Men register their thoughts wrong, by the inconstancy of the signification of their words; by which they register for their conceptions that which they never conceived, and so deceive themselves.
Thomas Hobbes, *Leviathan*

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**The informations**

Geoff Nunberg  
School of Information  
UC Berkeley

iConference  
U. of Toronto  
Feb. 9, 2012
The question of “information”
   A problematic prefix
   What kind of meaning could information have?
   The symbolic meaning of information; gimcrack concepts

The backstory
   the two meanings of information; the first information age,

The Fall and Rise of Information
   Unhappiness with "information"; the rise of “IT” and the information age
   Information as a term of art

Reinventing “information”
   The information-knowledge hierarchy

iSchools: the critical role…
What puts the i in iSchool?

The iSchools are interested in the relationship between information, people and technology. …The iSchools take it as given that expertise in all forms of information is required for progress in science, business, education, and culture.

iSchools Caucus at www.ischools.org

"Information" unifies & legitimates the iSchool enterprise
What puts the / in iSchool?

What does it mean to be a "school of information"? Is it computer science or library science? Is it social science, law, or business? Is it information architecture or multimedia design? Are we pioneering the next big navigation tool? Or are we concerned with "the human element" of information: how it connects, separates, affects people?

The answer to all these questions is "yes," because the study of information — how it is created, shared, and transformed into actionable knowledge — touches a wide range of issues and disciplines, just as it addresses `the vast diversity of human needs, activities, and relationships.

AnnaLee Saxenian, Dean's statement, UC Berkeley School of Information
A skeptic’s dilemma?

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AnnaLee Saxenian, Dean's statement

How can you champion the iSchool movement if you have your doubts about the i-?
The scope of “information”
"strong, difficult, and persuasive words..." Raymond Williams

Wm. Empson: Words as "compacted doctrines"
New kinds of relationship, but also new ways of seeing existing relationships, appear in language in a variety of ways: in the invention of new terms (capitalism); in the adaptation and alteration (indeed at times reversal) of older terms (society or individual); in extension (interest) or transfer (exploitation).
... it's always there when we look for it, available wherever we bother to direct our attention. We can glean it from the pages of a book or the morning newspaper and from the glowing phosphors of a video screen. Scientists find it stored in our genes and in the lush complexity of the rain forest. The Vatican Library has a bunch of it, and so does Madonna's latest CD. And it's always in the air where people come together, whether to work, play, or just gab.

What is it that can be so pervasive and yet so mysterious? Information, of course.

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What is it that can be so pervasive and yet so mysterious? Information, of course.

But whatever it is...
...it can effect mighty changes

What gives computers such awesome potential to reshape the world? For starters, all technologies that "process information" ... affect deeply the societies that use them. Johannes Gutenberg's printing press eventually helped reformers to erode the Catholic Church's political power: Books spread knowledge in ways the Vatican could not control....But the world has never seen anything like the computer.
The newest new order...

...we’re inspired by technologies that have revolutionized how people spread and consume information. We often talk about inventions like the printing press and the television — by simply making communication more efficient, they led to a complete transformation of many important parts of society. They gave more people a voice. They encouraged progress. They changed the way society was organized. They brought us closer together.
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Operating assumptions

1. Information is an English word.*

*il existe un mot semblable en français.
1. Information is an English word.*
2. An account of information as it’s ordinarily understood should be consistent with the way the word is used.
Operating assumptions

1. Information is an English word.*

2. An account of information as it’s ordinarily understood should be consistent with the way the word is used.

3. When *information* is used as a technical term, there is a presumptive assumption about its ordinary-English use.

   Why *information* and not *succotash*?
1. Information is an English word.*

2. An account of information as it’s ordinarily conceived should be responsible to the way the word is used.

3. When *information* is used as a technical term there is a presumptive relationship to its ordinary-lg use.

4. In its ordinary use, *information* is surreptitiously polysemous.

5. The relations among the senses of *information* are logically incoherent… but ideologically coherent.
What could *information* mean?
What kind of meaning(s) could "information" have?

Monosemy: does information have a single meaning that’s

Vague (like nice or child)

General (like structure or artifact)

structure (OED) 3. The mutual relation of the constituent parts or elements of a whole as determining its peculiar nature or character.

