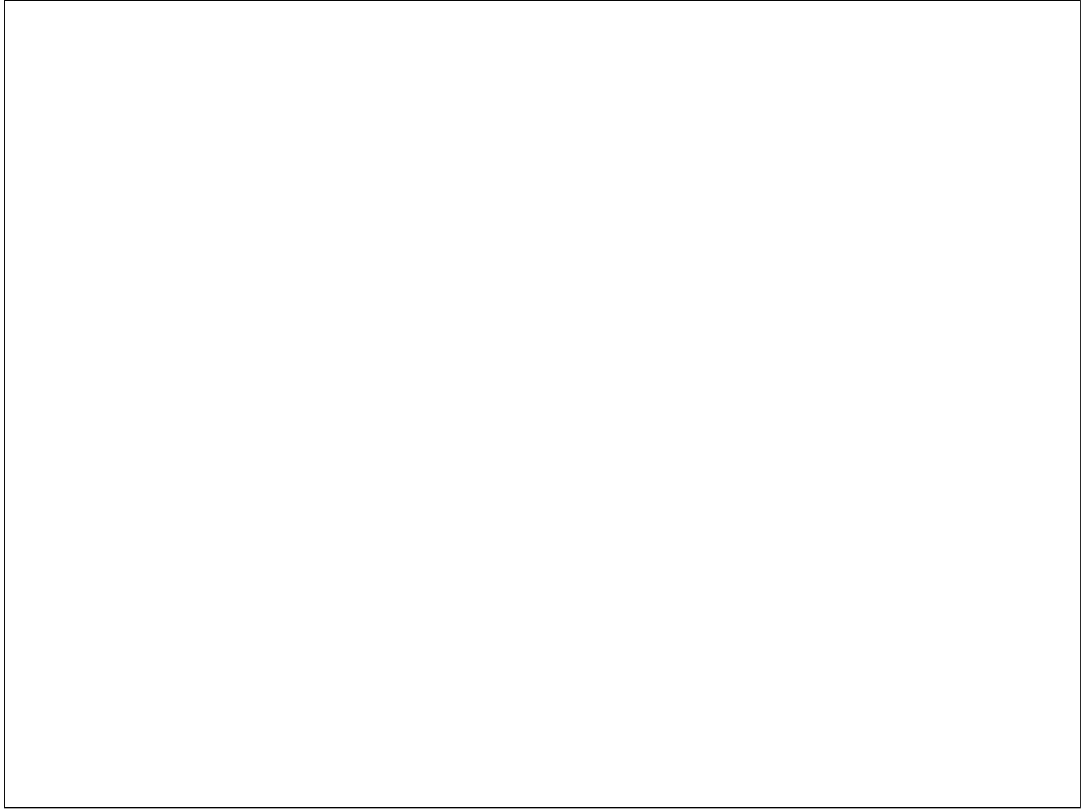


Source: Google Maps - <http://goo.gl/maps/NQMDr>



## **Learning technology – a backward and forward look**

*Seb Schmoller*

*Online Educa, Berlin, 30/11/2012*

### **0-0.5**

This talk is a much changed version of a personal reflection that I gave in September at the 2012 ALT conference, after 10 years working for the Association for Learning Technology (ALT), latterly as ALT's chief executive.

Gilly Salmon (today's chair - and a past Chair and President of ALT) thought it might be of interest to Online Educa participants.

That's why I am here.

My overall aim is to

**[NEXT]**

to draw out some of the things I have  
learned over the last 20 years, and to say  
what I think we (that is, people active in  
the field) now need to do

**0.5/1.0**

The talk is intended to work in **3** broad sections

**[NEXT]**

### **Structure**

1. What got me into the field of Learning Technology?
2. Things I have learned
3. What we now need to do

**0.25/1.25**

**[NEXT]**

# What got me into it?

**0.15/1.40**

The older I get the more important I find it is to know a bit about a speaker's back story.

It helps you put what they say into context.

Here is mine.

**[NEXT]**



Sculptor Gunter Demnig fitting three Stolpersteine, Neukölln, Berlin, 29 November 2012

### **0.75 / 2.35**

If you've walked around Berlin you will have probably come across brass Stolpersteine (in English "stumbling blocks") set into the pavement to commemorate citizens who were taken from their homes in the 1940s generally to their deaths.

In October 1942 my grandparents and my dad's grandmother were began their journey to the concentration camps from a flat just 3 km N of here, on the other side of the Tiergarten. To commemorate them I'm in the process of arranging for Stolpersteine to be placed outside that flat.

And yesterday morning I took the underground to Oderstrasse in Neukölln to see sculptor Gunter Demnig fitting

**[NEXT]**





Stolpersteine commemorating Selma Lewin, Martha Meth and Max Meth outside  
52 Oderstrasse, Neukölln, Berlin, 29 November 2012

## 0.5 / 2.85

three stones in memory of other Jews who perished in a similar way:

Selma Lewin

Martha Meth

and Max Meth

I really was in two minds about whether to include this story at the start of this talk. The advice I got from Gilly Salmon and from Graham Attwell (whom I chanced to ask) was to make the digression before getting back on track to explain that ....

**[NEXT]**



### **Roots/routes**

Berlin, Cape Town, Maseru (in Lesotho), London - 1946

Conchillas (in Uruguay), Buenos Aires, London - 1945

London, Cambridge, Sheffield - 1975

### **0.4 / 3.25**

My father came to London from here via South Africa and Lesotho in 1946

My half-Russian Uruguayan mother came to England via Argentina in 1945

I've lived since 1975 in Sheffield, an English steel, engineering and now also "digital media" town



**0.65 / 3.90**

In 1979 I got a dream job in Sheffield Trade Union Studies Centre on the top floor of Granville College in Sheffield, seen here during its demolition last year.

My role was to write and teach courses run by the TUC (the UK trade union confederation) for workplace representatives on things like employment law, organising, negotiating, representing, and occupational health and safety.

TUC courses are run at scale, with centrally created learning materials.

They've used problem based learning methods from the beginning.

This **[NEXT]**



Picture by geologist [adrian@adrianlorente.com](mailto:adrian@adrianlorente.com) who worked on the tunnel reconstruction

## 1 / 4.90

.... is the mouth of the 5km Viehla Tunnel under the Pyrenees. Until 1964 it was the longest road tunnel in the world.

I biked to it and through it in May 1985 with my friend and wonderful Trade Union Education colleague Andy Fairclough (who later died of cancer in his early 40s) on a ride between Bilbao and Barcelona.

