

# Web 2.0 Unraveled

**Vince Kellen**

CIO, University of Kentucky

[Vince.Kellen@uky.edu](mailto:Vince.Kellen@uky.edu)

February 17, 2010

## Information rules

Consider the following statements:

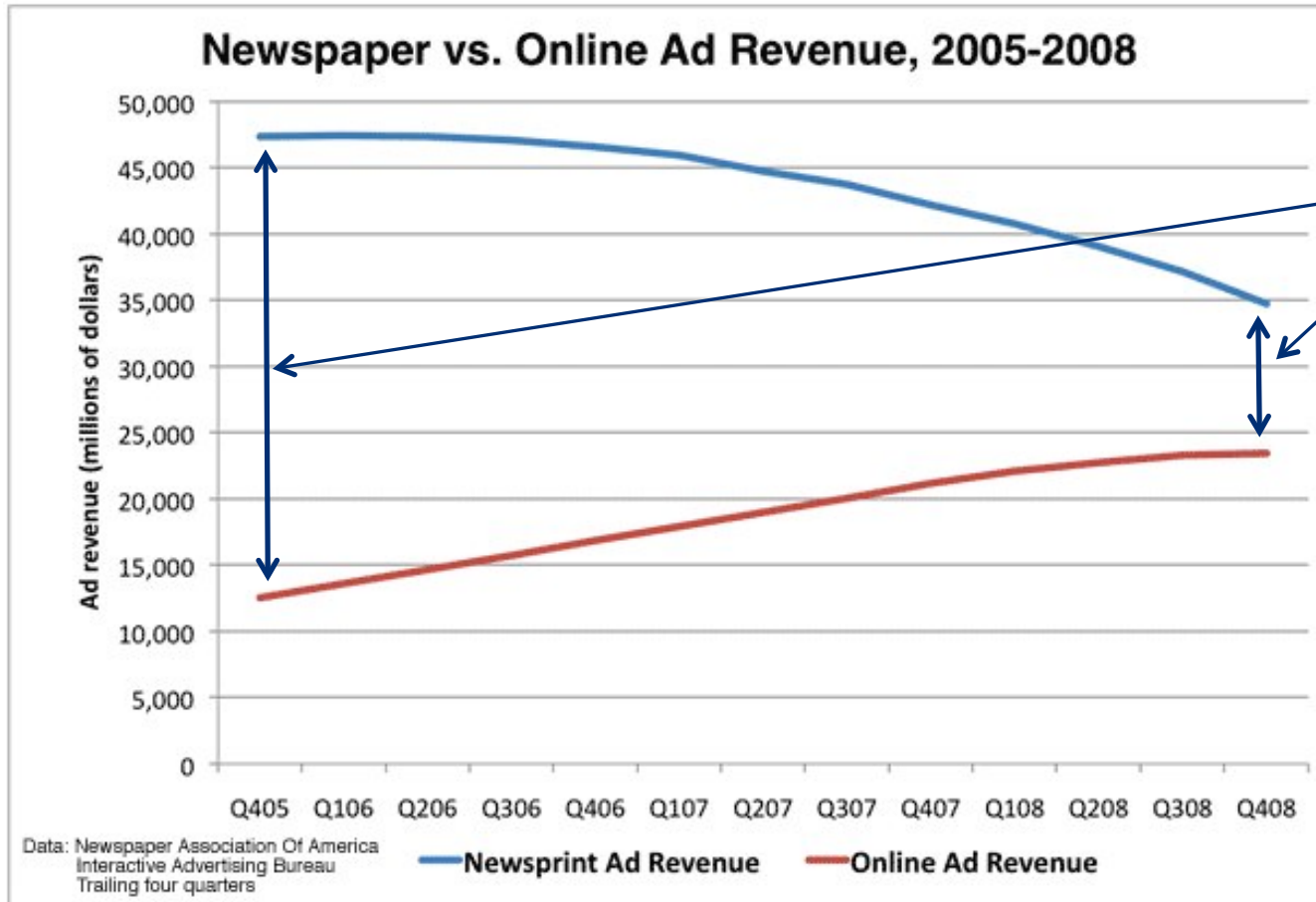
1. The “shape” or “kind” of information can influence organizational culture
2. One can make money from certain “kinds” of information and not from other kinds
3. If you understand the “shape” or “kinds” of information well, you can understand how you can extract value from information and how organization cultures change in response to information

## Some more practical questions

- How do firms like Google make money giving things away for free?
- When will this crazy social networking fad disappear?
- Why has everyone has been discussing Web 2.0 in such hyperbolic terms?
- What the heck is “crowdsourcing” and will it ever be significant?
- Why is metadata so important? And who does it benefit really?
- Will Facebook might be a the next big threat to Google? And should we care?
- What should we (individually or as an organization) be doing about Web 2.0?
- When will human society mutate into some and devolved, bizarre and unrecognizable form all because of social networking, mobile technology and Web 2.0?
- Or can I safely ignore all this and live my idyllic life as it is now?

