Open Society Research

Leslie Carr

The Internet is Doomed!

THE **FUTURE** OF THE **INTERNET**
AND HOW TO STOP IT

JONATHAN ZITTRAIN
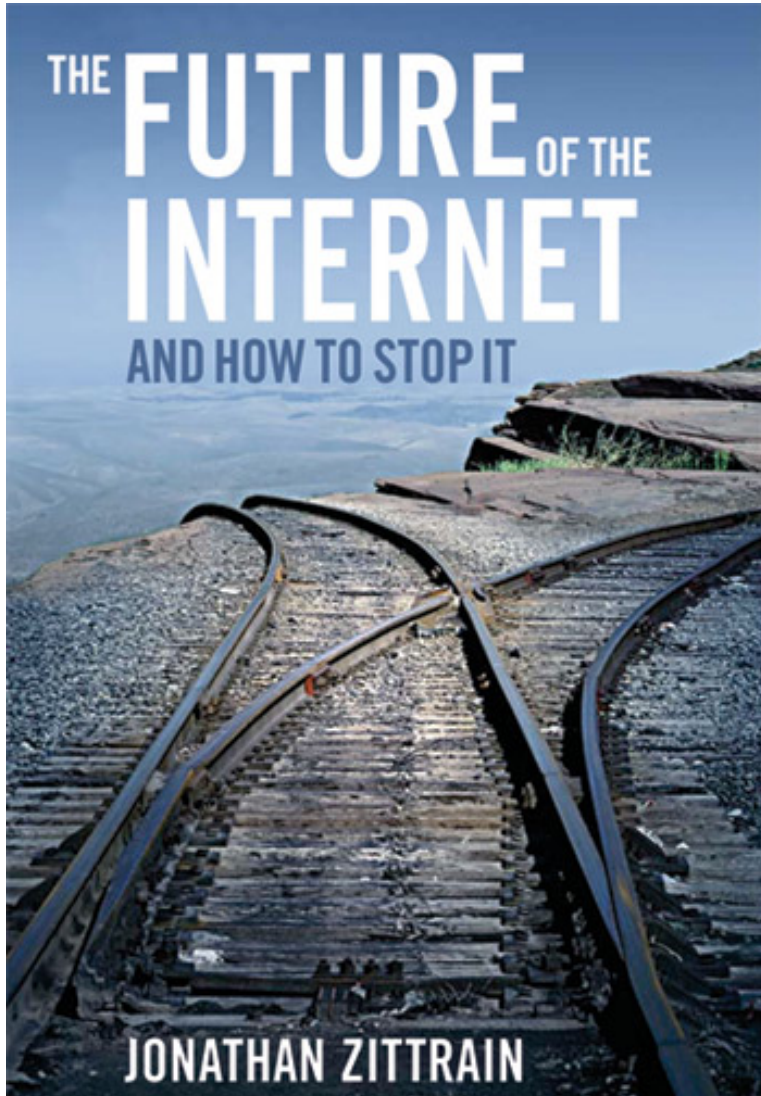
- "This extraordinary book explains the engine that has catapulted the Internet from backwater to ubiquity...

- With the unwitting help of its users, the generative Internet is on a path to a lockdown, ending its cycle of innovation — and facilitating unsettling new kinds of control."

Internet as a Generative System

- unanticipated change emerges through unfiltered contribution from broad and varied audiences
- same way that PC development has been unrestricted and open.
  - No-one controls what you can do with a PC, what programs you should be able to write, to run or what information you should be allowed to process.
- The very processes that could control the Internet to make it a "safer" place will also
  - restrict technological development
  - make the future of the Internet a much poorer place
    - the user experience
    - future economic activity

according to Zittrain

# Example of Generative System: Building on the PC

- Kiosks
- Retail Point of Sales (POS) System
- Self-Serve Check in/Checkout Kiosk
- Information Kiosk
- Airport, Train station and Subway e-Ticketing Kiosk
- Self-Serve DVD Rental Kiosk
- Multimedia preview Kiosk
- Parking Machine
- e-Ticketing Kiosk
- ATM Terminal
- Multimedia Vending Machine
- Coin Exchange Machine
- Photo Kiosk
- Scientific Instruments e.g. Helium Ion Microscope
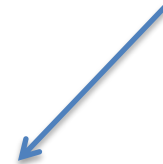- Industrial Manufacturing Equipment

How often is a PC built into something rather than used as a PC?

