

# The Economist

[Altered states](#) Sep 8th 2012 12:12 GMT

Altered States suggests that multi-level memory can be achieved by physical melting of nanometer thick chalcogenide. However, this is unphysical. The Fourier heat transfer equation gives a continuous variation in temperature that precludes any possibility of distinguishing between memory levels. