Free Learning from a Development Perspective

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Some Background….

- My expertise is focused around a few core areas:
  - educational theory - specifically, ways of describing how we learn, framed as 'network learning' or 'connectivism‘
  - educational technology - models and systems for supporting and distributing learning through technology
  - policy and process supporting free and open access to learning

Currently…

- I have worked at the National Research Council since 2001
  - Previously: taught philosophy for University of Alberta, Athabasca University, Grande Prairie Regional College
  - Instructional technology developer for Assiniboine Community College and the University of Alberta
  - Currently serving as Program Leader for Learning and Performance Support Systems (LPSS) at NRC, $19 million to develop personal learning technology

My International and Development Focus

- Experience in development education in Canada
  - with Arusha Centre and Development Education Coordinating Council of Alberta (Calgary)
  - Experience traveling to and teaching in First Nations communities in Northern Alberta, Manitoba
- Work with projects internationally
  - supporting OOPS in Taiwan, EduCamp Colombia, francophonie MOOC, work with Arab League nations

Free Learning

- The idea that learning should be freely and openly accessible to people around the world
  - Free as in *gratis* – the idea that there should be no cost, either in terms of money or information
  - Free as in *libre* – the idea that you can reuse and share the materials a d results of your learning experience
  - Open as in *door* – the idea that access to learning and learning resources is not limited by prior conditions, social status, etc.

Three Perspectives

- What I would talk about is the idea of 'free learning' from three perspectives.
  - what can be done ('free learning' as a pedagogical approach, supported by learning theory)
  - what has been done (systems and technologies, such as open licensing, MOOCs and learning repositories, to support free learning)
  - what should be done (policy framework supporting free and open learning worldwide)

What Can be Done

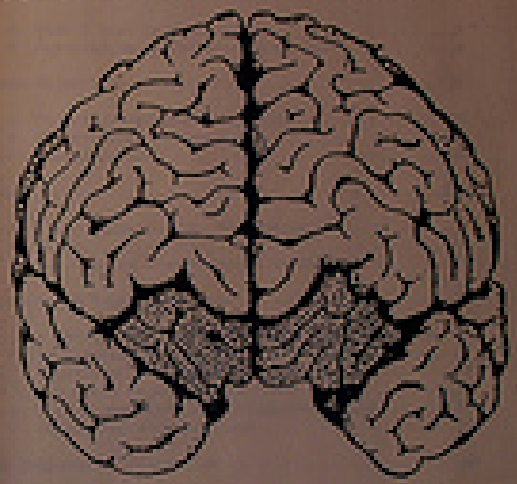
- Already occurring – the shift from instruction to engagement
  - Instruction based on behaviourist ideas of stimulus and reward, outcome based on memorization and rote
  - New constructivist pedagogies based on engagement in authentic problems, outcome based on creation of cognitive or conceptual understanding
  - Though vocal sceptics remain, constructivism is a proven approach and employed by world-leading countries (including Canad)

Connectivism

- Knowledge is created by networks of connected entities
  - Can be personal knowledge, as in neural networks
  - Can be computational knowledge, as in connectionist software
  - Can be social, as in social network theory
- Learning is the *development* of these networks
  - A focus on both personal experience and social networks
  - Learning is a matter of practice and reflection
  - To *know* is to *recognize*

HE ETWORK PHENOMENON

PIRICISM and the NEW CONNECTIONISM



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22 NOVEMBER 1990

Network Development Principles

- These inform both personal development and social development
- They are based on underlying principles supporting dynamic and responsive networks (ie., networks that can learn):
  - *Autonomy* – each entity has its own values and objectives and decides for itself
  - *Diversity* – each entity in a network is unique, both in terms of internal constitution as well as in terms role, function and perspective
  - *Openness* – membership in the network is fluid; content (signals, messages) can enter and exit the network
  - *Interactivity* – knowledge in the network is created by the interactive process (as opposed to the content of signals propagated through the network)

Free Learning and Connectivism

- These reinforce and depend on each other
- For example, autonomy as a pedagogical principle creates a requirement for:
  - *Access* to learning materials and resources without cost or barriers
  - *Connection* with other learners by means of sending signals to other network entities (learners, instructors, friends and associates)
  - *Open learning* or the ability to join networks regardless of qualifications or social standing

The learning process

- To learn is to practice and reflect; to teach is to model and demonstrate – each member of the network both learns and teaches
- A rough outline of a learning process:
  - *Aggregate* – seek out connections and obtain resources through those connections
  - *Remix* – join the resources from multiple connections together
  - *Repurpose* – adapt the remixed resources
  - *Feed Forward* – send the newly created resources on to the next nodes in the network

What Has Been Done

- Network theory is established in multiple domains
  - Foundation in mathematics, as graph theory
  - Computer science – connectionism and neural networks
  - Biology – ecology and ecosystems
  - Sociology – social network analysis
  - Physiology – perception, neuroscience
  - Philosophy – information theory, distributed representation

Examples of network in operation

- Networks in nature, such as the murmuration
- Social organization, such as corporate networks, political networks
- Infrastructure, such as the electrical grid
- The internet, a worldwide information network
- Social networks, such as discussion boards, web sites, Facebook, Twitter

Identification of Network Principles

- The internet – based on a distributed and connective architecture
- Open Source Software as a form of organization (the Cathedral and the Bazaar)
- Forms of organization – networks are conversations (the Cluetraion Manifesto) – small pieces loosely joined
- Open Access and Open Archives Initiative

Open Educational Resources

- A subset of open access in general, focused on learning resources
  - Defined as a concept by UNESCO in 2002
- May be based in a set of educational standards defining learning resources specifically
- The status of OERs may vary considerably depending on the licensing adopted

http://wikieducator.org/OER_Handbook/educator_version_one/Introduction/Defining_OER

Licensing Models

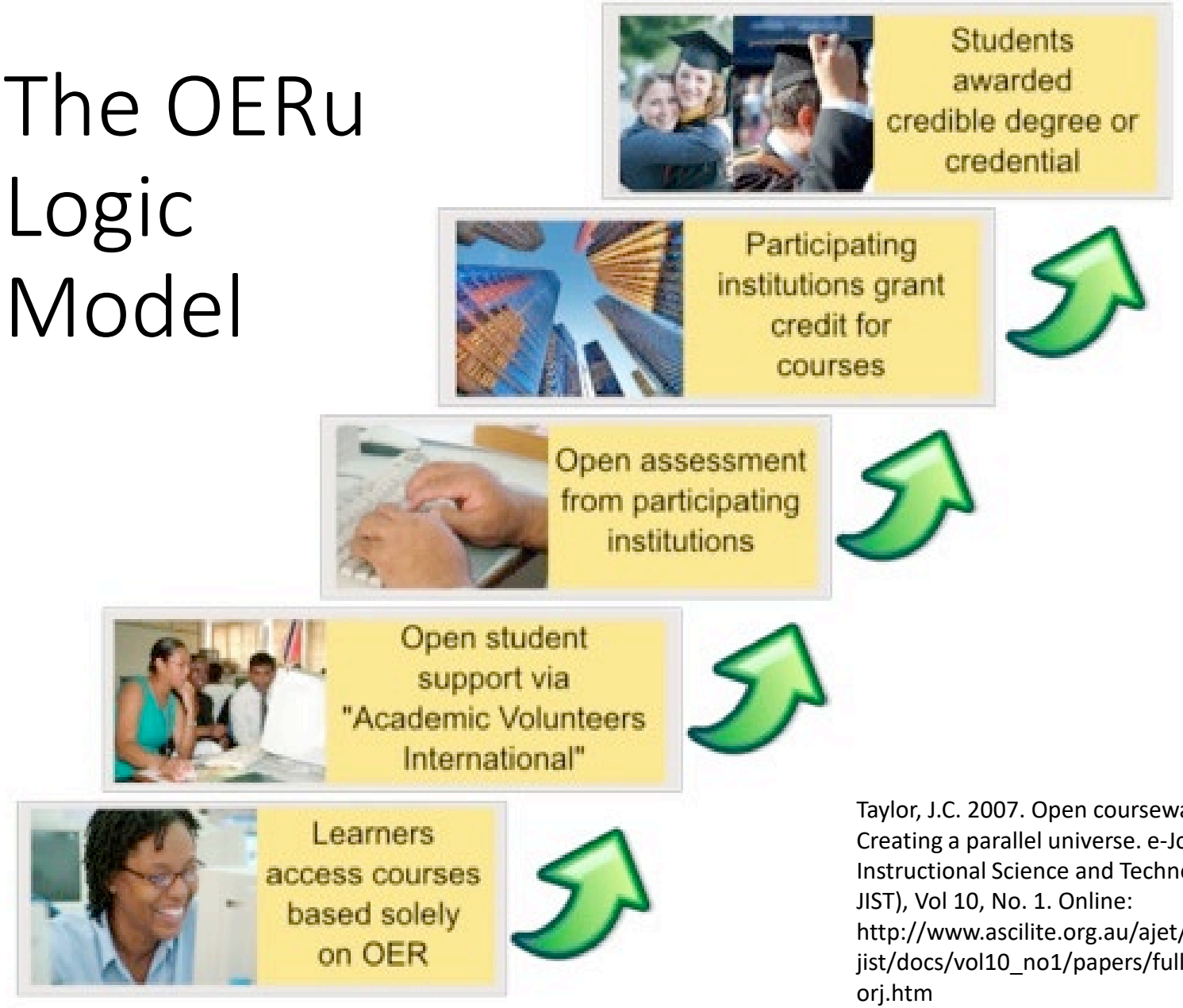
- GPL or ‘viral’ licensing – enables free sharing of resource, on the consition that the license travels with the resource, even if the resource is adapted – for documents, GFDL
- Creative Commons – a set of licences supporting free sharing, with ‘some rights reserved’ by the author
  - Attribution, Share-Alike, Non-Commercial, No-derivatives
- Open access, rights reserved – copyright content enabled for free access (eg. YouTube videos) but *not* licensed for reuse or sharing

http://legacy.earlham.edu/~peters/fos/overview.htm

OERs in Traditional Courses

- Course components or entire course packages are created and made available online, suitable for discovery and redistribution
  - Rice University's *Connections* – a course building resource
  - WikiEducator / OERu– OERs built using a wiki system (also: Wikiversity, Curricki)
  - MIT OpenCourseware – learning resources only
  - Open University OpenLearn – complete learning packages
- The focus iss on reuse by educators or other teachers, who would access these materials and adapt them to local use

The OERu Logic Model



Taylor, J.C. 2007. Open courseware futures: Creating a parallel universe. e-Journal of Instructional Science and Technology (e-JIST), Vol 10, No. 1. Online: http://www.ascilite.org.au/ajet/e-jist/docs/vol10_no1/papers/full_papers/taylorj.htm

Criticism of the Logic Model

- Traditional Curricular based approach
  - a focus on articulation & credit transfer
  - closed federation of traditional institutes
- Tight link to traditional credentials
- The Black Box problem – ‘open’ this or that (eg. ‘open business model’) unstudied and undeveloped

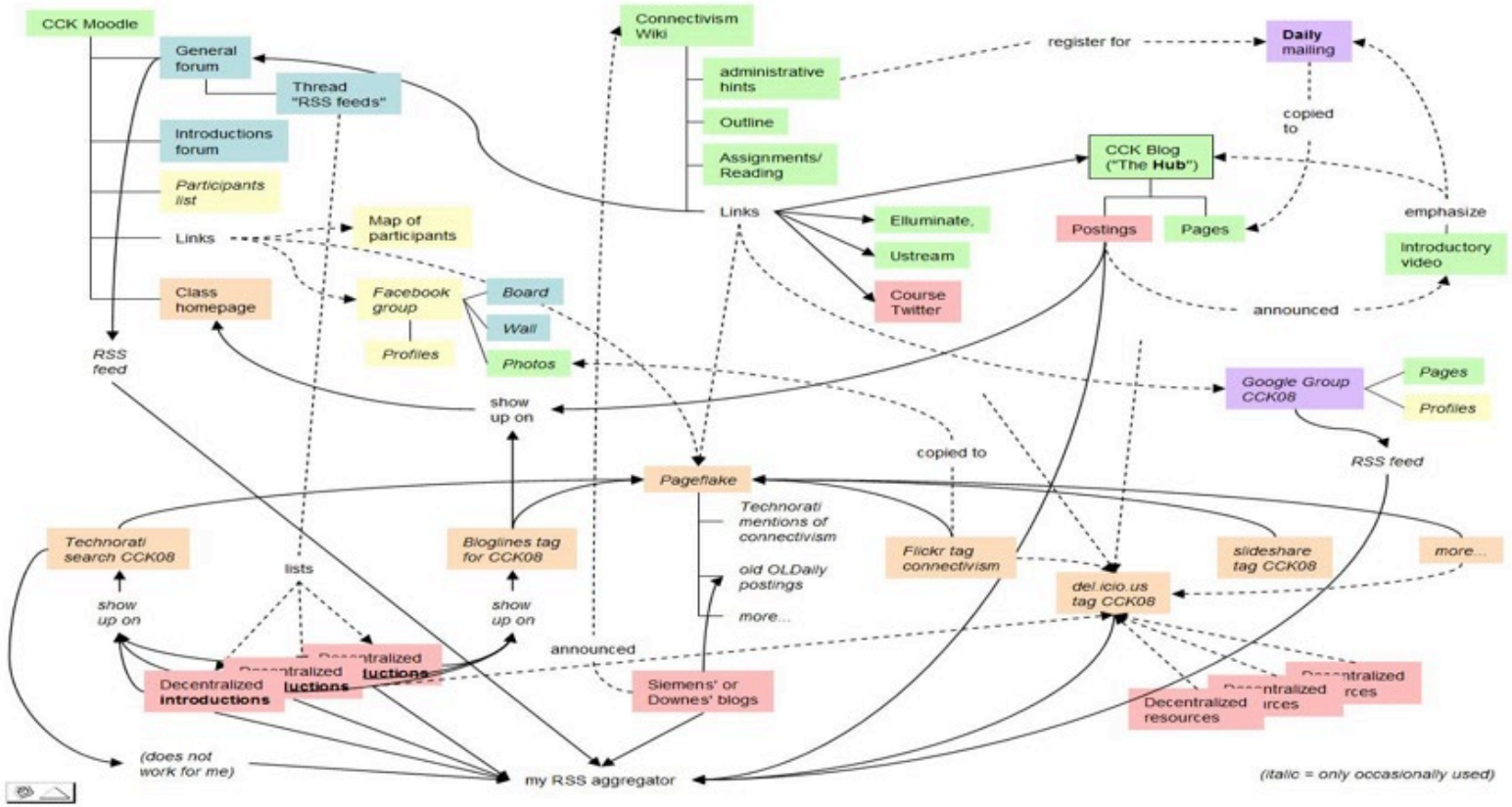
The Connectivist MOOC (cMOOC)