Convincing argument, but is it true?

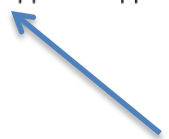**Generativity: contributions from software developers per year**
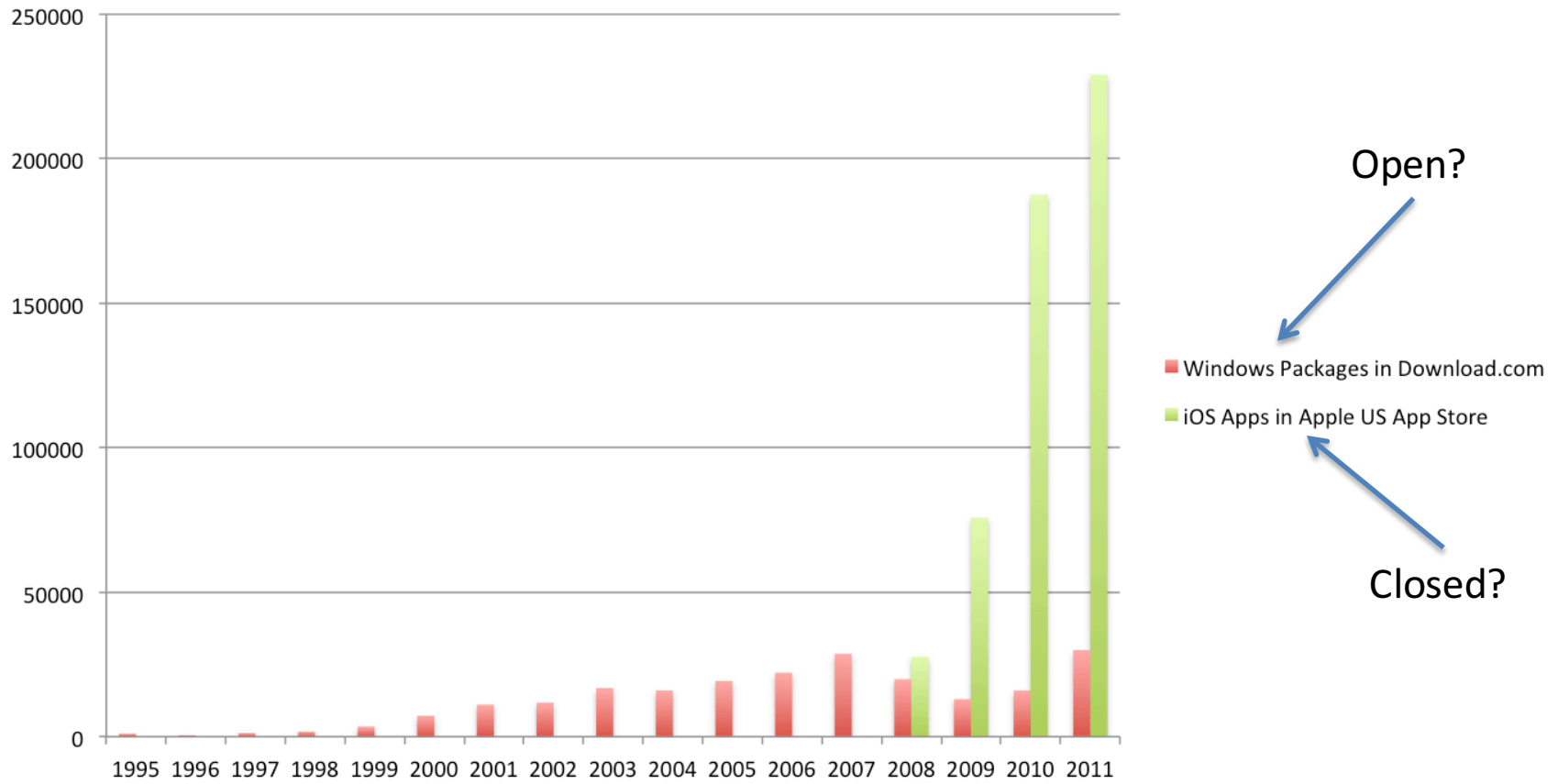
Open?

Closed?

■ Windows Packages in Download.com
■ iOS Apps in Apple US App Store

This is one chart does not disprove Zittrain, but demonstrates that the situation might be complicated...

