Data, learning and the architecture of understanding

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Possibly the most interesting and potentially the 'newest knowledge' aspect of the PhD project is how data and learning are 'intertwingled'. I've been led into this area by instinct, having realised that in dealing with *smart* (city) learning, we need to think as much about data as we do about knowledge and community. The idea has been lurking around for some time but ignited when I read Cutting the Trees of Knowledge: Social Software, Information Architecture and Their Epistemic Consequences by Michael Schiltz, Frederik Truyen & Hans Coppens and I was again reminded of how much the tagged, metadata'd, semantic web has to do with what we find, know and become. Put another way: how Resource Description Frameworks and Ontology Web Languages will impact smart learning.

The idea of the PhD (the questions) relate to pedagogy, frameworks and learning design for smart cities. If I'm not wrong, this *has* to mean how pedagogy impacts on data and algorithm design as much as it has to do with how human learners react and interact to learning experiences mediated by tech. As I'm progressing, the whole concept of pedagogy-to-algorithm is becoming dominant. It's a big concept but I really don't think this loses sight of the questions. Quite the opposite, I think it embraces them more. This thinking is mainly focused on cognitive/affective (conative) interactions in technically mediated learning, and how these might be interpreted, analysed and adopted into algorithm design for advanced smart delivery of personalised learning. In practical terms it means that data is produced according to learning design and the consequent interface and functionality interactions that take place because of those designs. So learning design > user-learner journey design > learning data.

I've begun to stress the interdisciplinarity of the whole work, while making effort to not lose sight of the importance of the *pedagogical* but stressing more the importance of the relationship of pedagogy to 'data for learning'. If there is a way or ways of tracing connections (relationships) between pedagogical design and production of useful data and of the analysis of data, then we as (technically orientated) educators can have impact into how data scientists design their algorithms. This potentially makes for far more dynamic and useful data than that which we currently know as 'learning analytics', a sort of basic google analytics for the VLE. It is necessary to stop thinking of learning online (in a VLE especially) the same as we think of goal conversion in commercial websites. We need to think far more deeply and on multiple levels to understand how data can be made, so that it is actually *learning data*, not just website data in a VLE – i.e. time on page, how many downloads, how many log ins etc. This kind of data tells us nothing about the learning.

Morville puts it well in his latest book 'Intertwingled', on page 46 he says:

> "The origin of our (information architecture) work is ontology. [...] In designing taxonomies and vocabularies we serve as architects of understanding. We shape how users view the business, topic, task...".

Pedagogy designs for learning, but in a super-connected world, (web) ontology can design for understanding.

Apart from Morville's books, which I first noticed about ~~five~~ seven years ago (Search Patterns), and then rediscovered through Schiltz et al's citing of Ambient Findability, I've found other great thinkers and projects

relevant to this area. A few I highly recommend checking out further:

- Ben Williamson: his article on ClassDojo, and other papers, two blogs (dmlcentral), (Code Acts in Education), and a post at pearson.com about Pearson Education data.
- Jose Van Dijck for her attitude about the connectivity and platform society, and her papers
- Considering Pask, I came across Paul Pangaro and the ThoughtSticker app (very early conceptual ideas on clever delivery of content for learning)
- IBM Smarter Education have some interesting articles

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