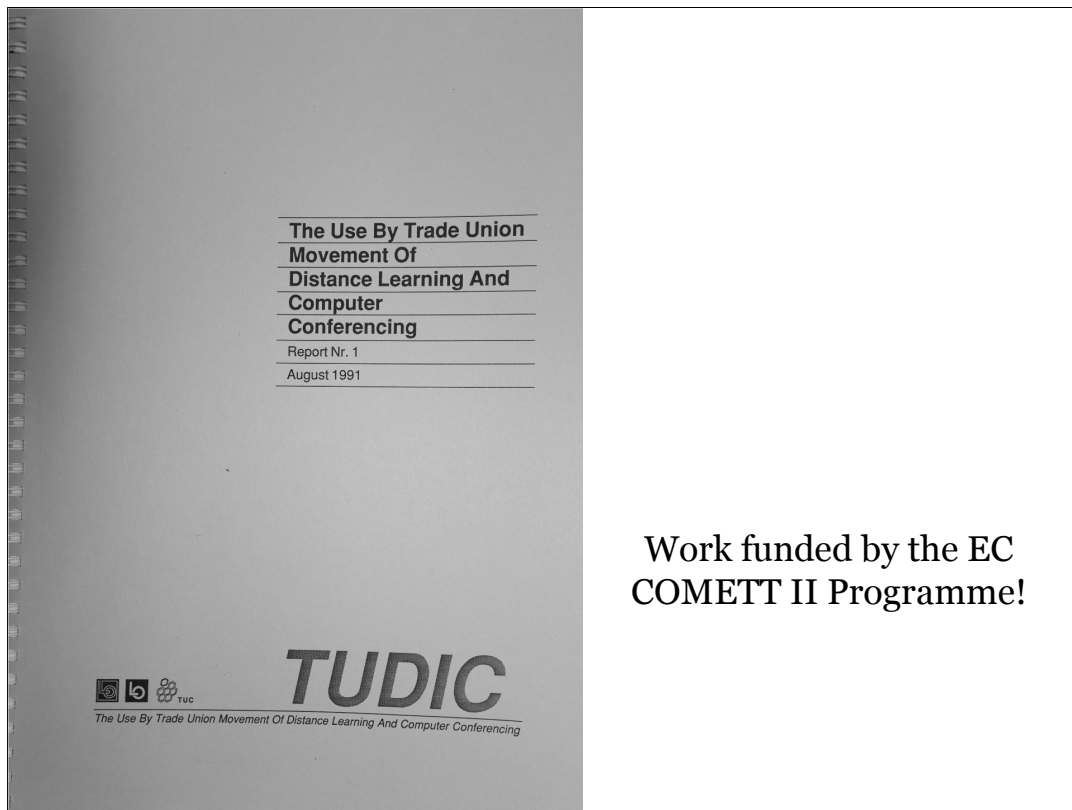
We'd each just been bitten by the computing bug.

During the up-and-down 160 km ride to Viehla we talked a lot about IT in education.

Later that year I got involved in writing courses about how to use computers in union work – which took off – and in 1990 I got roped into my first online distance learning project.....

which involved making and running an online course about European integration for union representatives in Denmark, Sweden and the UK.

Here is one of **[NEXT]**



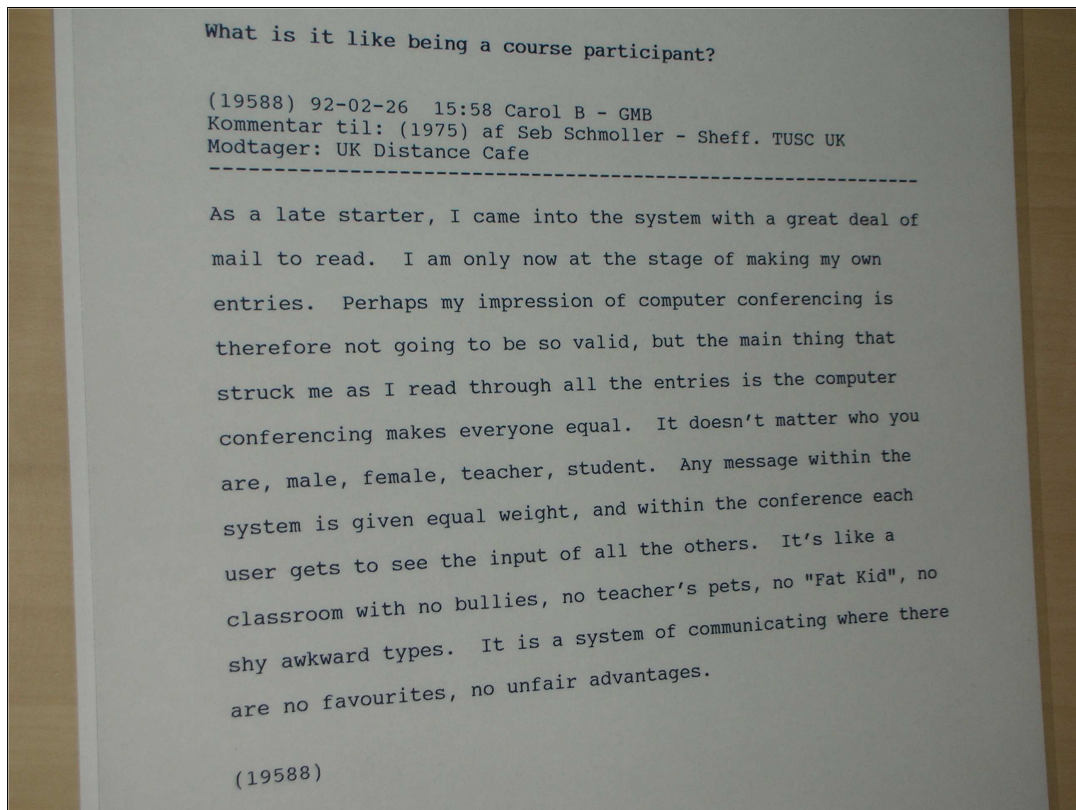
**0.25 / 5.15**

..... the project outputs – from 1991.

People in the room with long memories may recall the EC funded COMETT II programme, and I think it is still obligatory to mention COMETT II whenever a project is referenced.

And here .....

**[NEXT]**



## **0.75 / 5.8**

is an artefact from the TUDIC course

It is a 1992 posting by a student in our PortaCOM Conferencing System.

I do not know how this compares with your own experience, but I knew, when I read it just over 20 years ago, that

**online learning could change learning for the better in a fundamental way**

Around that time I decided that I would switch the focus of my work to online learning.

**[NEXT]**

INTERNET ARCHIVE
http://www.sheffield.ac.uk/lettol/
Go
JUN AUG FEB
13
1999 2001 2002
81 captures
2 Oct 99 - 11 Nov 10

# LeTTOL - Learning to Teach On-Line

[Introduction](#)  
[Course details, accreditation and prices](#)  
[Course philosophy and team](#)  
[What others have said](#)  
[Entry requirements](#)  
[Contact and registration information](#)  
[Tell someone about LeTTOL](#)

## Introduction

Over 600 people have completed LeTTOL to date, from all over the world, from the private and public sectors, and from schools, colleges, and universities. Our client list is [here](#), and you can read a selection of comments from past learners [here](#).