"Open" Platforms

Internet

The Internet is an open platform on which people are free to create new protocols and applications. It's not 'open' in other senses because it's a set of privately owned networks (ie the information superhighway is not a public highway)

"Open" Platforms

Internet

Web

The Web is an open platform on which people are free to create new kinds of sites, pages, services and applications. It's not 'open' in most other senses in that it's a set of private servers – there's no public space where you have a right to comment.

"Open" Platforms

Internet

Web

Wiki Facebook Twitter YouTube Google

All these new kinds of Web applications are open for people to use in innovative ways and to develop new kinds of service…

"Open" Platforms

Internet

Web

Wiki	Facebook	Twitter	YouTube	Google

Wikipedia	Social Applications	Media Channel	**X**

Except Google. You can't use Google as a platform – it has no APIs and it doesn't allow crawlers!

"Open" Platforms

Internet

Web

Wiki	Facebook	Twitter	YouTube	Google

Wikipedia	Social Applications	Media Channel	X

In that sense, Google is not 'open'. It's free, but you can't build a new service on it as a platform.
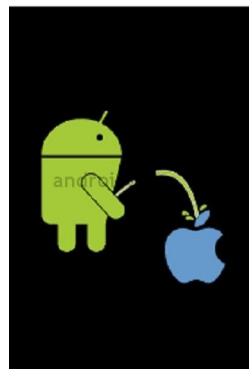
e.g. building on Twitter Platform

Mr Tweet, Brand Chirp, We Follow, Twitter Friends Network Browser, Friend or Follow, Featured Users, Tweepler, TwitterTroll, Refollow, Twitdir, Just Tweet It, Twellow, Twitaholic, Twitter Poster, Nearby Tweets, The Twit Cleaner, Twuffer, Twittercal, TweetLater, Twitter Dmer, TwitPic, Twt Poll, Twit Wall, Group Tweet, Backupify, Twitter Counter, Tweet Beep, Twitsay, Tiny Chat, Twit Cam, Chirp Stats, Tweet Stats, Twitter Grader, Tweet Volume, Twitter Analyzer, Tweetmeme, Topsy, Whos Talkin, Trendistic, Twitscoop, Echofon, Tweetie, Brizzly, OpenBeak, Dial2do, Tweetdeck, Twittad, Twhirl, Twittload, Twittonary

Top 50 Twitter Apps http://www.tuttoaster.com/50-amazing-twitter-services-that-you-do-not-want-to-miss/ , June 2010

e.g. building on Twitter Platform

Mr Tweet, Brand Chirp, We Follow, Twitter Friends Network Browser, Friend or Follow, Featured Users, Tweepler, TwitterTroll, Refollow, Twitdir, Just Tweet It, Twellow, Twitaholic, Twitter Poster, Nearby Tweets, The Twit Cleaner, Twuffer, Twittercal, TweetLater, Twitter Dmer, TwitPic, Twt Poll, Twit Wall, Group Tweet, Backupify, Twitter Counter, Tweet Beep, Twitsay, Tiny Chat, Twit Cam, Chirp Stats, Tweet Stats, Twitter Grader, Tweet Volume, Twitter Analyzer, Tweetmeme, Topsy, Whos Talkin, Trendistic, Twitscoop, Echofon, Tweetie, Brizzly, OpenBeak, Dial2do, Tweetdeck, Twittad, Twhirl, Twittload, Twittonary

Top 50 Twitter Apps http://www.tuttoaster.com/50-amazing-twitter-services-that-you-do-not-want-to-miss/ , June 2010

Open vs Closed?

- Side taking
- Camps

Open Platforms: Android

Android Ecosystem

Android Products

Smartphone / Tablet Hardware	Android Open Source Project

Privileged Partners	Any Manufacturers	Public Open Branches	Private Branches (e.g. ICS)

Google Services

Android App Store	Search, Gmail, Maps, Play, Pay

Open Development API	Any Developers

Google control some bits of it, restrict some bits and make other bits open.
The ultimate reason (of course) is to increase Google's reach in mobile advertising.

Open Platforms: Amazondroid

Open	It's Complicated

Proprietary / Controlled / Closed

Amazon Ecosystem

Amazon Products

Amazon Services

Tablet Hardware	Android Open Source Project

Amazon App Store	Kindle Store & Amazon Media

Quanta Computer Kindle Fire	Public Open Branches	Private Fork

Android Open Development API	Any Developers

Amazon controls most components and leaves other bits open.
The ultimate reason (of course) is to increase Amazon's reach in mobile retail, leveraging others' investment, but without being subject to Google's restrictions.