- Instead of seeing a course as a series of contents to be presented, envisions a course as a network of participants who find and exchange resources with each other (2008)
  - An initial structure is developed and ‘seeded’ with custom-built or (preferably) existing OERs
  - Participants are encouraged to use *their own sites* to create or share resources
  - A mechanism (gRSShopper) is employed to *connect* these disparate sits with the course core and distributed participant sites

http://www.connectivistmoocs.org/what-is-a-connectivist-mooc/

http://change.mooc.ca/how.htm

A Map of the Community



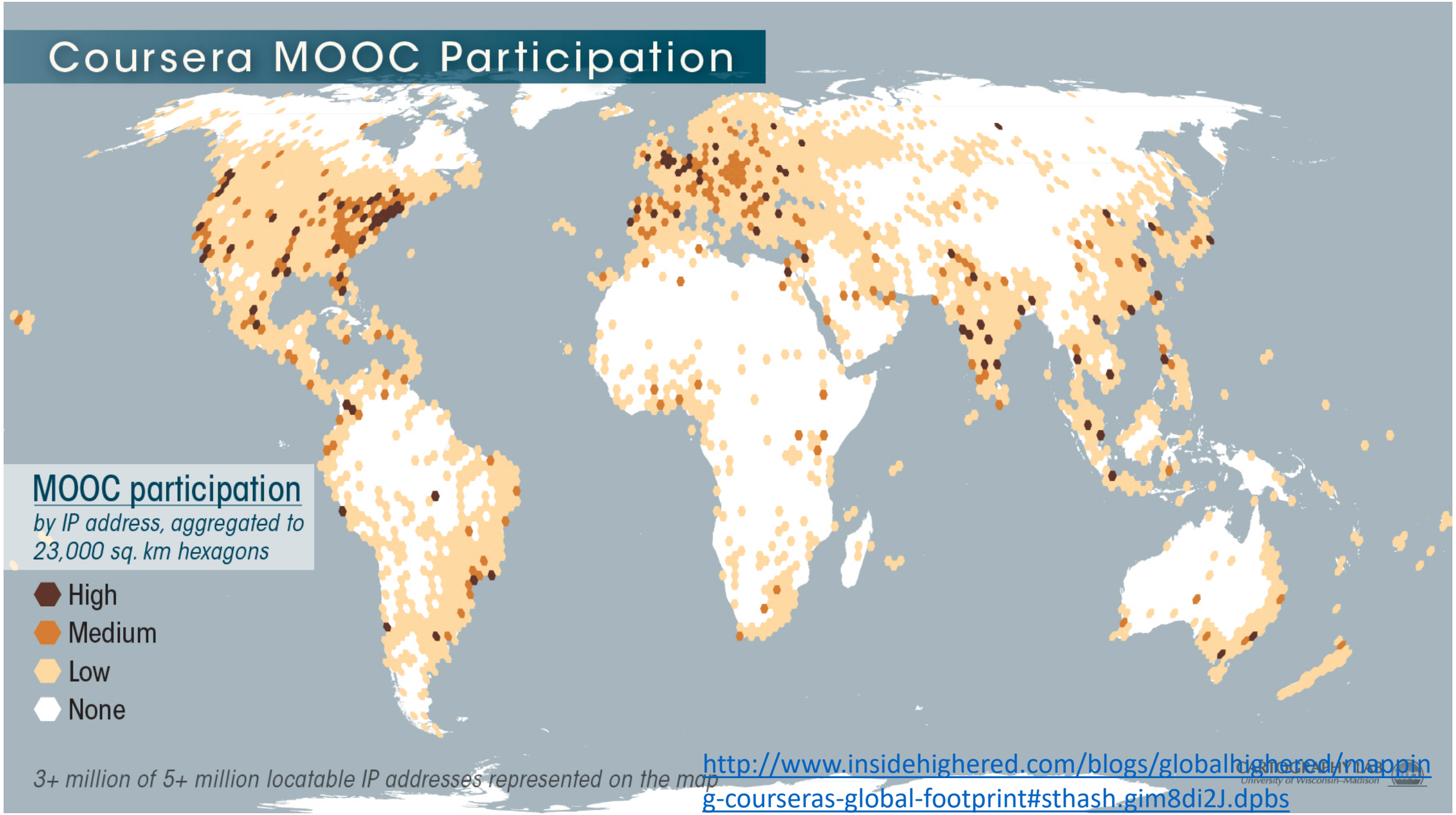
Connectivism: A Theory of Personal Learning
Stephen Downes, December 3, 2008, Educational Development Centre, Ottawa
http://www.downes.ca/presentation/208

