby, *Cybernetics*, 1957



# homeostasis

## **invisible hand**

“I believe every mainstream economist sees the invisible hand as one of the great thoughts of the human mind. A “bad idea”? No, a great one.”

—Alan Binder, *NYRB*, 2014

## **cp cybernetics and feedback**

[CS's Rat] “the idea that both humans and cybernetic machines are goal-seeking mechanisms that learn, through feedback, to reach a stable state. Both are information processors that tend towards homeostasis”

—Hayles

## **equilibrium / pareto efficiency**

# *principia*

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"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

# systematicity

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"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, *Theory of Moral Sentiments*

# understanding the system

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"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

# beyond the market

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"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

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"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

# appalling vistas

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[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*

"The costs of rejecting normality ... are substantial" — Fama, 1970

# economic crisis > 2008

**new rebels:**  $r > g$   
questioning Pareto  
*Panglossian responses*

**old rebels**  
Stiglitz, new Keynesians  
freshwater vs saltwater

**return of the repressed?**

marxists  
behaviorists  
Samuelson  
Richardson?

Graphique 10.10. Rendement du capital (après impôts) et taux de croissance au niveau mondial depuis l'Antiquité jusqu'en 2100



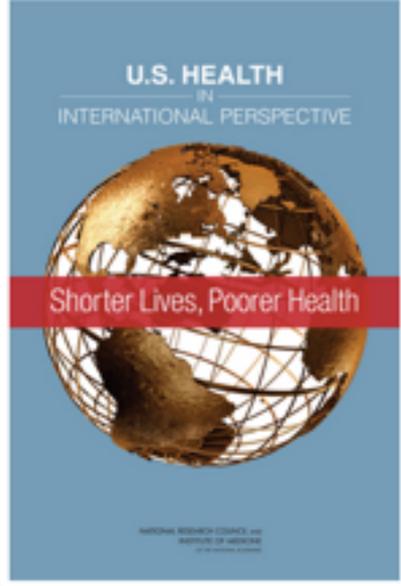
**CAPITAL**

*in the Twenty-First Century*

**THOMAS  
PIKETTY**

TRANSLATED BY ARTHUR GOLDHAMMER

- progress: rising height, weight, health, gdp, equality



## economic ills

“The panel called the pattern of higher rates of disease and shorter lives ‘the U.S. health disadvantage,’ and said it was responsible for dragging the country to the bottom in terms of life expectancy over the past 30 years.

American men ranked last in life expectancy among the 17 countries in the study, and American women ranked second to last. ‘Something fundamental is going wrong .. This is not the product of a particular administration or political party. Something at the core is causing the U.S. to slip behind these other high-income countries. And it’s getting worse.’ ”

— *New York Times* 2013

"Economics is not only a social science, it is a genuine science ... refutable implications."  
—Lazear

## trapped by models?

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"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

"the Streeten-Kuhn maxim that a model is never defeated by facts, however damaging, but only by another model."  
—Hirschman, *Exit, Voice, & Loyalty*, 1969

# doubts

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## **robust modelling**

So economics as a profession has reaped the benefits of being both inside and outside. It has been deeply involved in the world while declaring a studied scientific and political distance from it. It is confident about relevance but cautious about consequence, assertive about authority but impervious to accountability. An enviable but ultimately fragile position.