LeTTOL was developed in the UK, by the South Yorkshire Further Education Consortium (SYFEC), a collaboration between the 8 FE colleges in South Yorkshire. LeTTOL won the "Beacon" British Educational and Communications Technology Agency Award for Information, Learning, and Communications Technology to Support Effective Learning, in 1999, and a "Threshold" award in the UK's 2000 National Training Awards Competition.

LeTTOL is for teachers, lecturers, trainers, materials developers, and academic or technical managers. It provides an opportunity for participants to gain an understanding of how on-line learning works, and it equips participants to:

- teach learners on-line;
- support learners using email and conferencing;
- manage on-line learning provision;
- employ the Internet as a resource for teaching and learning;
- apply appropriate learning methods in the design of on-line learning materials.

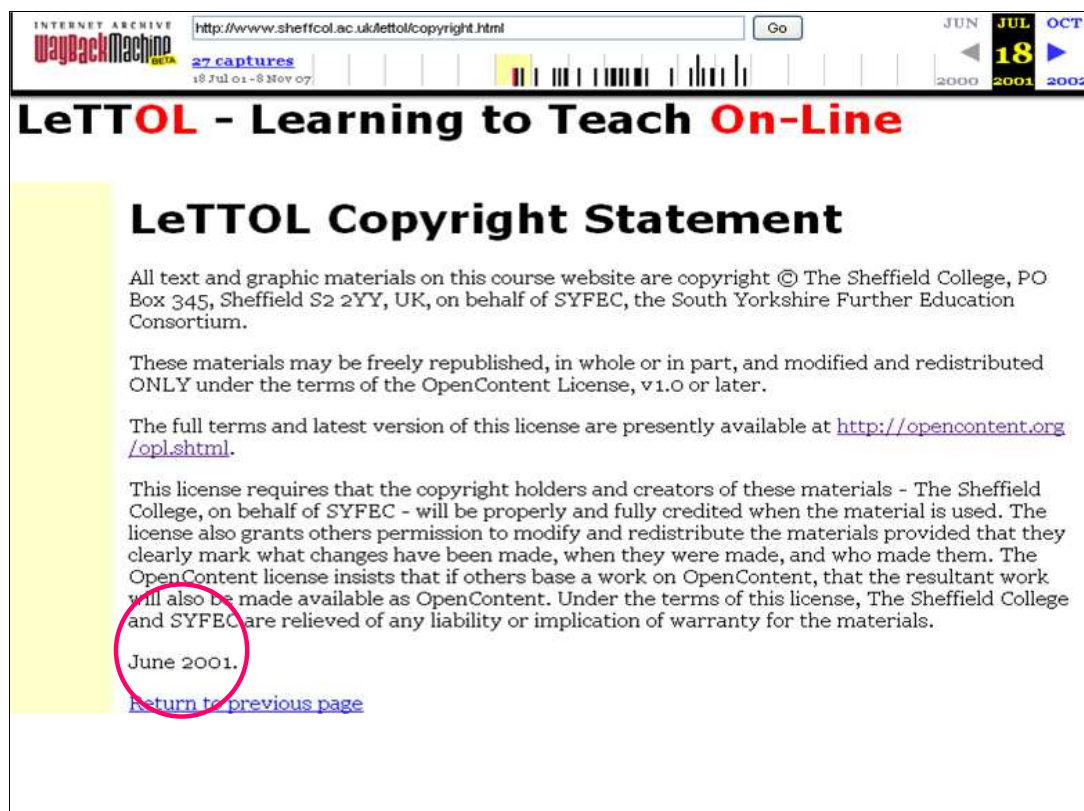
**0.25 / 6.05**

With a £16,000 grant from a UK funder we got in involved in the creation of LeTTOL, an online web-based course about how to be an online tutor.

The course launched in 1999, and it still runs from time to time.

**[NEXT]**





0.4 / 6.45

I am proud that by June 2001 LeTTOL had an Open Content license – essentially a precursor of the Creative Commons license that is so common today. Making the content freely available did not result in others trying to run our course.

In 2003 I had the luck to get a job with .....

[NEXT]



# ASSOCIATION FOR LEARNING TECHNOLOGY



Web: [www.alt.ac.uk](http://www.alt.ac.uk)

News: [newsletter.alt.ac.uk](http://newsletter.alt.ac.uk)

Journal: [ResearchInLearningTechnology.net](http://ResearchInLearningTechnology.net) (Open Access!)

Online Educa: [Stand A31](#) Twitter: [@A\\_L\\_T](#)

**0.25 / 6.7**

..... the association for Learning Technology (ALT), the UK's main membership organisation for people and organisations interested in the astute use of technology to support learning.

I'm not going to talk about ALT here except to say that I had got to be paid to do my hobby as a job for nearly 10 years, so I count myself lucky.

**[Next]**

# Meanwhile

....

0.1 / 6.8



**0.25 / 7.05**

My two children turned into young men. (One of them is drumming at the Berlin O2 World tomorrow night)



1 / 8.05

Policies of our Governments have changed widely since the mid 1970s

(I've got together pictures for Germany, the UK, the Netherlands and Finland because Educa's Severin Goerss told me these have the largest representations at the conference.)

You can see from this slide that that Finland seems to get through Prime Ministers much more rapidly than Germany gets through Chancellors.

But pictures of political leaders do not give insights into the really big no-going back political and economic changes during this period like:

deindustrialisation in many parts of Europe;

the ending of Apartheid;

the fall of the Berlin Wall;