We may compare a vague word to a jelly and a general word to a heap of shot. Bertrand Russell

A received view…
Abstract: Certain definitions of information are compatible... if their relationships are properly understood as referring to different levels of organization in a subsumptive hierarchy. The resulting hierarchy, with thermodynamics subsuming information theory, and that in turn subsuming semiotics, amounts to a naturalizing of the information concept.

"Naturalizing Information", Stanley N. Salthe, Information, 2001

(Italics GN)
Why do we care whether information is one thing?

Abstract: Certain definitions of information [are] compatible… if their relationships are properly understood as referring to different levels of organization in a subsumptive hierarchy. The resulting hierarchy, with thermodynamics subsuming information theory, and that in turn subsuming semiotics, amounts to a naturalizing of the information concept.

“Naturalizing Information”, Stanley N. Salthe, Information, 2001

The universe would only be one fact and one great truth for whoever knew how to embrace it from a single point of view. 

D'Alembert, Preliminary Discourse to the *Encyclopédie*


(Italics GN)
What kind of meaning(s) could "information" have?

Does information have several meanings? If so, is it…

…ambiguous? (several words, diff. meanings) bank, duck, etc.

…polysemous (one word, several related mngs)

E.g., terror: emotion, that which elicits emotion (terror suspect…); news (Did you hear the ___/listen to the ___?)

"Consider for example the proceedings that we call "games". I mean board-games, card-games, ball-games, Olympic games, and so on. … if you look at them you will not see something that is common to all, but similarities, relationships,…"

Ludwig Wittgenstein, *Philosophical Investigations*
The polysemy of *information*: Collocational Settings

Collocations listed in OED:

- Information revolution, society, age
  - *digital, internet, post-industrial, service*
- __science,* theory*
  - *signal, entropy, document, communication*
- __technology*
  - *digital, computer, electronic*
- __explosion, glut, anxiety*, overload, rich, poor*
  - *knowledge, data, content, access*
- __architect, officer*
  - *knowledge, technology*
- __storage, retrieval, processing*
  - *data, knowledge?*

(* = items given sep. entries)
Dimensions of variation in conceptions of Information

Popular (folkloric) vs. technical/scientific conceptions of information — but lines are fuzzy

• "Information" as a category of everyday discourse
  
  *Can you give me some information about dehumidifiers?*

• "Information" in public discourse & policy, education, journalism

• "Information" as a theoretical notion in philosophy, information theory, CS, cognitive science & linguistics, informatics, economics, political science, public policy, business & management, etc.

• "Information" as a theoretical notion in biology, physics, etc.
Is information just chaosemous?

In ordinary usage, is *information* simply "loose" or "sloppy" or "bleached"?

“…a high-frequency and low-content phrase that permeates our ordinary language without attracting much attention, since its meaning has long eroded."

Pieter Adriaans and Johan van Benthem

"…a sloppy, pseudoscientific catch-all…an 'amoeba word'… an oracular authority and inspirational text."

Uwe Purksen, *Plastic Words*

"[Terms such as] "information society"… seek to catch a fashionable wind and twist it for modish purposes." Daniel Bell
Does "information" mean anything at all?

In ordinary usage, is information simply "loose" or "sloppy" or "bleached"?

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But calling a wd "vague," “low-content,” “sloppy,” “eroded” “empty” doesn’t mean you can pick up & go home...
Gimcrack concepts

Most accounts of objectivity – philosophical, sociological, political – address it as a concept…. But if it is a pure concept, it is less like a bronze sculpture cast from a single mold than like some improvised contraption soldered together out of mismatched parts of bicycles, alarm clocks, and steam pipes.

Lorraine Gaston & Peter Gallison, *Objectivity*

Gimcrack words are typically ideologically inflected, "persuasive."
Lexicalization can lead to reifications, illusory unities & distinctions, etc.

Whenever we have made a word to denote a certain group of phenomena, we are prone to suppose a substantive entity existing beyond the phenomena, of which the word shall be the name.

—William James, Principles of Psychology…
We can have concepts without words... words merely serve to make concepts easier to access, recall, and communicate...

relating to the maintenance of a balance between producing and using carbon, especially balancing carbon-dioxide emissions by activities such as growing plants to use as fuel or planting trees in urban areas to offset vehicle emissions.

carbon-neutral!!!
We can have concepts without words… but gimcrack concepts can exist only when there are words for them.