Open Platforms: Baidudroid

Open | It's Complicated

Proprietary / Controlled / Closed

Baidu Ecosystem

Baidu Cloud Smart Terminal

Baidu Cloud

Smartphone Hardware

Android Open Source Project

Baidu App Store

Baidu Search, Music, Map, Netwdrive

Changhong H5018

Public Open Branches

Private Fork

Android Open Development API

Any Developers

Baidu controls most components and leaves other bits open.
The ultimate reason (of course) is to increase Baidu's reach in mobile, leveraging others' investment, and without being subject to Google's restrictions.

Open Platforms: Apple?

Open | It's Complicated

Proprietary / Controlled / Closed

Apple Ecosystem

Apple Products

Apple Services

| Smartphone / Tablet Hardware | iOS / OS X | | Apple App Stores | iTunes, iBooks |

| Apple iPhone/iPad | Components: Darwin, WebKit, cups... | Proprietary Code | Open Development API | Any Developers | Any Publisher |

Apple controls almost all components and leaves some bits open.
The ultimate reason (of course) is to increase sales of Apple's hardware. It leverages others' investment, but also contributes heavily to some Open Source projects.

Android Openness Quantified

Open Governance Index (% open)	
Android	23%
Qt	58%
Symbian	58%
MeeGo	61%
Mozilla	65%
WebKit	68%
Linux	71%
Eclipse	84%

- **Access**: availability of the latest source code, developer support mechanisms, public roadmap, and transparency of decision-making
- **Development**: the ability of developers to influence the content and direction of the project
- **Derivatives**: the ability for developers to create and distribute derivatives of the source code in the form of spin- off projects, handsets or applications.
- **Community**: a community structure that does not discriminate between developers

http://www.visionmobile.com/blog/2011/07/the-open-governance-index-measuring-openness-from-android-to-webkit/

Openness might not mean *Freedom*

- Reports surfaced yesterday (Sept 13th 2012) that Google prevented Acer from launching a phone using a rival operating system, by threatening to terminate its Android-related partnership with the hardware company.

- Google said that Acer signed away its rights to make Android-like phones not blessed by Google when it joined the **Open Handset Alliance**, a consortium designed to promote Android and create "greater openness in the mobile ecosystem."

http://img.gawkerassets.com/img/17z5 38r96d27pjpg/original.jpg

Acer didn't sign away all of its rights to make rival phones—after all, it does sell Windows Phones. But Acer wanted to release a phone using Alibaba's Aliyun OS, which can run Android apps but hasn't met the requirements of the Android compatibility program. That's a no-no because it leads to Android fragmentation, in Google's view.

http://arstechnica.com/gadgets/2012/09/google-blocked-acers-rival-phone-to-prevent-android-fragmentation/

Building on Android

- 600 brands and 4000 devices
- Diversity, or fragmentation? The press can't decide.
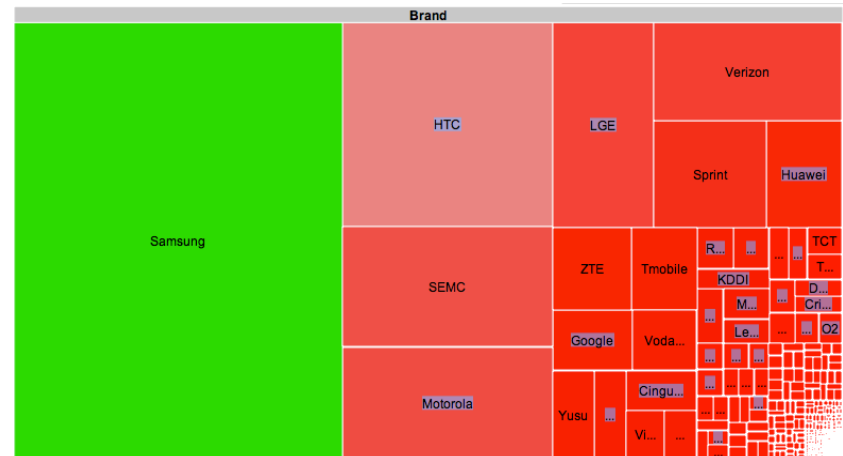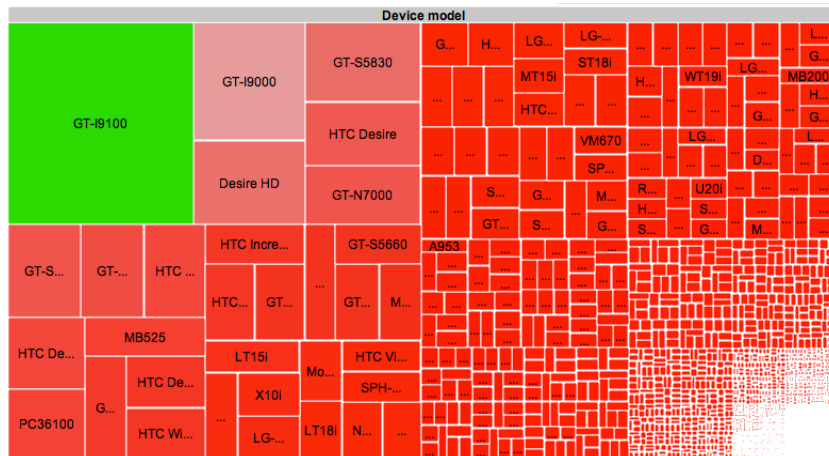
The many faces of a little green robot
http://opensignalmaps.com/reports/fragmentation.php , June 2012