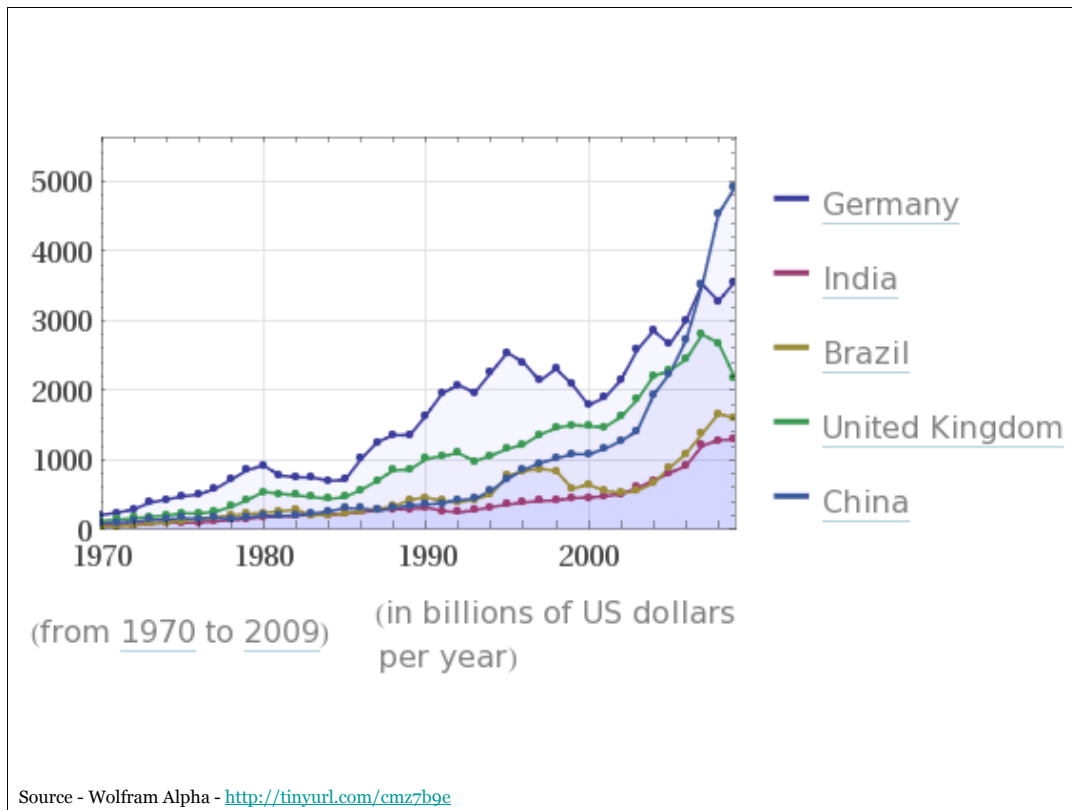
the war in Iraq;

the menacing take-off of global warming;

the 2008-2010 financial crisis

and the rise of the .....

**[NEXT]**



**0.5 / 8.55**

... BRIC countries.

See here how the GDPs of China, Brazil and India increased relative to Germany and the UK, with China's overtaking both, and now really beginning to dwarf the UK's.

And, as an aside, see the emergence of tools like Wolfram Alpha – which I used to generate this chart in less than 15 seconds – a product of the IT forces that are at work, perhaps the most important of which has been .....

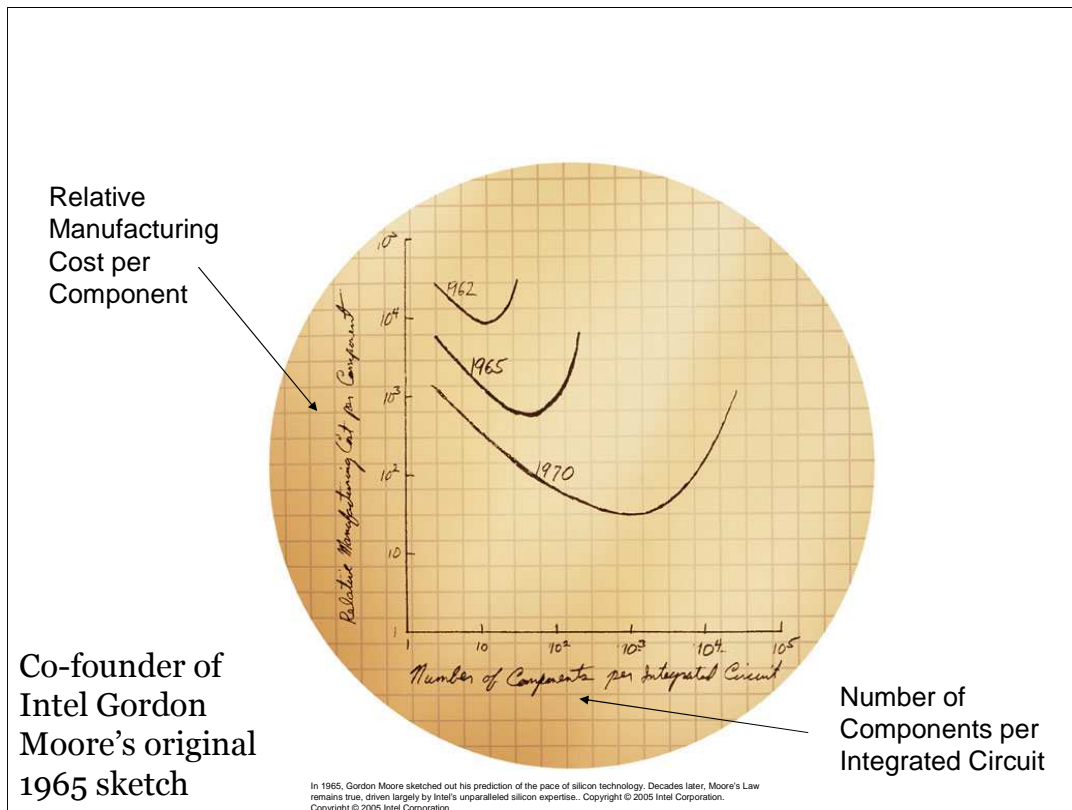
**[NEXT]**



Gordon E. Moore, Co-founder, Intel Corporation.

**0.2 / 8.75**

Moore's....



## 0.75 / 9.5

.... Law – that the number of transistors that could be economically produced on a single chip would double every 2 years

has been ticking away quietly, showing no signs of letting up for the next 10 or 20 years at least

And it is the fact of Moore's Law that enables us to do so many of the things we are now doing with IT

Not least our interaction with the Web, which my earlier use of Wolfram Alpha illustrates.

Here, for example, is an extract from a recent reaction to the death of Neil Armstrong by ex Nasa Peter Norvig and Udi Mepher both now at Google.

[NEXT]



“It takes about the same amount of computing to answer one Google Search query as all the computing done -- in flight and on the ground -- for the entire Apollo program.”