The eXtended MOOC (xMOOC)

- Combines open access and traditional course structure
  - First such was Stanford's AI course (2011)
  - Content tends to be open access only and is bespoke created
- Spawned a number of highly visible initiatives
  - Coursera, Udacity launched by Stanford AI founders
  - EdX created by a consortium of eastern universities (MIT, etc)
  - Open University launched FutureLearn
  - Existing LMS companies have created 'open' versions of their platforms
  - Numerous other initiatives (eg. Codeacademy)

What We Know

- There is a huge pent-up demand for open online learning (market projected to have 58% CARG)
- This demand is world-wide (initial results notwithstanding)
- The widespread adoption of open online learning will require both infrastructure and policy initiatives


Coursera MOOC Participation
MOOC participation
by IP address, aggregated to 23,000 sq. km hexagons
High
Medium
Low
None
3+ million of 5+ million locatable IP addresses represented on the map
http://www.insidehighered.com/blogs/globalhighered/mapping-courseras-global-footprint#sthash.gim8di2J.dpbs

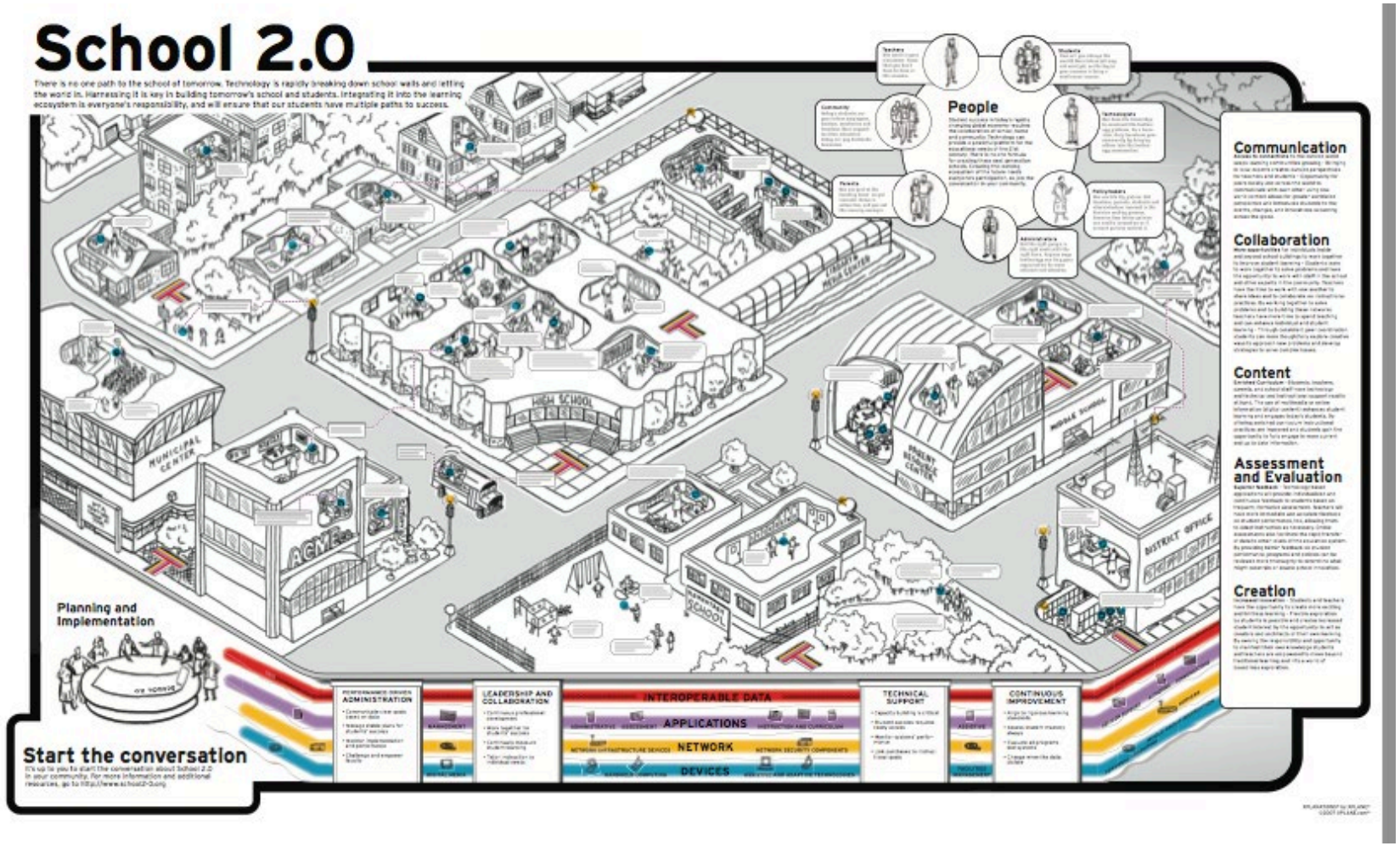
What Should be Done

- Criticisms of MOOCs (and expecially xMOOCs)
  - Content is often open access only, and cannot be shared
  - Traditional course structure is instructivist in nature
  - They serve mostly educated professionals from the developed world who already have degrees
  - Significant internet overhead required to provide access

