

The Logical Æther

Nick Rossiter & Michael Heather

[http://nickrossiter.org.uk/process/
michael.heather@cantab.net](http://nickrossiter.org.uk/process/michael.heather@cantab.net)

Abstract

The propagation of light and the action at a distance of gravity are still a mystery. Some all pervasive medium would provide a ready answer. Newton postulated a compact luminiferous medium that was not detectable but which could transmit light as through a gas. The word *luminiferous* however like many examples in science is just a classification and is not realised for any known medium although it seems a compact density could be related to dark matter. The Michelson & Morley experiments to detect the Earth's motion through the æther was inconclusive and Einstein side stepped its existence in general relativity.

Nevertheless the many attempts to discover the æther in the 19th and 20th centuries were centred around physical materials and bottom-up theories that are first order which will always be limited to local limitations whereas we might expect any pervasive medium to have a global character. As pointed out by Alfred North Whitehead top-down needs metaphysics. A very obvious example is logic as a metaphysical æther throughout the Universe. Under the Pauli exclusion two fermions are not allowed the same state therefore as a matter of logic given the quantum state of one the state of the other is determined however far apart.

Monads in pure topos theory now suggest that there is always a third level closure to any order and that can lead to very sophisticated properties. Those can be more readily explored for propagation in physical media. Very advanced examples can be found for the media of the propagation of sound such as music.