Who Develops Open Components?
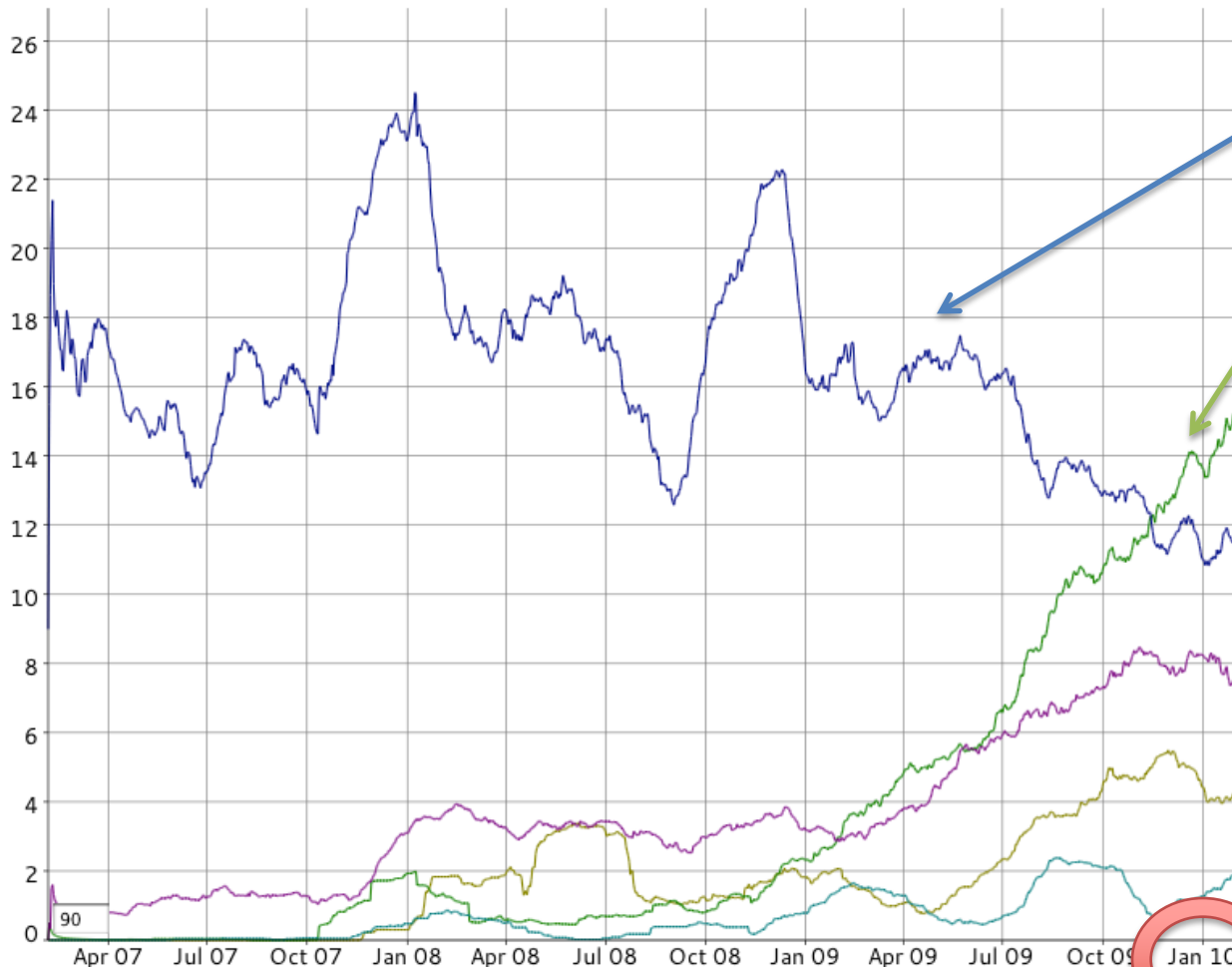
- Apple, Google, Nokia, RIM etc