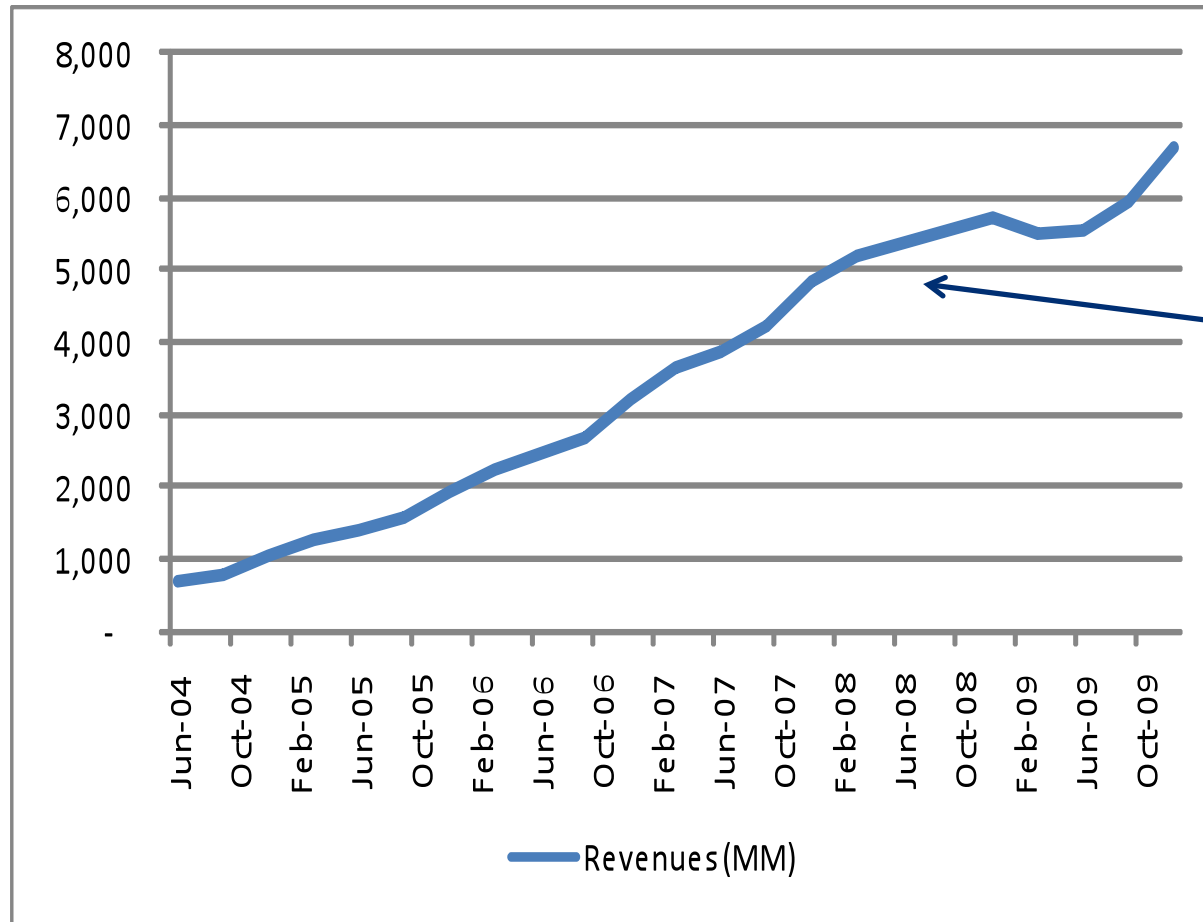
**Somebody's pocket is getting picked...**