A Connectivist System

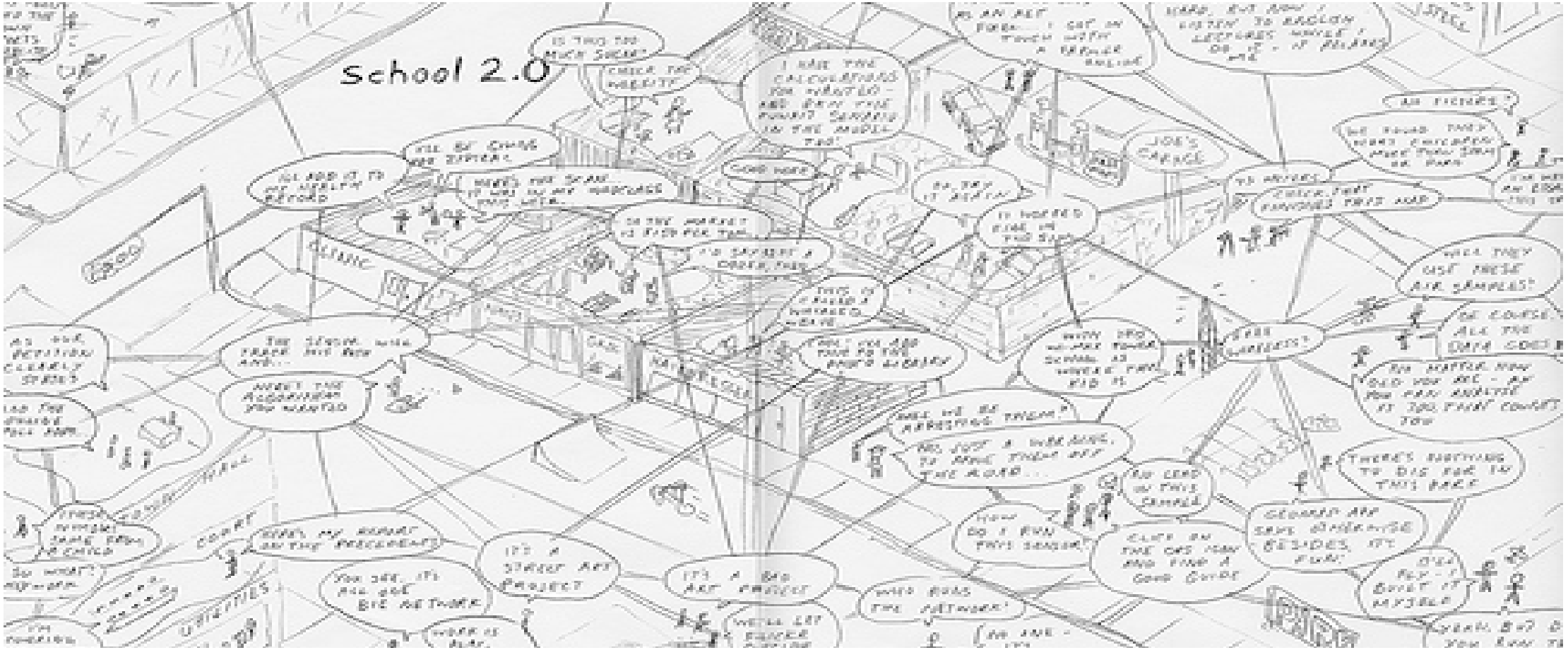
- We began by applying connectivism to courses only
- Ultimately, network learning is best supported with a connectivist system
  - This has a basis in *personal learning* rather than the existing community focus
  - Note: not ‘personalized’ but actually *personal*
- Personal learning is based on the needs of individuals, in the context of their actual community
- It is an emphasis on informal and practical learning, such as performance support