"Your values are different – she has them."

**values**: logically inconsistent, ideologically coherent

Cf Walter Lippmann on political symbols, which "stand for a truce or juncture between ideas."

Folding in the social: *objectivity, literacy*, etc.

Words as "compacted doctrines" Empson
The first age of information

He who does not learn the lessons of historical linguistics is condemned to repeat Ling 101.
"Information" in the early 19th c.: the two senses

1. The shaping of the mind or character; communication of instructive knowledge; education. (Now rare or Obs.) ("Bildung" sense) from inform "give form to"

A woman of mean understanding, little information, and uncertain temper.
Jane Austen, *Pride and Prejudice*, 1813

*The Germans' object in the university course is not information or education, but training.* Scribner's Magazine, 1879.

(cf "for your information," etc.)
"Information" in the early 19th c.: the two senses

2. Knowledge communicated concerning some particular fact, subject, or event. [1450] < inform "tell") ("propositional" or "news" sense) From inform "impart knowledge"

   Her language is singularly agreeable to me and the information she communicates is often just what I want to gain. C. Brontë, Jane Eyre, 1847

But not really knowledge, and only when new

   Which fact,“ he said, “is not information to me. I knew it long ago.” F. Kelley, Charred Wood, 1918
"Information" in the early 19th c.: the two senses

2. Knowledge communicated concerning some particular fact, subject, or event. [inform "tell""] ("propositional" or "news" sense)

From inform "impart knowledge"

Information in this period often more like news: cf frequency of “information of”

But as I had not when I despatched the vessel received any information of the declaration of war. 1814

Information of vs information about, 1800-1940
A sense that isn't...

a. The action or fact of imparting the knowledge of a fact or occurrence; communication of news

1724 You desir'd no Information, but upon his Death.
1877—For the information of members, we publish entire the By-laws.
1930—The talking news-reel is a new vehicle of public information.
1954—disclosures believed necessary for the information of the reader
2001: for your information...

"Information is a process"
—No. it isn't.
1. The shaping of the mind or character.

2. Knowledge communicated concerning some particular fact, subject, or event.

3. Records of a factual nature, either published, or collected and maintained by public entities or institutions. [GN, not OED] ("substance" sense)

*They give their monthly penny, and we try to give them sixteen -pages of information…. The Cottager's friend, and guide of the young, 1844*

*Vote 6 has always contained about 12 times as much information as it dThe detailed information in Vote 6 this year is all put in the form of appendices. Hoes this year. ansard's Parliamentary Debates, 1887*

*Business must lay hold of modern library methods if they were to keep up with the steadily growing mass of printed information. Bull. of the Am. Lib. Assoc. 1913*
A new facet of information emerges

1. The shaping of the mind or character.

2. Knowledge communicated concerning some particular fact, subject, or event.

3. Records of a factual nature, either published, or collected and maintained by public entities or institutions. [GN, not OED] ("substance" sense)

Relative frequency of ‘times as much information’ in Google Books, 1800-2000
Where did the new "information" come from?

The obvious assumption:

- Information1 "Bildung/education"
- Information2 "propositional/news"
- Information3 InfoAsSubstance
But information-as-substance is different from propositional information

InfoAsSubstance doesn't include spoken utterances etc.

...though the principal modern languages contain ten times more information than either of them, a knowledge of the two classical languages has been considered an essential part of a liberal education. *The Michigan Teacher*, 1872

Cf. "A copy of the daily *New York Times* contains more information than that the average 17th c. Englishman came across in a lifetime." (ubiquitous)
information-as-substance different from propositional information

Senses translate differently in other lgs

Information-as-Substance:
  The information age (society etc.)
  *L'age de l'information* (not *l'age des informations* or ~ *d'information*)
  *L'età dell'informazione* (sg.)

Propositional Information
  According to my information
    *Selon mes informations* / *secondo le mie informazioni* (pl.)
  My information is reliable.
    *Le mie informatzioi sono attendibili.* (pl.)
    *La mia informazione è attendibile.* (sg)

Highly sensitive information…
  *streng vertrauliche Informationen* / *streng vertraulich Information*
How information-as-substance is different from propositional information

Why isn't IaS information just propositional information in the large?