~\$23 billion  
difference

## Google's revenue growth



~\$26 billion  
increase



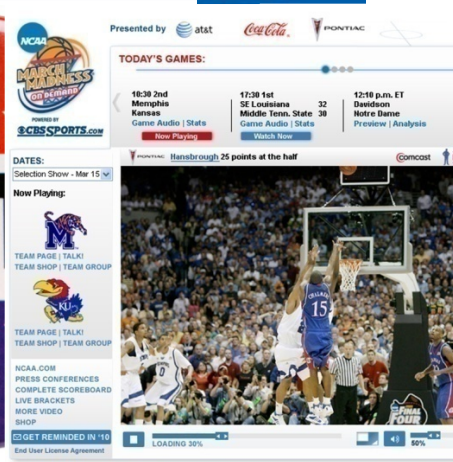
Flash crowd  
online fashion



Webcast Election  
cable-size audience



RECORD TRAFFIC  
Election



CAPTURES TV audience



ALS



audience



1,084 Gbps

1999

2002

2004

2007

2008

2009



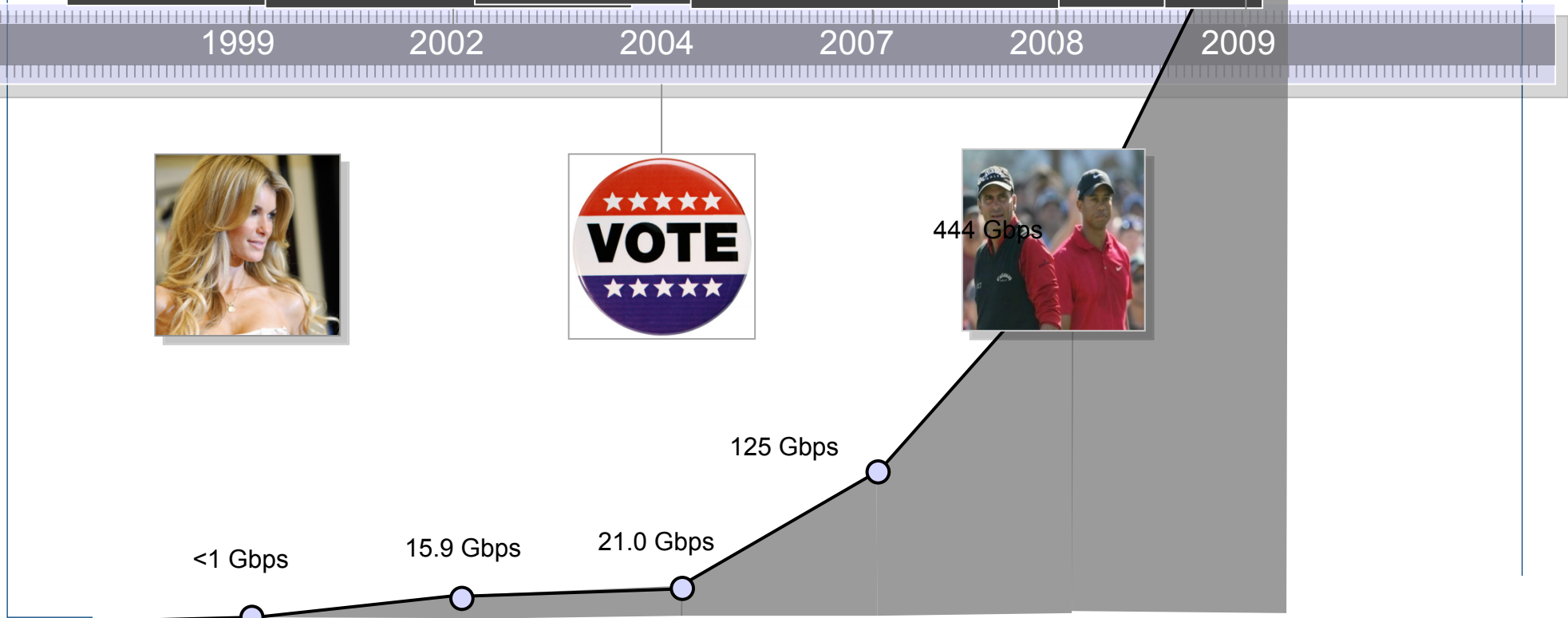
444 Gbps

<1 Gbps

15.9 Gbps

21.0 Gbps

125 Gbps



# Video on the Internet



1999

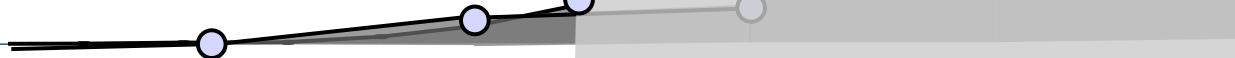
2002

2004

2007

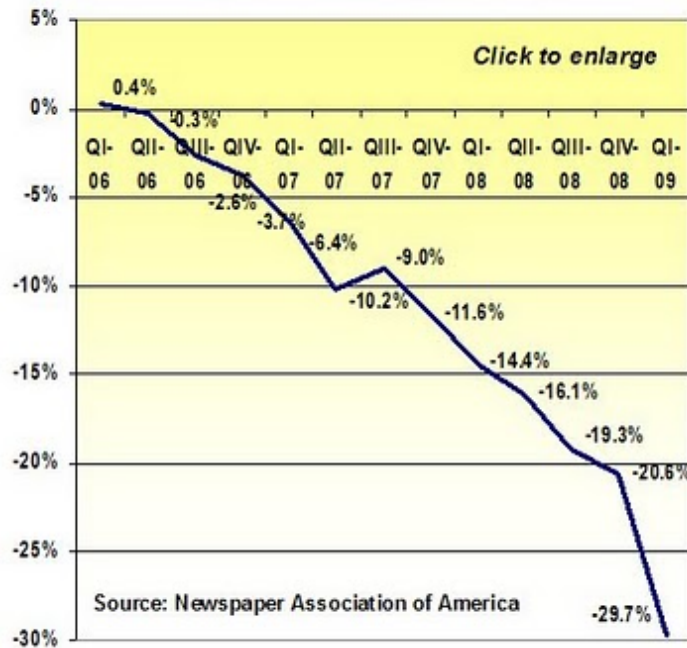
20

HD Video over IP into the home

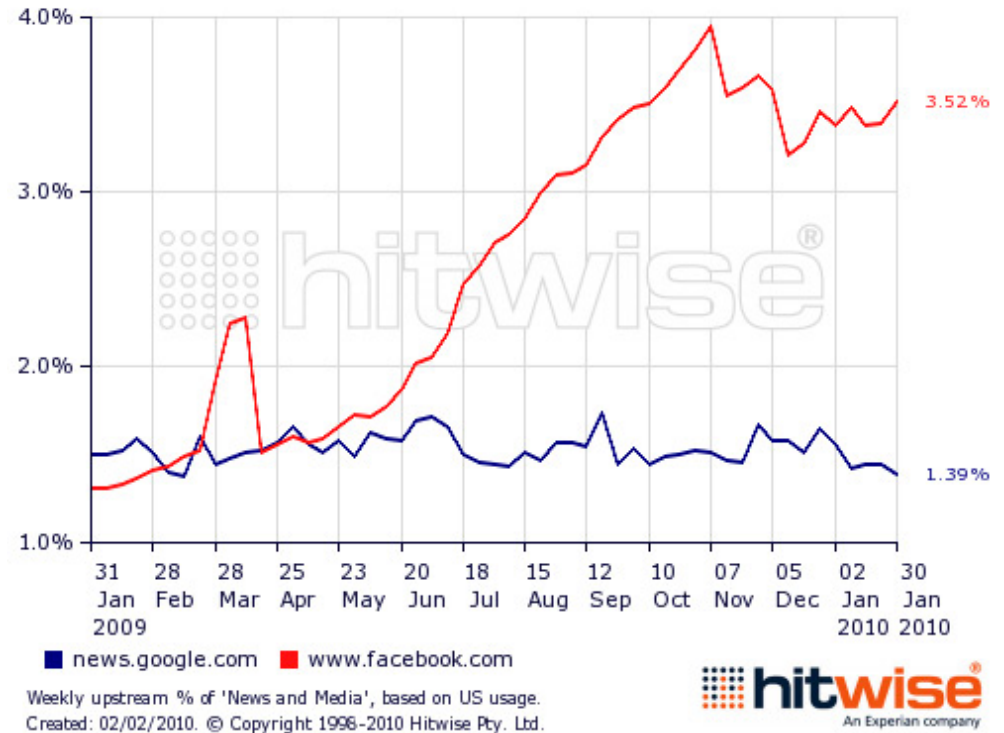


## Accelerating slide

Quarterly newspaper print ad sales



Upstream Visits to News and Media from Google News and Facebook



## Facebook stats (from Facebook press pages)

- More than 400 million active users (February, 2010)
- Only 5.5 million active users in December 2005
- 50% of active users log on to Facebook in any given day
- More than 35 million users update their status each day
- More than 60 million status updates posted each day