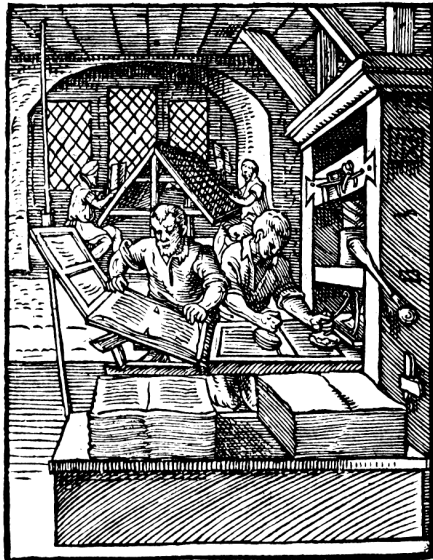
<http://insidesearch.blogspot.com.au/2012/08/the-power-of-apollo-missions-in-single.html> Udi Manber and Peter Norvig 28 August 2012

**0.25 / 9.75**

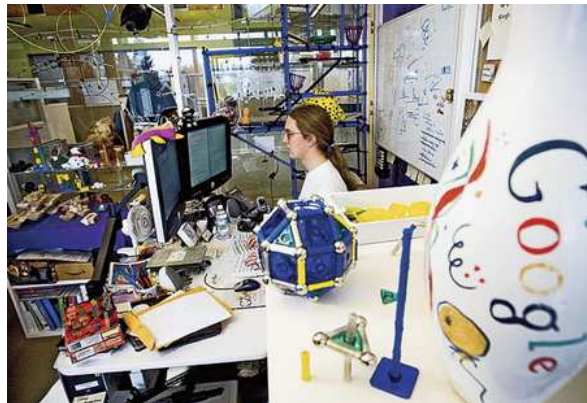
.....which is a reflection of the extreme power of Moore's Law.

In parallel, the nature of knowledge work – with the notable exception of teaching - has.....

**[NEXT]**



Picture from Wikimedia Commons: <http://tinyurl.com/6hr6hgc>



Picture by FrameSniper: <http://tinyurl.com/6afst96>

**0.2 / 9.95**

..... changed greatly.

But whereas the work of the composers at the back of the room in the picture on the left, in 1568, was basically the same as .....



Source: The Monotype Recorded  
Number 6, 1987 © The Monotype  
Corporation plc

## 1.1 / 11.05

..... that work my dad started doing nearly four centuries later – here he is in the middle of this picture as an apprentice in the 1934 composing room at Scholem's Berlin printing works.....

My dad had to adjust in his working life from

hand composing to

monotype casting to

linotype casting to

offset lithography to

photo-optical setting to

the aesthetically ghastly first attempts at computerised-based composition

that led the great computer scientist Donald Knuth to

drop his work on the 4<sup>th</sup> volume of The Art of Computer Programming in 1977

to then take eight years creating and refining the ground-breaking Open Source computer typesetting programme T<sub>E</sub>X

Moore's Law and the enormous strides that have been made in software engineering have of course driven many other changes – all of which are represented at Online Educa in exhibitors' products and services.

So now I turn to .....

# Some things I've learned

**0.15 / 11.2**

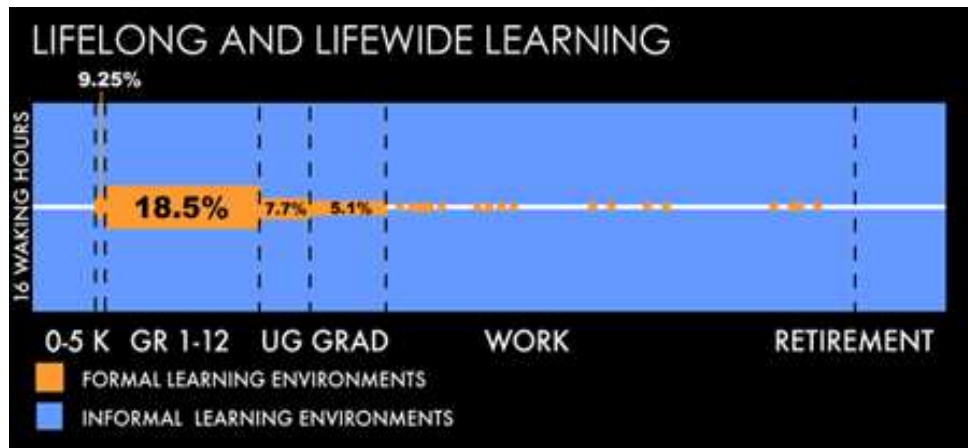
..... Which I've organised as an unstructured list un-supported by evidence, which would need longer than I've got

There are such things as  
“cornerstone ideas”. Find them!

**0.25 / 11.45**

Here are three of mine – of course there are others.

## Learning is life-wide and lifelong



Source: [NSF LIFE Centre](#)

0.45 / 11.90

Learning is lifewide and lifelong.

This diagram by Professor Roy Pea at Stanford shows elegantly how, from a citizen's point of view such a tiny proportion of life is spent in a formal learning environment, and how relatively more important (in time terms) is the informal learning environment.

**Learners *not* teachers *not* content create learning**

[Herb Simon](#)

*“Learning results from what the student does and thinks and only from what the student does and thinks. The teacher can advance learning only by influencing what the student does to learn.”*

[Dylan Wiliam](#) (at the 2007 ALT conference)

*“..... teachers do not create learning, and yet most teachers behave as if they do. Learners create learning. Teachers create the conditions under which learning can take place.”*

**1 / 12.90**

Two terrific quotes. One via Peter Norvig last month. The other from Dylan Wiliam in 2007.

Each of them spoke at the 2007 ALT conference.

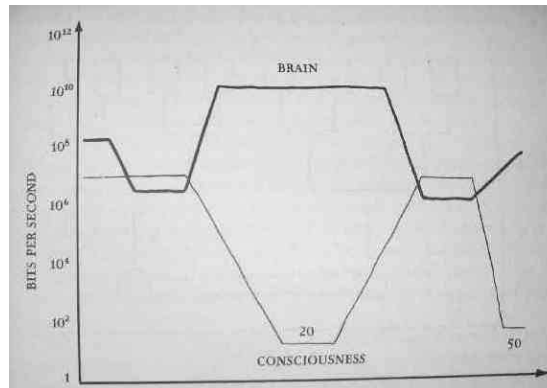
Another examples of a cornerstone idea concerns the “Bandwidth of consciousness”

**[NEXT]**



“Attention is extremely selective and the brain must rely on all sorts of shortcuts if it is to cope effectively.”

For more on this read the wonderful "The user illusion, cutting consciousness down to size" by Danish science writer Tor Nørretranders.



Clive Shepherd's summary of talk by Itiel Dror: <http://tinyurl.com/ct2rube>

My own "16 bits per second – the bandwidth of consciousness": [http://fm.schmoller.net/2007/03/16\\_bits\\_per\\_sec.html](http://fm.schmoller.net/2007/03/16_bits_per_sec.html)

## 0.75 / 13.65

The conscious mind is only able to deal with a tiny proportion of the data it receives - perhaps as little as 30 bits per second.

Perception therefore works on a very thin stream of data.

Your mind then creates a "media-rich" consciousness from this thin data-stream.

My point here is that for your own world it really is worth being on the lookout for cornerstone ideas.

Trust your intuition and the views of respected peers about which they are.