*They aren't the same kind of thing!*

How much information is there in the world?

Peter Lyman and Hal Varian, *How Much Information?* 2003
How information-as-substance is different from propositional information

Why isn't IaS information just propositional information in the large?

*They aren't the same kind of thing!*

- How much information is there in the world?
- How much truthful information is there in the world?

Peter Lyman and Hal Varian, *How Much Information?* 2003
Where did the new "information" really come from?

The real story:

*Information 1* "Bildung/education"

*information 2* "propositional/news"

"Effect for cause" Cf, a curiosity, a fright, a sensation etc.

Cf Literary genres: fantasy, horror, mystery…

1800 1850 1900
The Shift from Bildung to the stuff that induces it

Folding the social into the concept:

*Information*… although, according to the origin of the word, ought to be synonymous with intellectual education, is generally understood to signify only an accumulation of particular facts.

*The New Cratylus*, John William Donaldson 1850
A natural confusion

Examples of information = "edification, education"

...though without any of the early delight in books which had been so strong in Fanny, with a disposition much less inclined to information for information's sake, she had so strong a desire... —Jane Austen, *Mansfield Park*, 1814

I would not be hurried by any love of system, to underrate the Book.... Great and heroic men have existed, who had almost no other information than by the printed page. —Ralph Waldo Emerson, "The American Scholar," 1837

You will... receive much entertainment from Horace Walpole's letters, and also considerable information – shall I add edification? *The Living Age*, 1844

Modern readers are apt to misread these...
A natural confusion

Examples of *information* = "edification, education"

Cf Emma grilling Jane Fairfax about Frank Churchill:

‘‘Was he agreeable?’—‘He was generally thought so.’ ‘Did he appear a sensible young man; a young man of information?’… it was difficult to decide on such points. … She believed everybody found his manners pleasing.”

—Jane Austen, *Emma*, 1815
A natural confusion

Examples of information = "edification, education"

Cf Emma to Jane Fairfax about Frank Churchill:

‘Was he handsome?’—‘She believed he was reckoned a very fine young man.’ ‘Was he agreeable?’—‘He was generally thought so.’ ‘Did he appear a sensible young man; a young man of information?’—Jane Austen, *Emma*, 1815

Emma Woodhouse: Is he a man of information?

Jane Fairfax: All his statements seem correct.
Cf. the changing meaning of “well-informed” = “well-read, educated, cultivated”

To come with a well-informed mind is to come with an inability of administering to the vanity of others, which a sensible person would always wish to avoid. Austen, *Northanger Abbey*, 1798

Without a well-informed and tender conscience, confusion and vice will rule the mind. 1805

The writer possesses much of the true critical power; and, as far as English poetry is concerned, he is certainly well informed. 1866

He was indefatigable in study; and of a comprehensive, well-informed judgment… 1803
"Information by the Book"

Presumption of a public passively imprinted in the image of the texts that are imposed on it. (Certeau’s “Law of Information”)

An age of "informational" institutions and practices

- Museums, public libraries, expositions, works of reference, journalism/newspapers, photography, science, “literacy”…

Relative freq. of “informed citizen,” 1800-2000
Information and civic virtue

An age of "informational" genres, institutions and practices

The ideology of literacy: the "informed electorate"

"[To the free library] we may hopefully look for the gradual deliverance of the people from the wiles of the rhetorician and stump orator.... As the varied intelligence which books can supply shall be more and more widely assimilated, the essential elements of every political and social question may be confidently submitted to that instructed common sense upon which the founders of our government relied.” J. P. Quincy, 1876

The social folded in...

Information acquires its importance in creating a productive workforce and responsible citizenry (cf. parallel development of literacy, c. 1882)
The first “information age”

The press, schools, libraries, etc. prepare people for economic and public life.
The Features of Information-as-Substance
Propositional Information communicated/communicable representations of particular states of affairs; a basis for judgment or action.

Information as substance: the embodied, factualistic representations produced by the expansion of the media, corporations, and the modern state.
But senses interact...