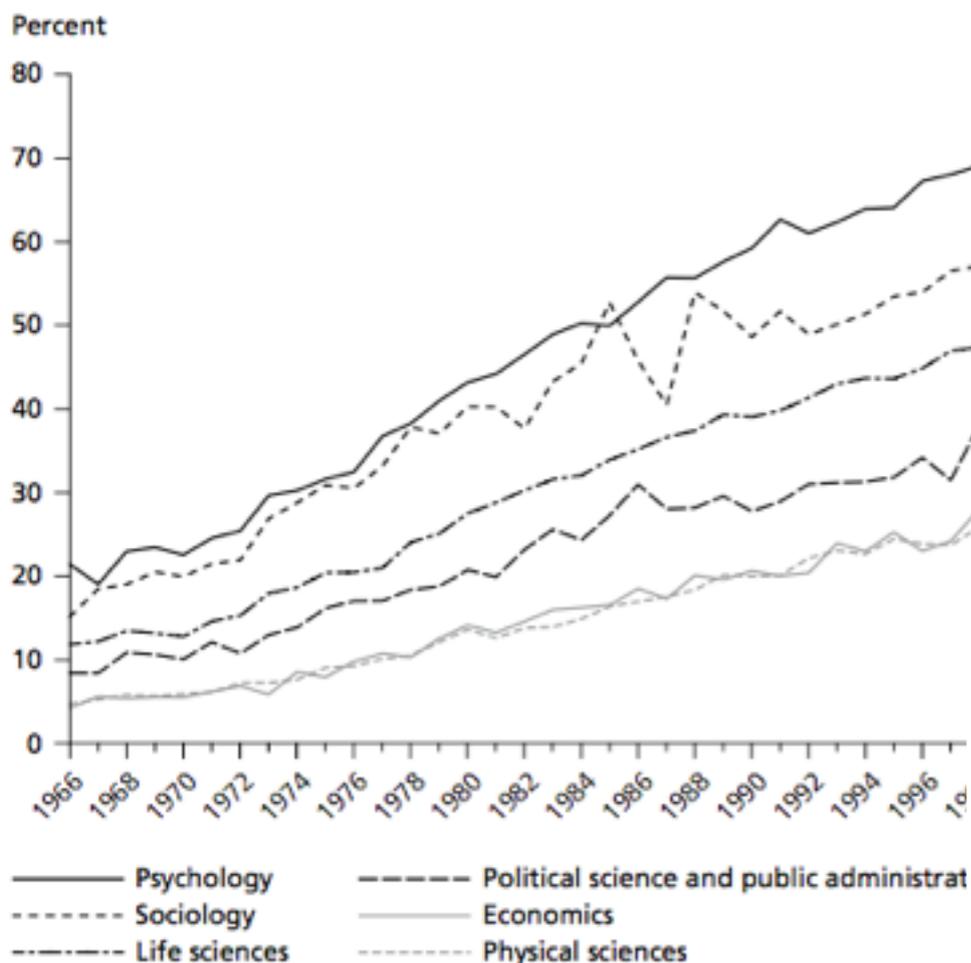
## Economists' Ambivalent Authority



*Marion Fourcade is a professor of sociology at the University of California, Berkeley.*

UPDATED FEBRUARY 9, 2015, 3:32 AM

Figure 1 Percentage of doctorates awarded to women in selected disciplines, 1966–2011



superiority

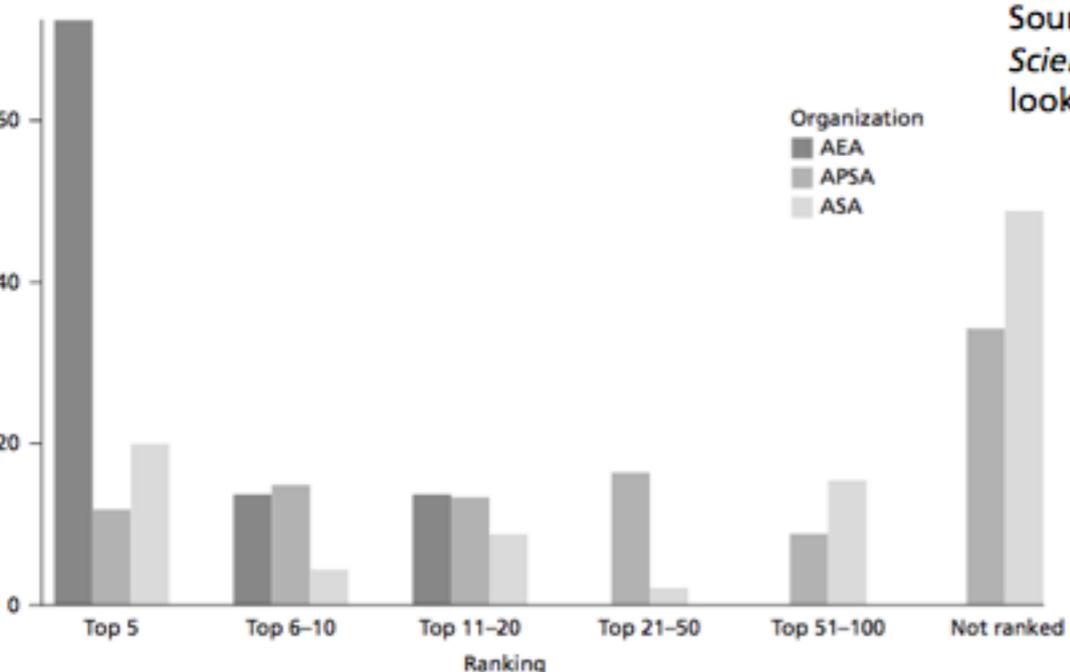
Table 1 Citations from flagship journals to articles published in the 25 top journals in each discipline, 2000–2009 (as a percentage of total citations in each journal)

Cited journals Citing journal (% of all references)	Top 25 economics journals	Top 25 political science journals	Top 25 sociology journals	Total number of papers/citations from this journal
American Economic Review	40.3%	0.8%	0.3%	907 29,958
American Political Science Review	4.1%	17.5%	1.0%	353 19,936
American Sociological Review	2.3%	2.0%	22.0%	399 23,993

Source: Compiled by the authors from the electronic Institute for Scientific Information's *Web of Social Science*. The high number of papers and cites in the *AER* is due to the *Papers and Proceedings*. We also looked at these data without the P&P. The patterns do not differ significantly.

Figure 2 Institutional composition of the Executive Council of three disciplinary organizations, 2010–2014

Members of the Councils (percent)



Note: Non-appointed members only, unique individuals. The "not ranked" category comprises mostly departments that do not have a graduate program, and a very small number of foreign institutions. The US News and World Report ranking of best graduate schools, by discipline, is from 2012.

