

information, economics, & development - 2

concepts of information

April 3, 2012

course change

Week 12

3 April: Information, Economics, and Development—2

5 Apr: Theories of Information—2

Week 13

10 Apr: Information and Cognitive science—1

12 Apr: Discussion: Outline of Finals Papers/Projects

Week 14

17 Apr: Information and Cognitive Science—2: Critique

19 Apr: Literacy, then and now

Week 15

24 Apr: Searching for Information

26 Apr: Wrap: Has This Course Provided Any Information?

Week 16: Reading Week

1 May: Final Paper/Project Presentations

(y)our goal

disciplinary use of *information*

- consistent with ordinary usage or a specialized term?
- internally consistent?

economics as an example

a canonical piece of information?

My name is Paul Duguid.

properties:

autonomous?

transferable?

propositional / true or false?

uncertainty-reducing?

cumulative?

countable?

stuff?

economics & information

emergent information:

information as price (Hayek)

a/symmetrical information:

information as precondition (game theory)

information economics:

information as goods (Arrow)

idea economy:

information as machine term (Romer)

economics & information

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Hayek: information & 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

Hayek: data

"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.

--Hayek, 1937

Hayek: data and knowledge

"the only condition ... is the "constancy of the data" ... some authors [Kaldor] feel it necessary to add "perfect knowledge" as an additional and separate condition."

--Hayek, 1937

Hayek, the media

"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."

--Hayek, 1937

no media effect on data?

"it is neither necessary nor useful to attribute to advertising the function of changing tastes ... advertising affects consumption not by changing tastes, but by changing price"

George J. Stigler & Gary S. Becker "De Gustibus Non Est Disputandum," 1977

Hayek, information, data and knowledge,

"What is the problem we wish to solve when we try to construct a rational economic order? ... If we possess all the relevant information, if we can start out from a given system of preferences and if we command complete knowledge of available means, the problem [of constructing a rational economic order] is purely one of logic. ... the "data" from which the economic calculus starts are never for the whole society "given" to a single mind ... knowledge ... the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess."

--Hayek, "Use of Knowledge in Society," 1945

21-Cofl-Economics-2 12

and so to price

"indices ... in which all the relevant information is concentrated ... in a system where the knowledge of the relevant facts is dispersed ... prices can act to coördinate the separate actions of different people."

--Hayek, 1945

Hayek to Fama

"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 [cannot affect the market]."

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

21-Cofl-Economics-2 14

Babbage to the contrary

"The money price at which an article sells furnishes us with comparatively little information."

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

conflicting notions?

information as emergent

information as a construct

information as a precondition

contra Hayek?

"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*

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game theory

information:

perfect

complete

(a/symmetrical)

von Neumann & Morgenstern,

Theory of Games, 1944

imperfect asymmetries?

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

--Stiglitz

asymmetrical lemons

"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
21-Cofl-Economics-2 20

quality problems

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

--Stigler, "Economics of Information," 1961

particularly price problems?

"The cost, to the purchaser, is the price he pays for any article, added to the cost of verifying the fact of its having that degree of goodness for which he contracts ... the purchaser if not himself a skilful judge ... must pay some person, in the shape of an additional money price, who has the skill to distinguish, and integrity to furnish, articles of the quality agreed on."

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

21-Cofl-Economics-2 21

Shannon again

"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

condition or content

reducing quality uncertainty

a recursive problem?

"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

21-Cofl-Economics-2 23



assaying knowledge

"If the wise man or any other man wants to distinguish the true physician from the false, how will he proceed? He will consider whether what [the physician] says is true, and whether what he does is right, in relation to health and disease? ... But can any one attain the knowledge of either unless he have a knowledge of medicine? ... No one at all, it would seem, except the physician can have this knowledge; and therefore not the wise man; he would have to be a physician as well as a wise man."

--Plato, *Charmides*
21-Cofl-Economics-2 24

quality of information

OP-ED CONTRIBUTOR

Why I Am Leaving Goldman Sachs

By GREG SMITH

Published: March 14, 2012

TODAY is my last day at Goldman Sachs. After almost 12 years at the firm — first as a summer intern while at Stanford, then in New York for 10 years, and now in London — I believe I have worked here long enough to understand the trajectory of its culture, its people and its identity. And I can honestly say that the environment now is as toxic and destructive as I have ever seen it.

[Enlarge This Image](#)



To put the problem in the simplest terms, the interests of the client continue to be sidelined in the way the firm operates and thinks about making money. Goldman Sachs is one of the world's largest and most important investment banks and it is too integral to global finance to continue to act this way. The firm has veered so far from the place I joined right out of college that I can no longer in good conscience say that I identify with what it stands for.

It might sound surprising to a skeptical public, but culture was always a vital part of Goldman Sachs's success. It revolved around teamwork, integrity, a spirit of humility, and always doing right by our clients. The culture was the secret sauce that made this place great and allowed us to earn our clients' trust for 143 years. It wasn't just about making money

omics-2 25

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consistent?

"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

21-Cofl-Economics-2 27

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?

overview

why economics

economics & information

a historical account

economics, information, & development

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

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, "Idea Gaps," 1993

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. ... industrial nations ... 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, "Idea Gaps"
21-Cofl-Economics-2 32

gap bridging

the object gap disappears?

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

..."absorption capacity ..."



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

it's just information



Grandfather:
Well, I finally finished my
doctoral thesis.



Woman:
Way to go, Gramps.



Grandfather:
Did my research at
Indiana University.

Woman:
Indiana?



Grandfather:
Yup. IBM took the
school's library...and
digitized it. So I could
access it over the Internet.

*She cocks her ear to take
this all in.*



Grandfather:
You know...It's a great time
to be alive.



Tag:
IBM. Solutions for
a small planet.

potential?

"the potential for workers in developing countries to combine their labor with technologies from advanced countries"



Hayek, practice theorist

"We need to remember only how much we have to learn in any occupation after we have completed our theoretical training, how big a part of our working life we spend learning particular jobs, and how valuable an asset in all walks of life is knowledge of people of local conditions, and special circumstances ... a curious fact that this sort of knowledge should today be generally regarded with a kind of contempt ... Even economists who regard themselves as definitely above the crude materialist fallacies ... commit the same mistake [of prejudice] toward the acquisition of such practical knowledge ... because in their scheme of things such knowledge is supposed to be 'given.'"

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