Information1 "Bildung/education"

information3 InfoAsStuff

information2 "propositional/news"

1800 1850 1900
Features of Information-as-Substance

IAI typically belongs to public, commercial, or institutional life.

“...A letter from your old acquaintance, the housekeeper at the Grange,” I answered.... She would gladly have gathered it up at this information, but Hareton beat her. *Wuthering Heights*, 1847

Connection of *information* to the state; cf “personal information”

??“We spent our first date exchanging personal information”

Sense colors meaning of propositional *information* as well

“Can you give me some information about the party tonight?”
(prob. = department party, not friend’s birthday party)

*Police are seeking information about the break-in on Fair Oaks St.*

?I asked my neighbor for some information about the break-in in her house.
Features of Information-as-Substance

IaS generally presumes a fixed medium of storage or transmission: "present" in the world; can be transferred from one medium to another.

IaS is morselized/measurable/commodified

"N times as much information" etc.

n.b. at this stage of print culture, measures of IaS roughly correlate w/ propositional density. More pages = more facts.
Features of Information-as-substance

IasS is "plausible in itself" – Presumption of veridicality

"It is indispensable for information to sound plausible. Walter Benjamin, "The Storyteller"

The assumption that IasS is generally veridical: a consequence of the rise of new institutions, the press, rationalized state & corporations, fiat money, etc.
IasS is "plausible in itself" –

The assumption that IasS is generally veridical: a consequence of the rise of new institutions, the press, rationalized state & corporations, fiat money, etc.

Depending on the favour and support of the public, which would soon cast them aside were they habitually to deceive, [journalists] have the strongest of all possible motives for sifting the information they collect, and for propagating only what is true.... Newspapers. tending to spread correct information, and checking the propagation of false rumours, are necessary... for the preservation of society.

Charles Dupin
Features of Information-as-substance

IasS is "plausible in itself" –

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Features of Information-as-substance

IasS is "plausible in itself" –

The assumption that IasS is generally veridical: a consequence of the rise of new institutions, the press, rationalized state & corporations, fiat money, etc.

Role of social institutions, etc. is manifested as implicit features of information.
The Fall and Rise of Information
The failures of information

By the early 20th c., widespread impression that “information” alone isn’t sufficient for education or democracy.

Concerns about propaganda, failure of schooling, complexity of the modern state, etc.

“mere information” in Google Books 1800-2000

Lippmann, *Public Opinion*
What’s missing in information: 1860-1950

It is the natural and proper tendency of information to ripen into knowledge, just as knowledge itself is not complete: until it is systematized into science. Henry Barnard, 1879

There is nothing less profitable than scholarship for the mere sake of scholarship… What we want is not learning, but knowledge. “Books and Libraries,” James Russell Lowell, 1885

[guide the student in] the acquisition of such additional information as will enable him to meet the problems of life and the problems of his calling, and to translate this information into knowledge. Am Jnl. Clin. Med, 1912

Our people want an education for their children which rests on demonstrable facts but which so relates and interprets facts as to convert information into knowledge and knowledge into wisdom. James Merril (pres. Of U. Of Minn.) The Crisis of Mankind, 1947
When “information” got no respect

There was, through the 1930s and 1940s, a popular radio program [called “information please”] which challenged listeners to stump a panel of experts by sending in unlikely questions about assorted trivia. Who was the shortest president of the United States? …That was the way most people thought about information in those days: disjointed matters of fact that came in discrete little bundles.

Theodor Roszac, The Cult of Information

1945- use of information expands in association with communications, computers, information disciplines
technology from late c.18 to mean "The branch of knowledge dealing with the mechanical arts and applied sciences"; (cf zoology, etc. e.g., MIT)

From early c20 for "the product of such study."

Social/material complexes, typified by artifacts.

When we refer to one of these complex systems as a technology, the material component more often than not serves as the tacit referent. But … the whole system, apart from the hardware, is so inclusive, so various—it's boundaries so vague as to defy exact representation.

Leo Marx, "Technology: The Emergence of a Hazardous Concept," 2010
The triumph of “technology”

Folding the social into the concept:
The triumph of “technology”

Whereas the term mechanic (or industrial, or practical) arts calls to mind men with soiled hands tinkering at workbenches, technology conjures clean, well-educated, white male technicians in control booths watching dials, instrument panels, or computer monitors…. technology belongs on the higher social and intellectual plane of book learning, scientific research, and the university.