- More than 3 billion photos uploaded to the site each month
- More than 5 billion pieces of content (web links, news stories, blog posts, notes, photo albums, etc.) shared each week
- More than 3.5 million events created each month
- More than 3 million active Pages on Facebook
- More than 1.5 million local businesses have active Pages on Facebook
- More than 20 million people become fans of Pages each day
- Pages have created more than 5.3 billion fans

## Conclusions

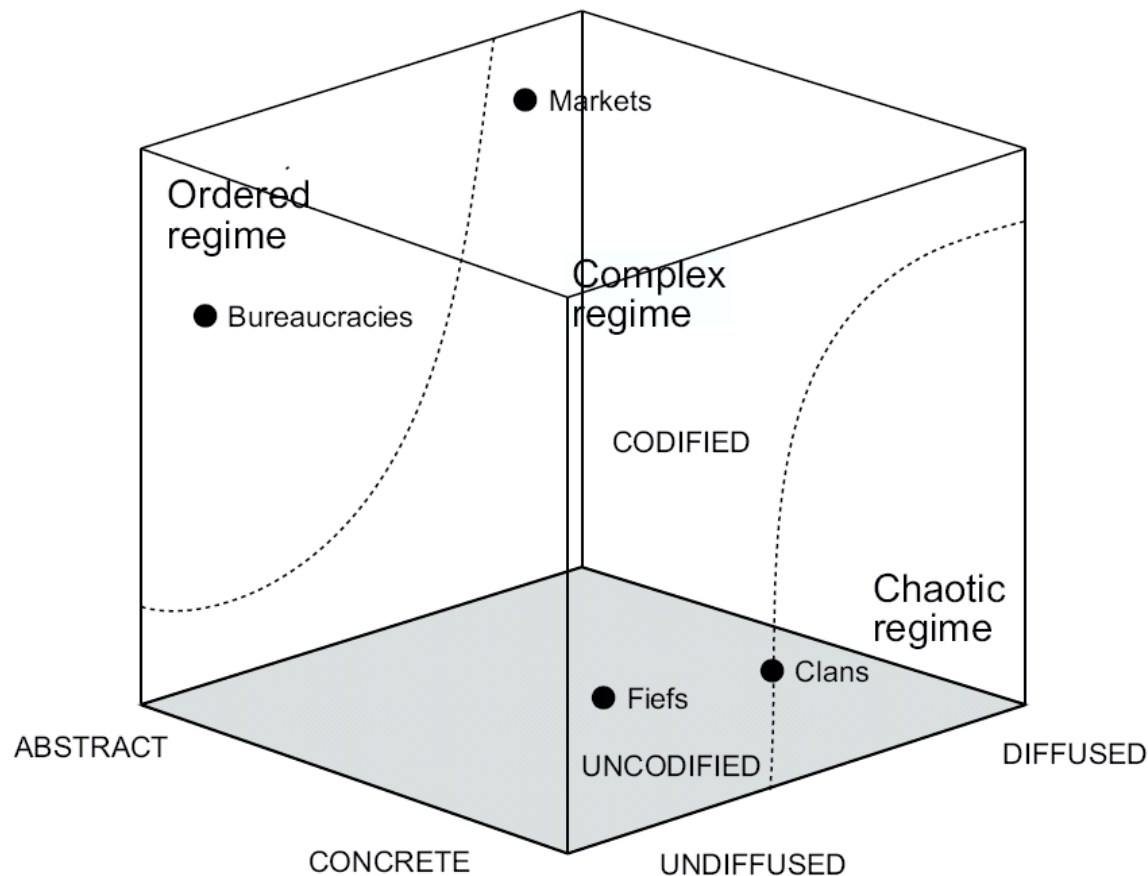
- IT and the Internet, IMHO, has enabled quick corporate demises
- Media has radically transformed in the past 15 years
- The social media is growing even faster right now
- Information distribution has shifted from macro to micro
  - From a few BIG channels a bunch of LARGE channels plus thousands of thousands and thousands of 'micro-channels'
  - Each Facebook page is a micro-channel
  - Large players have lost control over setting a limited agenda
  - But the consumption of ideas is acutely Pareto distributed...