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# knowledge

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## **no state regulation**

*The Road to Serfdom, 1944*

*The Fatal Conceit, 1988*

## **knowledge & information**

“Economics and Knowledge,” 1937

“The Use of Knowledge in Society,” 1945



Friedrich von Hayek  
1889–1992



# economics, knowledge & information

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"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

# information, knowledge, data

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"the so called "data", from which we set out in this sort of analysis, are (apart from his tastes) all facts given to the person in question, the things as they are known to (or believed by) him to exist. ... any change which leads him to alter his plan, disrupts the equilibrium relation between his actions.

" 'data' ... [as] the objective real facts, as the observing economist is supposed to know [or] ... the subjective sense, as things known to the persons whose behaviour we try to explain."

--Hayek, 1937

"The *money price* at which an article sells furnishes us with comparatively little information" —Charles Babbage

*On the Economy of Machinery and Manufactures, 1832*

# information, knowledge, data

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[price] "index ... in which all the relevant information is concentrated...

"prices can act to coördinate the separate actions of different people

".... The whole acts as one .... because .... individual fields of vision overlap so that through many intermediaries the relevant information is communicated"

"equilibrium analysis ... seems to have so extraordinarily little to say about the institutions, such as the press, the purpose of which is to communicate knowledge. ... a peculiar blindness to the rôle played in real life by such institutions as advertising. ...

"That an economist of [Prof S] standing should thus have fallen into a trap which the ambiguity of the term "datum" sets to the unwary."

--Hayek, 1945

# less principled?

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

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

# becoming established

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"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

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

-- George Stigler,  
"The Economics of Information," 1961

"Knowledge is, of course, a particular *form* of information"

—Stiglitz

"Information and the Change in the Paradigm of Economics," 2002

# price & quality

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“the search for information ... the ascertainment  
of market price ...

“the search for knowledge on the quality of  
goods” —Stigler,

1961

“Information about quality ... poses an  
intrinsically more difficult problem than  
uncertainty about prices” —J. Hirshleifer

“Where Are We in the Theory of Information?” 1973

# evasions

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"We are not equipped to discuss advertising in general because the problem of quality has been (and will continue to be evaded) by the assumption of homogeneous goods."

"Quality has not yet been successfully specified by economics, and this elusiveness extends to all problems in which it enters"

—Stigler

# information's place

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"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

## moreover

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"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

# finance and fama's prices

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"A market in which prices always "fully reflect" available information is called efficient ...

"Three relevant information subsets:

"weak form: the information set is just historical prices ...

semi-strong form: in which the ... prices efficiently adjust to other information that is obviously publicly available ...

"strong form ... groups have monopolistic access to any information relevant for price formation."

-- Eugene Fama,  
"Efficient Capital Markets," 1970

# shannon's view

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"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

## or more simply

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“Essentially, anything that can be digitized  
... is information.”

—Shapiro & Varian, *Information Rules*,

“... The assimilation of information is not an  
easy or pleasant task for most people”

—Stigler

# goods

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"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, 1973

# more problems?

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"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," 1970

# information plugs a gap?

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"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

# producing symmetry

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“This perspective-neutrality is the feature of information that gives it a more-or-less uniform exchange value, so that a piece of information that I give you can in principle be as comprehensible or as useful to you as it is to me.” — Nunberg, FTII

“Where observers recognize problems of inequality in the information age, they may reimagine the areas to argue that the key issue is not maldistribution of material resources (money, food, housing, etc.) but rather a matter of unequal information access (for example to education, libraries, internet facilities). The proposed solutions tend to offer not redistribution of wealth but instead improved access to information.” — *New Key Words*

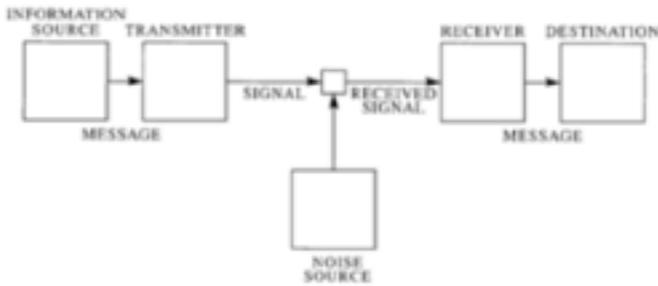
“Idea Gaps and Object Gaps in Economic Development” — Paul Romer

# range or binary?

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"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



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

--Stiglitz

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

# looking for symmetry

## Exercise:

Stiglitz and Akerlof might each be read as struggling so show how “information” works in ways more complex than Stigler. To explain their models of used-car and job-seeking markets, they rely on an underlying notion of symmetry. To tease out their assumptions, choose an example in which symmetry (rather than asymmetry) appears feasible. Then consider, perhaps, the “mechanism” of circulation, the process of “assimilation” (and even of “creation”), and the “value” of information; its relation to knowledge, or ways in which information imperfections might be different from asymmetries. What would we need to assume about the market, the goods, and the people involved? How far could we expect such assumptions to generalize?

Work, if you can, in groups of two or three. Send slides or links, ahead.