Leo Marx, "Technology: The Emergence of a Hazardous Concept," 2010
The Advent of 'IT'

*Information technology* from 1950's to denote mathematical techniques that utilized the computer to assist, or even replace, mid-level management.

*Information technology*… consists of the disciplines of planning, systems design, systems analysis, operations research, and computer programming. Edward Tomeski, 1970

Buy by the 1970s, IT denotes chiefly hardware and systems
Inventing the “information age”

Information: there's a growing agreement that it's the name of the age we live in ... Changes in our perception of information itself ... have accompanied this profound shift of emphasis in our society ...

Until 1975, “age of information” outpaces “information age”
The second "information age"

Information technology mediates creation of economically prepared and politically responsible citizenry

Information as substance

the metaphyscial substrate
The first “information age”

The press, schools, libraries, etc. prepare people for economic and public life.
Information as a term of art
"news" sense \rightarrow surprisal (ascertainment) sense (= informativeness) (bits, bandwidth, redundancy and compression)

1949 W. Weaver in C. E. Shannon & W. Weaver  The word *information*, in this theory, is used in a special sense that must not be confused with its ordinary usage \ldots In fact, two messages, one of which is heavily loaded with meaning and the other of which is pure nonsense, can be exactly equivalent, from the present viewpoint, as regards information.

\rightarrow Naturalistic information:

1953 J. D. Watson & F. H. C. Crick In a long molecule \ldots it therefore seems likely that the precise sequence of the bases is the code which carries the genetical information.
Post-WWII, *information* becomes a term of art in numerous fields, with various meanings drawn from either propositional (P) & substance (S) readings of “information”

- information theory & statistics P
- Philosophy P
- CS P (compression, complexity) S processing
- History (lately) S
- (information science & documentalism – S?)
- Economics P (but also S, e.g., informational goods)
- Cognitive science, AI S
- Linguistics S (but lately also P)
- Sociology, political science P, S, P&S
- Management science S (P)
- (biology, physics, etc.) P
Information as a term of art

Post-WWII, *information* becomes a term of art in numerous fields, with various meanings drawn from either propositional (P) & substance (S) readings of “information”

- Cybernetics, information theory & statistics P
- Philosophy P
- CS P, S
- History (lately) S
- (information science & documentalism – S?)
- Economics P (but also S, e.g., informational goods)
- Cognitive science, AI S
- Linguistics S (but lately also P)
- Sociology, political science P, S, P&S
- Management science S
- (Biology, physics, etc.) P
... and back to everyday usage again

Specialized accounts of *information* in turn color and enrich the popular conception:

- Information as fundamentally computational
  - the glowing phosphors of a video screen.
- & "natural"
  - Scientists find it stored in our genes
- Information as precisely quantifiable
- Information as fungible
  - the computer's ability to reduce all conventional information forms into one big digital stew
- Information as an index and a commodity

*But the fundamental gap remains*…
Language and its subdiscourses

Words percolate up the ivory tower

"Technicalization" of vocabulary:

Cf modern development of community, wealth, depression (econ. & psych.)
Words spread among subdiscourses

Words circle round the ivory tower (*Wanderwörter*)

Cf recent histories of *network*, *formalism*, *community*, *information*, *recursive*…

Everyday Usage
Words move in all directions at once

What does a given specialized use of information owe to the requirements of the discipline, the influence of neighboring disciplines, and the general understanding of the word?
= what else are they trying to sell you?
Reinventing “information”
A spurious semantic field

Data are facts and statistics that can be quantified, measured, counted, and stored. Information is data that has been categorized, counted, and thus given meaning, relevance, or purpose. Knowledge is information that has been given meaning and taken to a higher level. Knowledge emerges from analysis, reflection upon, and synthesis of information. Dr. Donald Hawkins, Information Today
An old saw rediscovered

Data are raw material of information, typically numeric. Information is data which is collected together with commentary, context and analysis so as to be meaningful to others. Knowledge is a combination of information and a person's experience, intuition and expertise. Prof. Charles Oppenheim, Loughborough University, UK