**What is going on under the hood?**

## In a nutshell...

- The amount of unstructured, poorly structured or loosely structured information is growing phenomenally fast in all locations on the Internet
- For people (and especially machines) to find that information, the information desperately needs metadata (tags) that describe it in more or less standardized ways
  - Accurate & slow: Semantic web, ontological engineering
  - Quick & dirty: Folksonomies, tagging
- Social media provides a way for people to share this information with each other
  - This data “inherits” each person’s metadata
  - People can tag data themselves, enhancing the metadata
- Metadata (and tags) are important

# Max Boisot's I-Space



Value/profits are extracted from data within the ordered regime

Web 2.0 data is in the chaotic regime, which is why Google doesn't directly profit from blogs, videos and social networking

Instead, proprietary algorithms (Google's AdSense and search technology) match advertiser with consumer via keywords. This more ordered and tightly controlled data drives Google's profits

Driven initially by deep technical insight (within the ordered regime), their technology automates the whole affair providing tremendous scale without mass

Dynamic, self-maintaining customer interaction venues may help keep the customer experience relevant

# I-Space terms

## ■ Diffusion

- Diffusion is the percentage of agents who can be reached by an item of data per a unit of time
- When all agents can equally access an item of data with the same speed, the data is maximally diffused

## ■ Codification

- The creation of categories to which phenomenon can be assigned, together with rules of assignment
- Well codified categories are clear and well-codified assignment rules are clear rules people can easily understand
- Uncodified categories and assignment rules are fuzzy, ambiguous
- Codification helps conserve effort, minimizing data processing costs

## ■ Abstraction

- Abstraction establishes the minimum number of categories required to make assignments meaningful
- When fewer categories are needed or derived, the categories are more abstract
- When the number of categories needed to assign phenomenon equals the number of phenomenon, there is no abstraction