- Apple contribute to open components

Data runs out just when it gets interesting!

Walled Gardens

- Controlled ecosystems that promote the growth or availability of content at the expense of 'freedom' and 'openness'
  - e.g. Apple iPhone, Amazon Kindle, Facebook, AOL, Compuserve
  - Apple app store requires Apple approval for all apps
  - Facebook content only available for registered users

- Do these constitute a threat to the Internet itself?
  - Not everything built on an open platform has to be open
  - Walled gardens don't threaten the open platform ecosystem UNLESS they take over and become dominant

Why Open Systems are Vital

Evaluation

> *Did Germany make the right choice in relocating their post-unification capital from Bonn?*

Synthesis

> *Create a set of guidelines for choosing alternative national capitals in a post-climate change Europe.*

Analysis

> *What were the overriding factors in the choice of sites for the European parliament and commission?*

Application

> *Choose the most appropriate capital for the Isle of Wight*

Comprehension

> *Why is Paris the capital of France?*

Knowledge

> *What is the capital of France?*

Increasing cognitive capabilities
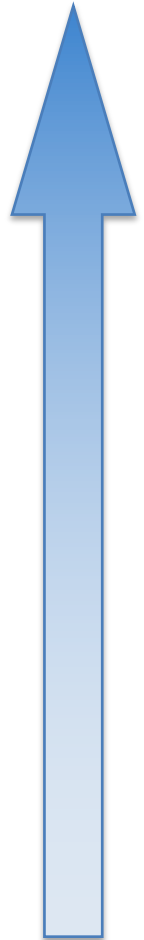
Bloom's Educational Taxonomy demonstrates why closed systems are bad – human understanding is built on top of successively better knowledge platforms.

How New Knowledge Grows

| knowledge apps |
| DBpedia |
| Wikipedia |
| Wiki |
| Web |
| Internet |

- Horizontal generativity means that you can build new kinds of platform (iOS vs Android vs Win Phone)
- Vertical generativity means that you can pile platforms on platforms on platforms to achieve ever more sophisticated applications
- But it requires 'open' licenses across generations of platforms.

Openness Agendas

- **Open Access to Research Outputs**
  - Supported by all UK Research Councils

- **Open Research Data**
  - Demanded by government, private funders & UK Research Councils

- **Open Data**
  - Government and public sector data

- **Open Educational Resources**
  - Move from closed VLEs to sharing resources

Open Research Publications

Institutional repository for the London School of Economics
http://eprints.lse.ac.uk/

One of 145 UK Institutional Research repositories
- Norway 47
- Sweden 58
- Denmark 9
- Finland 9

Open Scientific Data

A repository of chemical data JISC EBank project (2003)

Scientific, not bibliographic, metadata.

Run by the UK Crystallographic Service and latterly an international consortium.
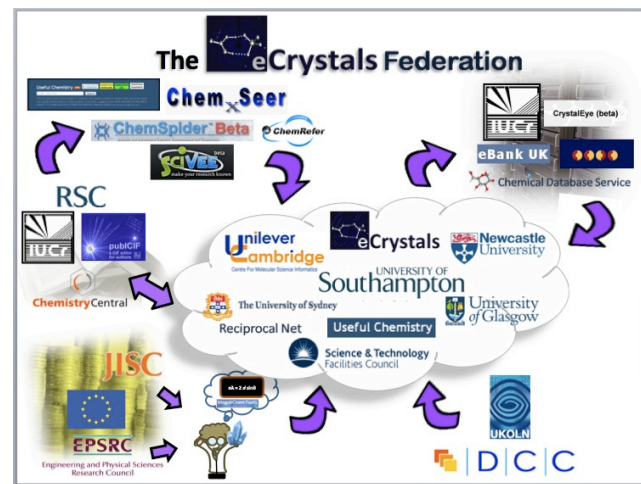
Open Educational Resources