The Old School 2.0



School 2.0 etoolkit http://etoolkit.org/etoolkit/

New Models for Schools



New Roles for Government

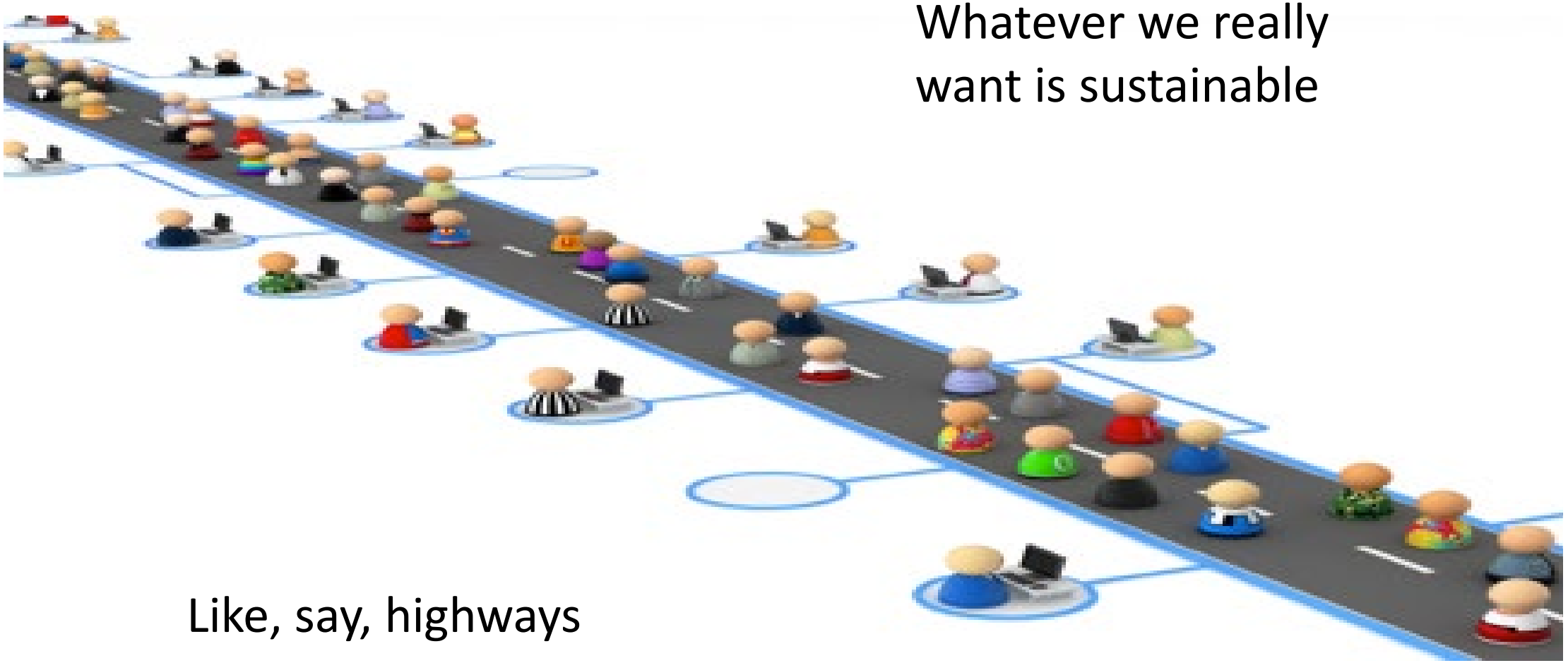
- Communications and Education Infrastructure
- Support for Open Educational Resources
- Support for Free Learning
- Management of assessments and credentialing

The Digital Infrastructure

- Public high-speed backbone networks
  - used not only for education but for other public services: police, fire and emergency, hospital, municipalities, etc.
- Local Access
  - eg. CAP Centres
- Legal Framework
  - policy on digital rights and copyright
  - net neutrality and similar regulations

A Note on Sustainability

Whatever we really want is sustainable



Like, say, highways

Sustaining Infrastructure

- Support for existing programs and services
  - cost reductions in communications overhead
  - improved efficiency of public service delivery
- Overhead on entertainment and commercial infrastructure
  - similar to broadcast ‘CanCon’ requirements

Standards

- Embrace standards that are syntactic in origin, resist standards that are semantic in origin
  - ‘syntactic standards’ are mechanisms that support connection and communication (like the mechanisms for connecting phones, specification of how a lightbulb screws into the socket)
  - ‘semantic standards’ address the content of the network (like the conversations people have on the phone system, like the type of bulb or colour of light it emits)

Open Educational Resources

- Traditional Resources
  - Already developed and paid for by government
  - Open access initiatives
- Public Policy Resources
  - design to serve a public end or objective
  - focus on basic literacies & community empowerment

Sustaining OERs

- Redirection of existing resource allocations
  - eg. OA mandates for grants and programs
  - community outreach for existing agencies
    - eg, NASA
- Support for community-based OER process
  - integration of OER development and use within publicly supported curricula
  - use of OERs in public services and programs

- Stephen Downes, Models for sustainable Open Educational Rsources, ijklo.org/Volume3/IJKLOv3p029-044**Downes**.pdf http://www.downes.ca/presentation/76
- OER Help with Keynote Slides, OER-Forum http://lists.esn.org.za/pipermail/oer-forum/2011-October/thread.html

Software and Service Support

- Software and environment support
  - eg. Public Knowledge Project Open Journal Systems, Moodle, et
- Service networks and support
  - JISC / CETIS, EdNA, etc.
  - Common Services - eFramework

Sustaining Support Systems

- Development and systems research support
- Public adoption of open licensing
  - FLOSS
    - GNU/GPL, BSD, etc
    - Creative Commons
  - directs resources toward multi-sector development
- Community service requirement for commercially sourced software