Alongside cornerstone ideas, there are also "approaches that seem to work". Here is four:

## [NEXT]

=====

We've evolved to interpret the sensually complex real world in an effective way; but that does not mean that our brains are good at interpreting media-rich inputs. In general, they are not. Think of this as a cognition-based justification for Keep it Simple Stupid.

Some kinds of change are  
unstoppable, so influence and shape  
developments rather than trying to  
block them.

**0.5 / 14.15**

Examples -

Publishers will have to get used to Openness

We have to get used to the encroachment of the private into the public  
(Google/Libraries? Coursera/Pearson/Higher Education)

Much of the exploitation of technical innovations happens in the private sector, though often in a way that depends on input and initial funding from the public sector.

**0.25 / 14.40**

Examples

Google!

Robots

It may however be publically funded, or depend on publically funded research.

Networks of trust transcend organisations,  
friendships, contracts. They are very durable.  
You can get a lot done through them.

**0.25 / 14.65**

And finally

The “terms of engagement” *really do* matter.

**0.5 / 15.05**

Thus – “dignity for the doers”

Credit and attribution (it pains me that Stephen Downes and George Siemens get insufficient credit for getting MOOCs – one kind – to happen)

Pay when pay is due

Rarely be unbending if you are a manager

**[NEXT]**

Just as with “cornerstone ideas and approaches” there are such people as “deep and leading thinkers”, who really are worth seeking out and listening to/reading.

**[Try, for example]**

How children learn - Richard Skemp:

<http://www.skemp.org.uk/>

The impact of the Internet - David Weinberger:

<http://www.hyperorg.com/blogger/>

Young people and social media - dana boyd:

<http://www.danah.org/>

**0.5 / 15.55**

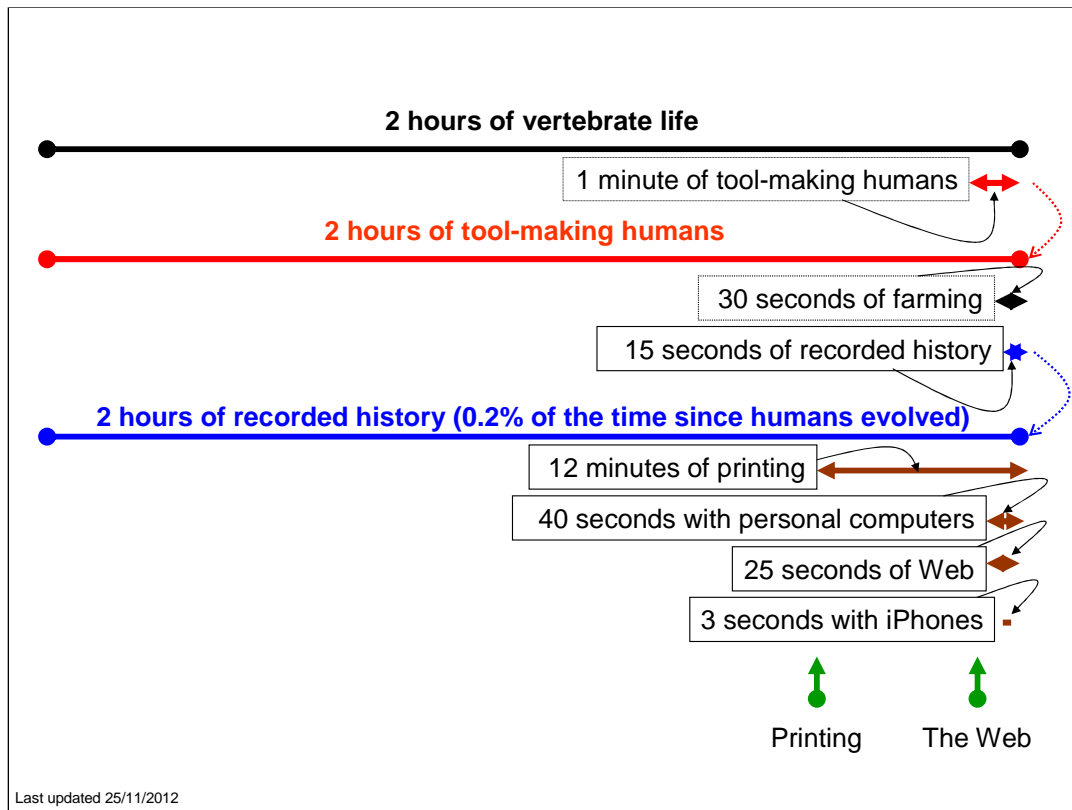
Just as with cornerstone ideas and approaches, it is worth being on the lookout for “deep and leading thinkers”.

Trust your intuition and the views of your peers about which they are.

Don't be restricted to people still living.

The final thing I have learned is best summarised with this.....

**[NEXT]**



1.45 / 17.00

.....diagram, which is prompted via Richard Sennett's book "The Craftsman" by a way of looking at the world described by the geneticist John Maynard Smith (who died in 1974).

It shows that:

1. "We" as a species (who evolved as hunter gatherers, not as book readers or Internet users) have not changed cognitively or biologically for hundreds of thousands of years.
2. We've only had recorded history for small proportion of that time.
3. We've only had the tools and systems which concern us as learning technologists for a tiny proportion of our existence.

It took centuries for the print-based distribution and mediation to become properly understood. The thing is that we really are at the very beginning of a new phase in how humans – cognitively unchanged for the last few hundred thousands years, and unchanging for the next - will create, distribute and mediate knowledge digitally.

We simply cannot know how things will turn out, so in that context .....

[NEXT]



# What we now need to do

**0.1 / 17.10**

... I turn now to what I think we now need to do

Do things at the right, big enough, scale.

**0.25 / 17.35**

Do not yourself try to replicate locally things that require large scale to work

That's why it will be the Courseras and Udacities of this world, not individual universities or colleges who will mainly make the running on massive open online courses.

Patiently wait for the drive for “world-class competitiveness” as a policy objective to dissipate.

**0.25 / 17.60**

This may be more of a UK problem than for those from elsewhere, but it is a drive that seems to permeate much of the developed world, whilst many people know that we should.....

Strive instead for world-class collaborativeness.....

Legal scholar Yochai Benkler and entrepreneur Tim O'Reilly have written extensively and accessibly about open source collaborative non-market based production

**0.25 / 17.85**

Because we will achieve more in the long run through collaboration

## Start noticing and doing something about the “unseen ends” of our use of IT

For example:

Production in China - <http://goo.gl/ovCMt> NYT article “In China, Human Costs Are Built Into an iPad”

“The real price of an iPhone 5: life in the Foxconn factory” - <http://goo.gl/8GvCu> - Guardian piece by Jemima Kiss



Image source – Australian Mining, 16/8/2012  
<http://tinyurl.com/8fer3uo>



Image source – Digital dumping ground in Agbogbloshie in Ghana - <http://goo.gl/OVIDi>

**0.5 / 18.35**

Rare earth mine; Ghana dump; Chinese factory conditions.