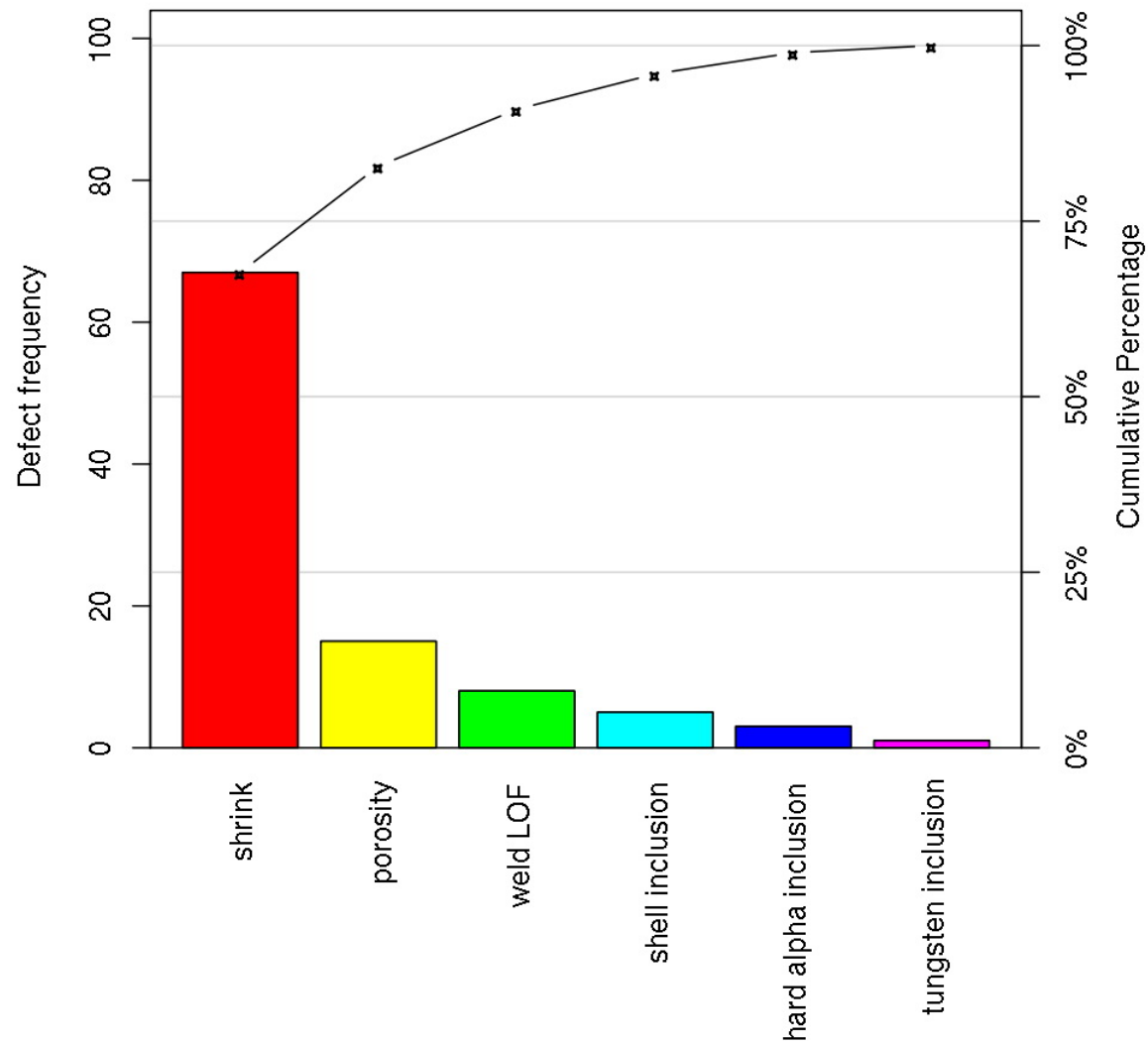
## Codification, abstraction and diffusion

Position	Codification	Abstraction	Diffusion
<b>High</b>	Is the knowledge easily captured in figures and formulae? Does it lend itself to standardization and automation?	Is the knowledge generally applicable to all agents whatever the sector they operate in? Is it heavily science-based?	Is the knowledge readily available to all agents who wish to make use of it?
<b>Medium</b>	Is the knowledge describable in words and diagrams? Can it be readily understood by others from documents and written instructions alone?	Is the knowledge applicable to agents within a few sectors only? Does it need to be adapted to the context in which it is applied?	Is the knowledge available to a few agents or only to a few sectors?
<b>Low</b>	Is the information hard to articulate? Is it easier to show someone than to tell them about it?	Is the information limited to a single sector and application within that sector? Does it need extensive adaption to the context in which it is applied?	Is the information available to only one or two agents within a single sector?

## What does this mean?

- Unstructured ‘volatile’ information is valueless. Cost of production is lowering. Cost of distribution is near zero
- What is valuable are ways of connecting ‘junk’ information with consumers. Ads “piggyback” on this connection
- Think of a large party with free food and drinks, but with insurance salespeople surreptitiously added in. These are salespeople who know your interests and behavior
- You ‘pay’ for the party only when you buy something
- Some call this the ‘democratization’ of the web. Or you can call it Capitalism 101
- The network has an effect not on the value of the information, but on the value of the algorithm that matches the information with people
  - Google’s search engine, AdSense/AdWords technology, including complex pricing models based on a Vickrey (sealed-bid, second highest price) auction model

Pareto chart of titanium investment casting defects



## Popularity of ideas

- Lots of things are Pareto distributed
  - Philanthropy
  - Wealth
  - Product sales
  - Customer profitability
  - Size of cities, meteorites, sand particles
  - Insurance losses, by incident
  - Total time consumed by SAP jobs
  - Content submitted in Wikipedia
  
- Information needs to be ‘popular’ to attract advertising revenue
  
- Information popularity is Pareto distributed (the long tail)
  
- While fragmentation can run ‘amok’ on the web, this is offset by the Pareto distribution of information popularity