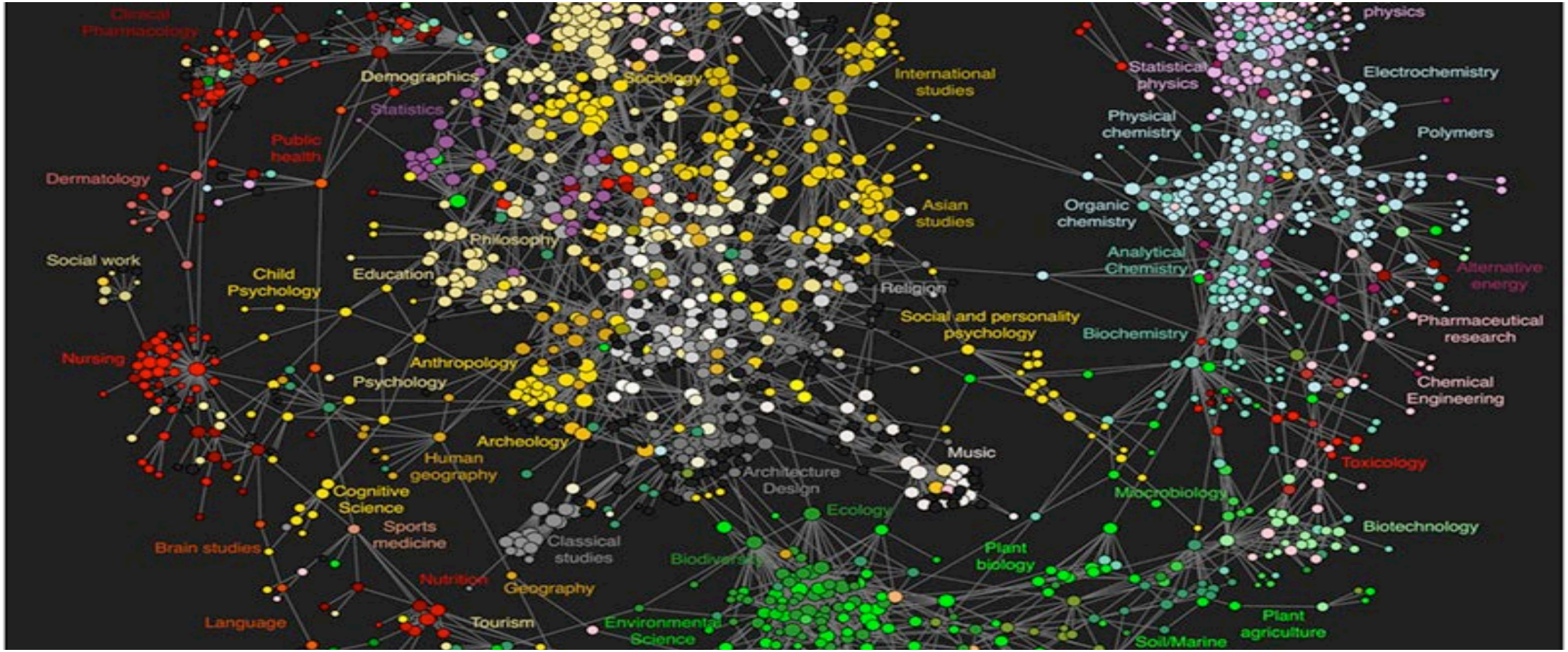
Assessment and Credentialing

- Major policy initiatives
  - separation of delivery and assessment
    - an end to Digital Diploma Mills
  - management of credentialing by professional associations under a regulatory framework
  - development of community-based assessment metrics and infrastructure
    - move away from simple testing, toward authentic community engagement and referrals

Assessment and Credentialing (2)

- Support for Personal Learning
  - provision of personal learning environments and frameworks
    - promote lifelong learning
    - link to skills database, corporate training registries
    - direct support for employment and funding
  - personal portfolios and credential banks
    - voluntary, self-managed
    - optional identity frameworks

New Roles for Research



Community = Interactions

- Not ‘spreading the word’
- Not ‘amplification’
- But rather, the creation of our own society, together
  - emergent from the free actions of each of us
  - not based on the ideas of one (or a small number) of individuals

Open Communities are Free

Dave Pollard, the Metamovement http://howtosavetheworld.ca/2011/10/20/the-metamovement-moving-beyond-marches-and-people-in-the-street/

- I'll be clear at the outset that my expertise is not in the area of providing basic education. So there are aspects of what you do in your office that I will not be able to touch upon. Rather, my expertise is focused around a few core areas:
  - educational theory - specifically, ways of describing how we learn, framed as 'network learning' or 'connectivism'
  - educational technology - models and systems for supporting and distributing learning through technology
  - policy and process supporting free and open access to learning

  So, what I would talk about is the idea of 'free learning' from these three perspectives. In particular, the talk could break into three phases:
  - what can be done ('free learning' as a pedagogical approach, supported by learning theory)
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  How is that?