Easy point to make.

Difficult to address.

But these issues are on my mind and I expect that they are on the minds of many in this room too.

In closing, I say.....

Be determined in bringing our community's knowledge and experience to bear on the wider educational world.

[Afterthought, triggered by a discussion after a talk yesterday by Donald Clark.] The time is particularly right for a focus on the boundaries between learning methods, technology, scale, and the structure of public provision.

## 0.5 / 18.85

The mistake we make is think of ourselves as “the wider educational world”, but we are not.

The wider educational world does not come to conferences like this.

It rarely looks over the edge of the furrow that it is in.

Our job is to help that wider world get to grips with the problems and possibilities that stem from the kinds of changes I've alluded to.

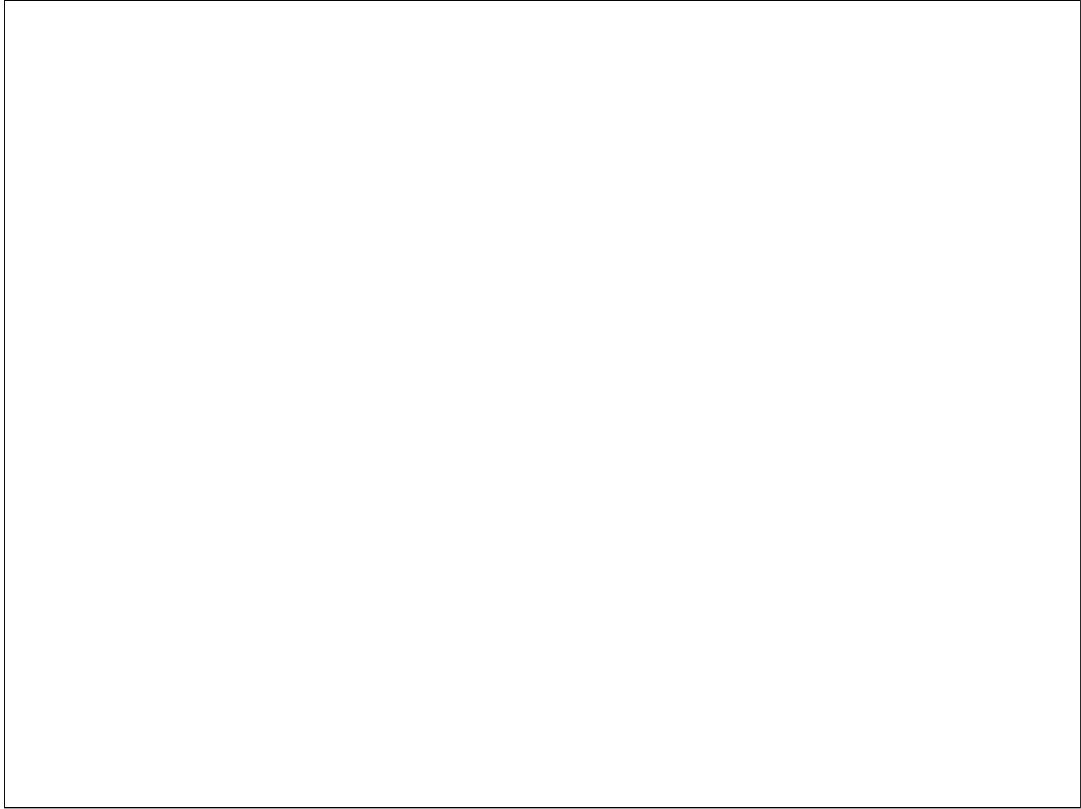
==

Last year, I was one of 20,000 of the 160,000 starters who completed Sebastian Thrun and Peter Norvig's mass open online AI course.

Thrun and Norvig invented a way of designing a mass course that made us learners feel that we were receiving one-to-one instruction. As Rob Rambusch, a fellow student of mine, put it:

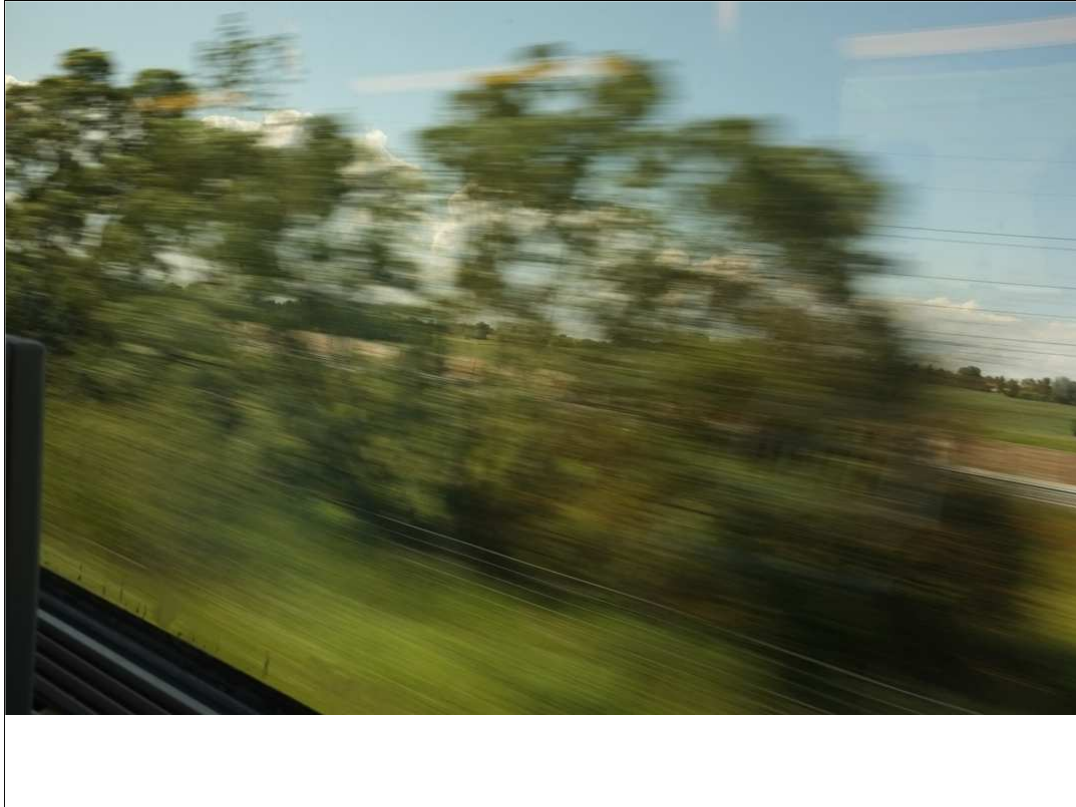
"The class felt like sitting in a bar with a really smart friend who is explaining something you haven't yet grasped but are about to."