# Mememes

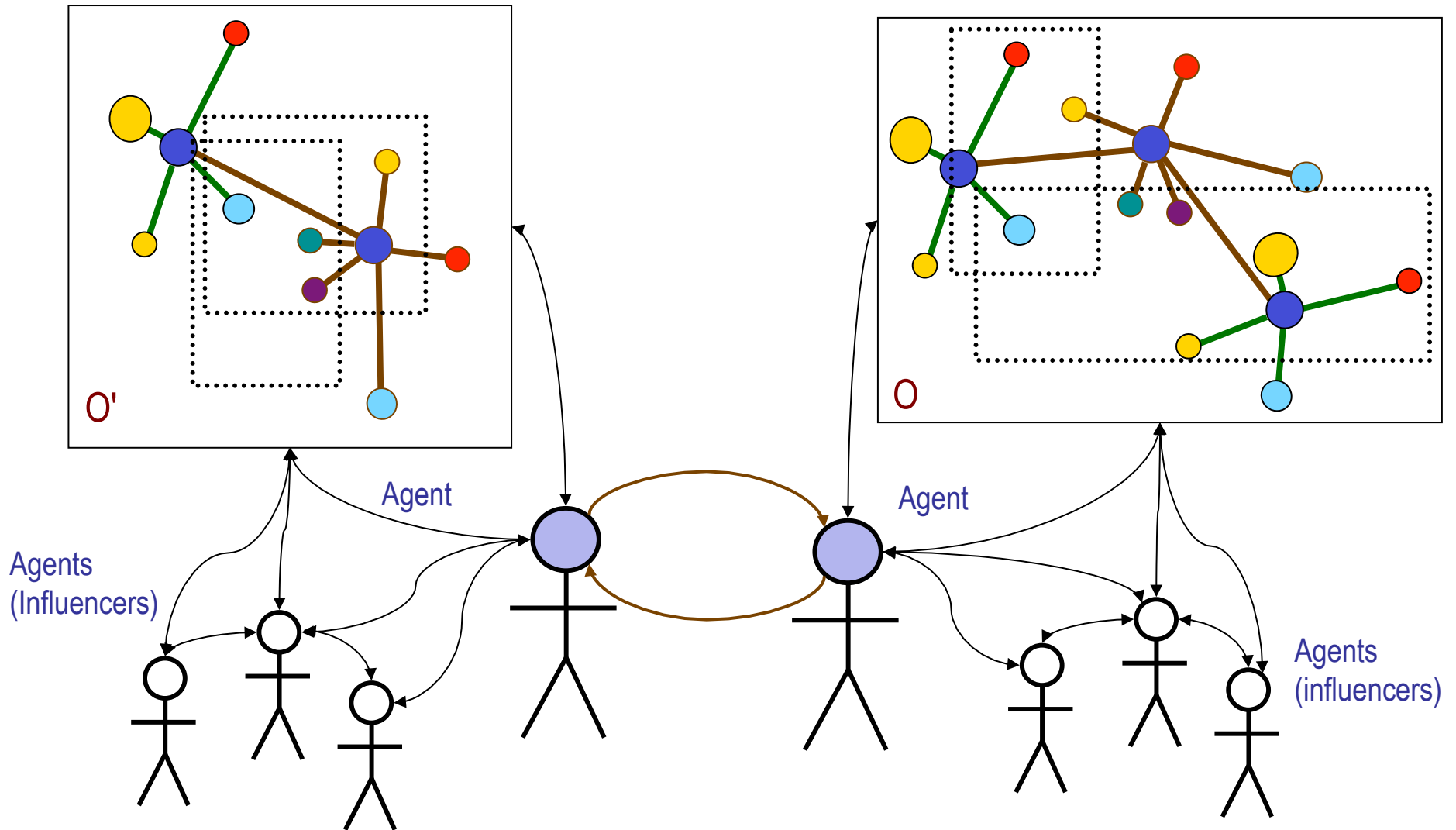
- Introduced by Richard Dawkins, in *The Selfish Gene* in 1976
- A unit of cultural information designed to be transmitted from one mind to another through culture
- Mememes mutate, evolve, compete and travel in packs (mememplexes)

See also:

Lederer, Chris 7 Hill, Sam. (2001). See your brands through your customers eyes. *Harvard Business Review*, June.

Grant, John. (2006). *The Brand Innovation Manifesto*. John Wiley & Sons, Ltd.

# Memeplexes



## My meme glossary

- Memes have the following attributes:
  - An identity, attributes, weights (importance) and levels
  - Associated memes (which combine to form a memeplex)
- Key terms
  - Agents are any person, group or thing which interact with memes
  - O is a meme as understood by an agent
  - O' is a meme that has “propagated” to another agent
- Memes propagate and mutate
  - Memes are not simply copied. They may change as they are communicated. Prior knowledge can be deliberately or non-consciously added to the meme
  - Similar terms: replicate, select
  - Memes compete with each other for our attention
- Meme(plex) mutation creates dissimilarity
  - Meme(plex)e(s) become something different when selection operates by continually favoring one version of the meme(plex) over another similar meme(plex)