Data are facts that are the result of observation or measurement. Information is meaningful data. ... Knowledge is internalized or understood information that can be used to make decisions. Prof. Carol Tenopir, University of Tennessee

"Data into Information" 1960-2000
An invented distinction

A heartbeat… can be extremely meaningful information when recorded and analyzed… So can electrical impulses… These and similar types of data are clearly recognized today as information, the kind of information on which we increasingly depend… IBM ad 1977

…such data may add considerable useful information to our knowledge” Science, July 10, 1891

No genuine grounds for the distinction…
No principled grounds for distinguishing data and information

The people selling management information systems (MIS) feel better if they call the output of their system information, that is, something of a higher order.. this quibbling is of no consequence.” Machlup 1983

… and no linguistic grounds, either:
A new sense of "information"?

OED 5 e. Contrasted with data: that which is obtained by the processing of data.

1970 A. Chandor et al. *Dict. Computers* Data is sometimes contrasted with information, which is said to result from the processing of data.

1977 *Ann. Internal Med.* 86 640/2 This admixture of information and data is cemented by an experience accumulated over the years and a dash of intuition into a ‘make-do’ diagnosis.

2001 R. W. Cahn *Coming of Materials Sci.* The process already has a name —datamining—. This means ‘the extraction of implicit, previously unknown and potentially useful information from data’.

2007 *Information & Managem* A common distinction within this domain is that data is raw numbers and facts, information is processed data.
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All OED citations for this sense are either stipulative or misanalyzed.
The English language doesn't owe you a living!

*Information* and *data* are actually never used this way except generically or stipulatively:

Is it information yet?
Information into knowledge?
The ideology of "knowledge"

Collocations

knowledge economy n. Econ. and Business an economy in which growth is thought to be dependent on the effective acquisition, dissemination, and use of information, rather than the traditional means of production. knowledge management n. Econ. and Business the effective management of the sharing and retention of information in an organization; the use of management techniques to optimize) the acquisition, dissemination, and use of knowledge. knowledge work n. work which involves handling or using information. knowledge worker n. a person whose job involves handling or using information.

[Note: almost never translated with equivalent of "knowledge"]
Defining "knowledge"

What kind of "knowledge" is information turned into?

- The information that Naples is in Italy →
- The knowledge that Naples is in Italy.

No epistemic difference…
The ideology of "knowledge"

Folding the social into the concept, again:
"Knowledge" itself is ideologically inflected

Information is piecemeal, fragmented, particular. Knowledge is structured, coherent and universal. Information is timely, transitory, even ephemeral. Knowledge is enduring and temporally expansive. Information is a flow across spaces. Knowledge is a stock, specifically located, yet spatially expansive. Machlup 1983

What kind of knowledge is "universal," "enduring," etc.?
The ideology of knowledge

Collective senses: knowledge as a collective achievement

**OED:** The sum of what is known [about X] [by Y]

What qualifies a proposition as c-knowledge?

His knowledge of chemistry/finance, etc.

→ chemistry etc. are socially constituted

Information” → “knowledge” = socializing individual knowledge of facts
"Information is hard to define and impossible to see, but it is everywhere. ...

"It is the thing that moves within and between people and technology.

"...where people and technology meet …that is where the information exists.

-- Wobbrock et al, "Exploring the Future of i-schools," 2010
How should we respond?

…we’re inspired by technologies that have revolutionized how people spread and consume information. We often talk about inventions like the printing press and the television — by simply making communication more efficient, they led to a complete transformation of many important parts of society. They gave more people a voice. They encouraged progress. They changed the way society was organized. They brought us closer together.
A therapeutic/critical responsibility?

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- Um… well, actually.. It's sort of complicated…
A therapeutic/critical responsibility?

Problematic identities:

Unpacking unfamilial resemblances

  e.g., bet. “information” that’s countable & “information” that’s valuable/truthful

  e.g., understanding the problematic relation between $\text{information}_s$ and $\text{information}_p$

Unpacking the social that’s folded into technology, information, knowledge…

Can we still talk about "information" in the large?
Yes, in the way we talk about "objectivity" etc.
A charge for the iSchools...

[T]his complete simplicity...concealed
The evilly compounded, vital I
And made it fresh in a world of white...
Still one would want more, one would need more.

Wallace Stevens, "The Poems of Our Climate"