- JISC EdSpace Project
- IEEE LOM metadata
- Web 2, informally tagged
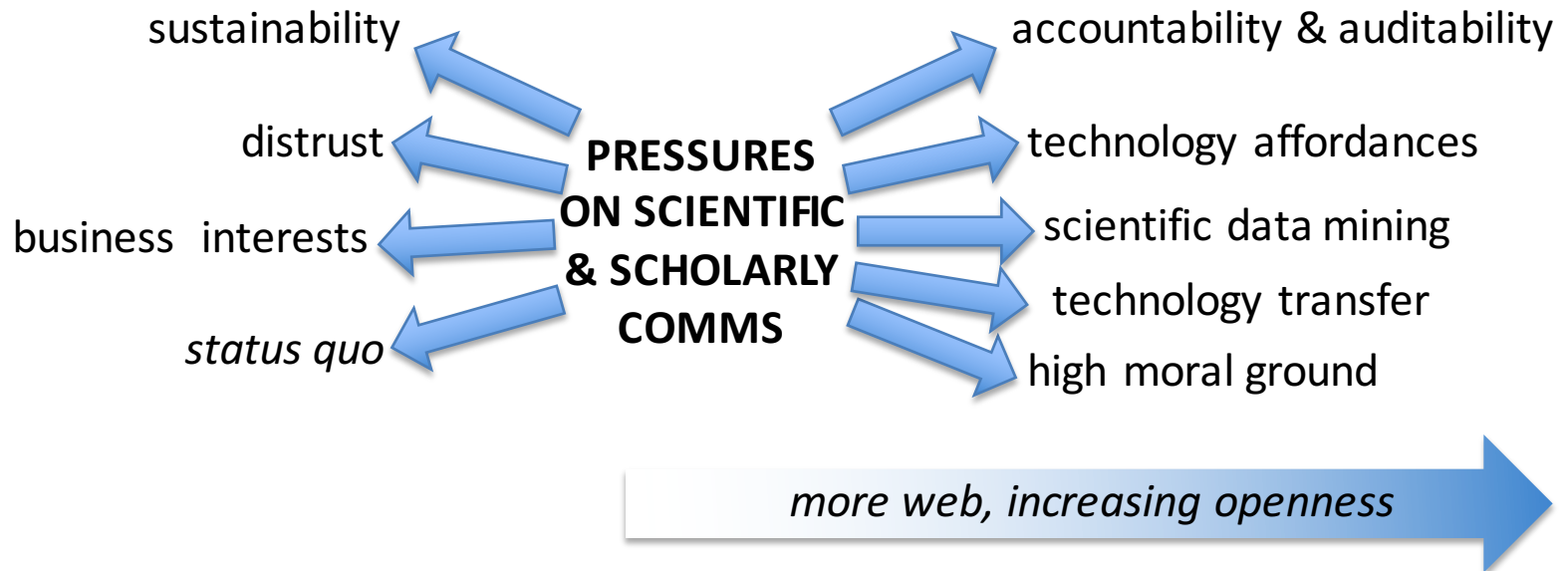- Sufficient for discoverability and usefulness

JISC Jorum (full LOM) &
JorumOpen (lightweight OA approach, DSpace)

Directions for Researchers

sustainability

accountability & auditability

distrust

technology affordances

business interests

PRESSURES ON SCIENTIFIC & SCHOLARLY COMMS

scientific data mining

technology transfer

status quo

high moral ground

more web, increasing openness

- Open Access, Open Data, Open Educational Resources
  - Web Technology joins the High Moral Ground
- *vs* the established economic model for ensuring continuity of information production
  - trading of privately held information through subscription products such as journals or magazines

Climategate

Climate science must be more open, say MPs

By Roger Harrabin
Environment analyst, BBC News

BBC NEWS

MPs investigating the climate change row at the UK's University of East Anglia (UEA) have demanded greater transparency from climate scientists.