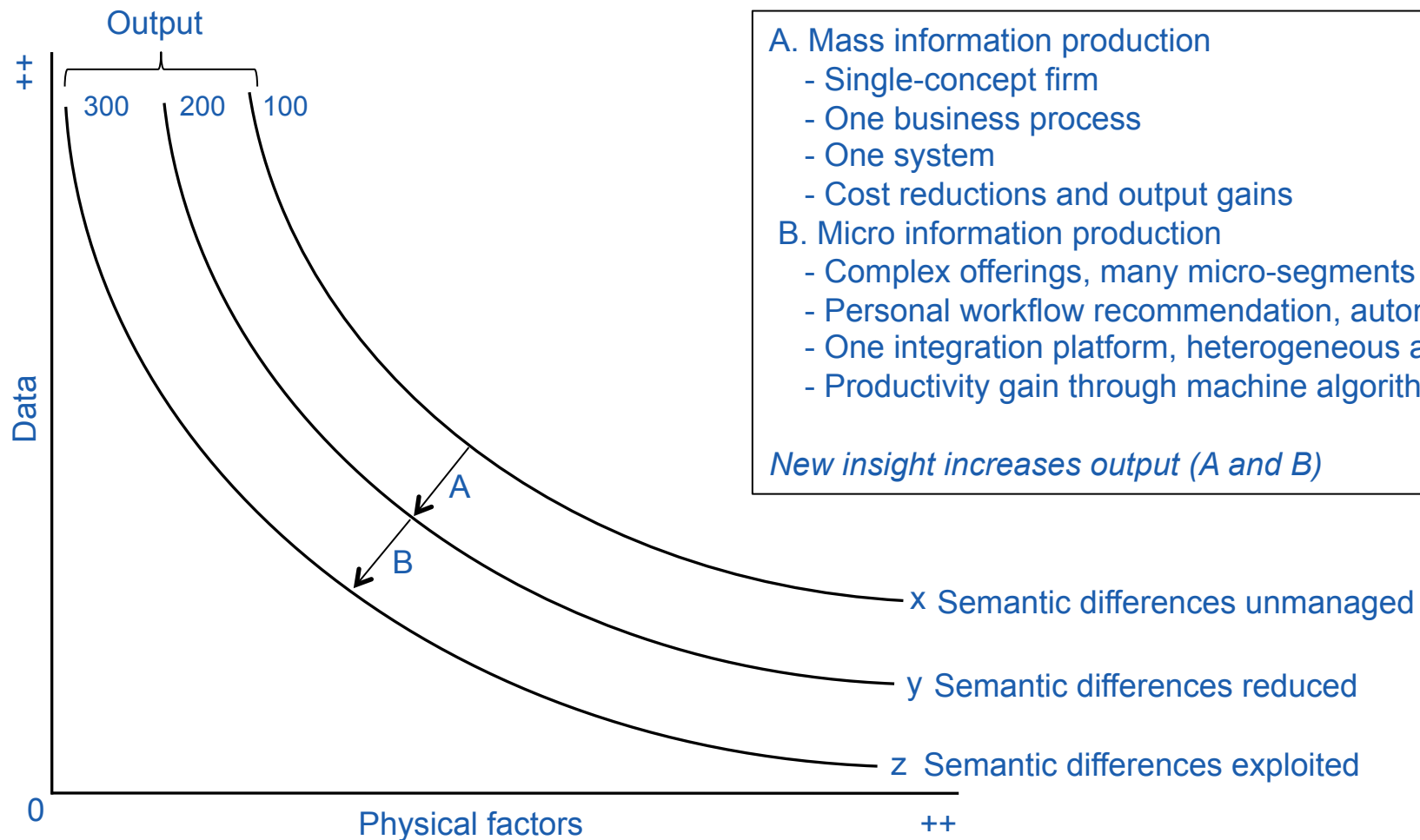
## Summarizing...

- Web 2.0 allows for rapid propagation, mutation and selection of memes. Winning ones attract advertising dollars. Human beings are trying to design wicked memes and in some cases are going to jail...
- Organizations can no longer control their ideas. They can design and unleash a meme and then the network of people on the Web will take it over
- How do you extract value from Web 2.0 and SN?
  - Connect ordered-regime knowledge with chaotic-regime knowledge
    - Use analytics to find insights in chaotic data, knowing the behavior patterns are most likely Pareto distributed
    - Design unique, culture-specific interactions via a Web 2.0/SN platform so that communities can maintain a relationship with the brand/organization/product

## The tension in the room is growing

- What is the balance we should keep between one way of doing something and a thousand ways of doing something?
- How do we accommodate diversity and avoid fragmentation?
- How do we empower individuals yet build cohesive groups?
- How do we achieve our organizational or personal goals in world were one could argue that due to technology we are losing direct control?
- Is technology lording over our biology or vice versa?

# IT Strategies for Web 2.0 and Social Networking



## A. Mass information production

- Single-concept firm
- One business process
- One system
- Cost reductions and output gains

## B. Micro information production

- Complex offerings, many micro-segments
- Personal workflow recommendation, automation
- One integration platform, heterogeneous access
- Productivity gain through machine algorithms

*New insight increases output (A and B)*

## Predictions

- Web 2.0 and social networking are here to stay. We are social animals. Information technology will be bent to suit our human needs
- We are not 100% digital. Face to face interactions are likely to be as crucial in the future as they were in the past, despite (or because of) HD video
- Higher education is likely to remain ‘somewhat’ immune to Web 2.0 impacts but higher education has not yet come to grips with the big educational benefits and implications within Web 2.0
- *Long term, universities that can help students and alumni maintain their relationships and accomplish their educational goals with highly relevant and compelling ways of distributing information will do better than universities that do not*

**Still confused?**