

Chapter 1

Learning Networks and Connective Knowledge

Stephen Downes

National Research Council, Canada

ABSTRACT

The purpose of this chapter is to outline some of the thinking behind new e-learning technology, including e-portfolios and personal learning environments. Part of this thinking is centered around the theory of connectivism, which asserts that knowledge - and therefore the learning of knowledge - is distributive, that is, not located in any given place (and therefore not 'transferred' or 'transacted' per se) but rather consists of the network of connections formed from experience and interactions with a knowing community. And another part of this thinking is centered around the new, and the newly empowered, learner; the member of the net generation, who is thinking and interacting in new ways. These trends combine to form what is sometimes called 'e-learning 2.0' - an approach to learning that is based on conversation and interaction, on sharing, creation and participation, on learning not as a separate activity, but rather, as embedded in meaningful activities such as games or workflows.

THE TRADITIONAL THEORY: COGNITIVISM

The dominant theory of online and distance learning may be characterized as conforming to a 'cognitivist' theory of knowledge and learning. Cognitivism is probably best thought of as a response to behaviourism. It provides an explicit description of the 'inner workings' of the mind that behaviourism ignores. It

is founded on the view that the behaviourist assertion that there are no mental events is in a certain sense implausible, if only by introspection. There is something that it is 'like' to have a belief, and this something seems clearly to be distinct from the mere assemblage of physical constituents. Searle in *Minds, Brains, and Programs* (1980) and Nagel in *What is it Like to Be a Bat* (1974) offer the most compelling versions of this argument.

In other words, cognitivists defend an approach that may be called 'folk psychology' (Ravenscroft,

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2004). “In our everyday social interactions we both predict and explain behavior, and our explanations are couched in a mentalistic vocabulary which includes terms like ‘belief’ and ‘desire’.” The argument, in a nutshell, is that the claims of folk psychology are literally true, that there is, for example, an entity in the mind corresponding to the belief that ‘Paris is the capital of France’, and that this belief is, in fact, what might loosely be called ‘brain writing’ - or, more precisely, there is a one-to-one correspondence between a person’s brain states and the sentence itself.

One branch of folk psychology, the language of thought theory, holds that things like beliefs are literally sentences in the brain, and that the materials for such sentences are innate. This is not as absurd as it sounds, and writers like Fodor offer a long and well-argued defense in works such as *The Language of Thought* (2005), *RePresentations* (1983) and *Psychosemantics* (1989). Intuitively, though, you can think of it this way: sculptors sometimes say ‘the sculpture was already in the rock; I just found it’. And, quite literally, it makes no sense to say that the sculpture was not in the rock - where else would it be? The idea of ‘shaping the mind’ is the same sort of thing; it is a revealing of the potential that is latent in the mind, the pre-existing capacity to learn not only language but even sets of concepts and universal truths.

Where the Fodor approach intersects with learning theory is via communication theory, the idea that communication consists of information that flows through a channel (Griffin, 2002). When we join folk psychology with communications theory, we get the idea that there is something like mental content that is in some way transmitted from a sender to a receiver. That we send ideas or beliefs or desires through his channel. Or at the very least, that we send linguistic or non-linguistic (audio music and video images, for example) *representations* of these mental entities.

In learning theory, the concept of transactional distance is based on this sort of analysis of communication (Moore, 1973). What that means is that

there exists a space (construed either physically or metaphorically) between two entities between which there exists a channel of communication. In one entity there exists a state, a mental state, which corresponds to a semantic state (in other words, a sentence), and in the process of communication, (aspects of) that state are transmitted from the first entity to the second. This transmission is known as a signal, and as writers like Schramm (1964, 1997) observe, the state transfer is made possible because it constitutes an experience (a mental state) shared between sender and receiver.

This signal, in physical form (such as, say, a book) may constitute an artifact; alternatively, it may be viewed as a medium. The physical analysis of learning, on this account, becomes possible because the physical state - the actual communicative entity - matches the mental state. Thus, the relative states in the sender and the receiver can be (putatively) observed and measured. For example, this approach allows Dretske, in *Knowledge and the Flow of Information* (1999), to explain communication from the perspective of information theory. The transfer of information, suggests Dretske, occurs when, as the result of a signal from an external entity, one’s assessment of the total possible states of affairs in the world is reduced.

Moore’s (1989, 1993) contribution to educational theory may be placed firmly within this framework. His view is that the effectiveness of communication is improved through interaction. Instead of viewing communication as a one-time event, in which information is sent from a sender and received by a receiver, the transfer of information is enabled through a series of communications, such that the receiver sends messages back to the sender, or to third parties. This is similar to the ‘checksum’ mechanism in computer communications, where the receiving computer sends back a string of bits to the sender in order to confirm that the message has been received correctly. Minimally, through this communication, a process of verification is enabled; one can easily infer more

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