If you are interested there is extensive material about the AI course at <http://fm.schmoller.net/ai-course/>



**0.1 / 18.95**

Breather before final slide



## 1.0 / 19.95

I took this picture last summer from a TGV train heading towards Milan from Lyons.

The point it illustrates is that for most people in knowledge-based work, we spend too much time too close to the landscape as it rushes by, to judge what is important.

This is an impediment.

It leads to passivity.

It make it difficult to feel in control.

What I have been trying to emphasise in this talk is that it really is worth:

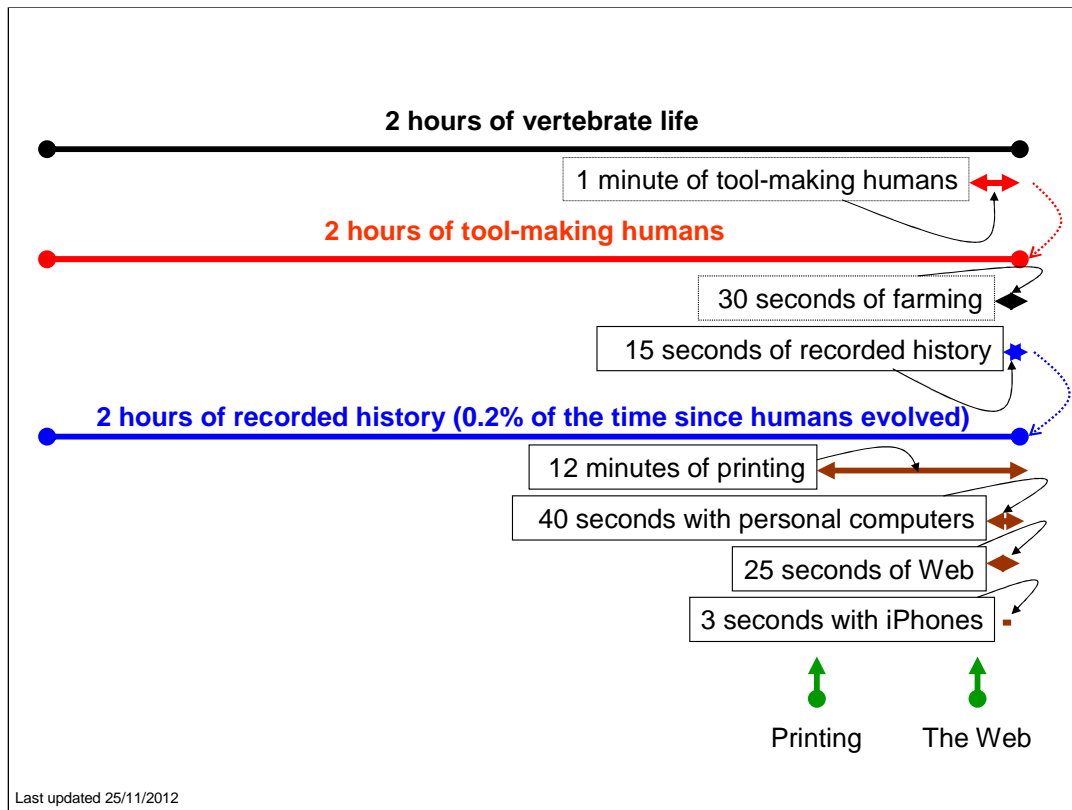
.....finding and apply cornerstone ideas

.....finding and study leading thinkers, dead and alive

.....holding true to some broad and ethical principles for action

As this... **[NEXT]**





0.25 / 20.20

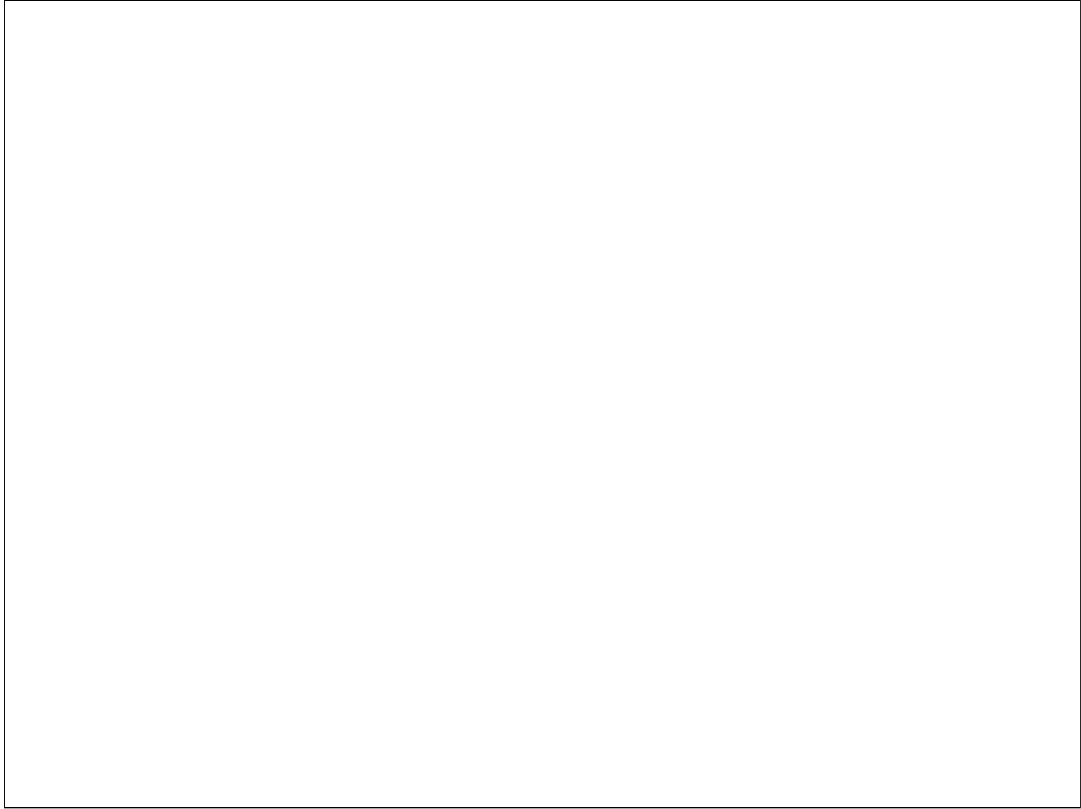
.....earlier diagram emphasises we really are at the very beginning of a new phase in how humans will create, distribute and mediate knowledge digitally, and learn.

We had better get it right.

Thank you for listening.

[NEXT]

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Final slide