The Commons Science and Technology Committee criticised UEA authorities for failing to respond to requests for data from climate change sceptics.
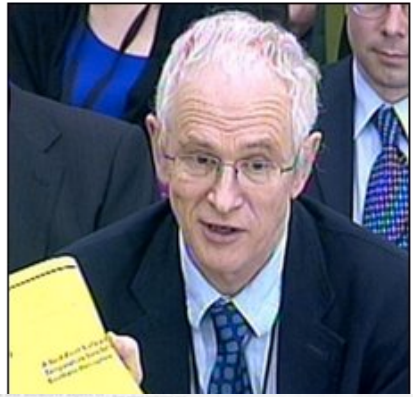
31 March 2010

Roger Harrabin
Environment analyst, BBC News

- Climate Research Unit at UEA refused to provide research data upon which its publications had been based

"It is not standard practice in climate science to publish the raw data and the computer code in academic papers," its report said.

"We consider that climate scientists should take steps to make available all the data that support their work, including raw data... and full methodological workings, including the computer codes."

"When the prices to pay are so large, the knowledge on which these kinds of decisions are taken had better be right," the report stated.

Open Society Research: understanding and facilitating "the power of open"

- Paradigmatic shift towards 'openness' and 'transparency' in practices of government, business, science and education underpinned by THE WEB
  - rapid and widespread circulation of data,
  - collective participation across time and space
  - ready re-purposing of code, products and systems.
- Great claims are made for this ongoing transformation – regarding the economy, democracy and equality
- Few systematic ways of supporting openness towards a fair, vibrant and sustainable society.

Open Disruption

- Innovative business, cultural, organisational, social and technical processes have become possible from new creativity and collaboration technologies.

- At the same time, these technologies are inherently disruptive of older economic models founded on **exclusion** and **rent-seeking**, and as such present challenges that need to be faced.

Characteristics of Openness

    i.   clear and public technical standards

    ii.   transparency

    iii.   collaboration

    iv.   unrestricted access to information resources.

- Benefits tend to be distributed across populations, rather than accruing to individuals or companies.
  - Dilemma for technologists, policymakers and researchers is balancing interests between individual agents and society.

Examples of Open

- **Open Access**: new models of sharing and reward are compatible with widespread access to scientific information and artistic content
- **Open Communications**: the use of artificial intelligence, cognitive radio techniques, cooperation-aided ad-hoc networks to support decentralized community internetworks
- **Open Data**: bringing together data from science, government and elsewhere to act as a public resource, enabling political, economic and social innovation, and accountability
- **Open Education**: transforming educational practice through open communities of practice, open resources, and open models for assessment and accreditation
- **Open Government**: forms of transparent engagement between democratic institutions and citizens
- **Open Innovation**: enabling businesses to develop products by acquiring existing solutions from other businesses and the crowd which contribute to engineering, innovation and marketing
- **Open Internet Governance**: supporting the 'pro-human' Web agenda by addressing the large-scale aggregation of intellectual property and personal data by Internet corporations
- **Open Science**: models of peer review, publication and public engagement, as well as citizen science, citizen social science and crowdsourcing scientific effort, including open tools and workflows
- **Open Source**: decentralized models of production, design and development based on open access to software (*e.g,* GitHub) and hardware (*e.g.* 3D printing)

Research Questions

- How can individual businesses which have previously been secretive and internally focused adopt open practices in traditional, established market sectors, to enhance supply chains, increase efficiency through transparency, and create new products through open data and open source software in collaborative open environments

- How can novel uses of open technologies help address the challenges facing contemporary democracies and contribute to democratic reform and revival of civic/political participation with new opportunities for deliberative democracy

- How can the Internet stimulate a thriving, independent cultural sector as successful composers and performers adapt to new roles of crowd-funded entrepreneurs because of the disappearance of post production sales revenue

- Do open governance mechanisms necessarily lead to "better democracy"? The recent example of Wikipedia *vs* the Gamergate movement highlights the problems in even the most open of spaces

- What different conceptions of openness exist in theory and practice, and how are they differently promoted by different kinds of technologies?

- How do power structures reshape under open practices?

- How do regulatory instruments such as government mandates foster openness – when does open government lead to open democracy and what kind of mandates lead to open science?

- What characterises an open society – how do open technologies influence the offline experience?

Closing Remarks

- Open vs Closed
  - isn't a binary divide, it's complicated
  - isn't Good / Bad
  - isn't Generative / Barren
- The tech press doesn't get platform building
  - it understands existing categories (e.g. browser, PC, phone) and promotes 'winners' and 'losers' according to market dominance
- HOWEVER building on open platforms is crucial
  - Especially for making progressively more sophisticated information systems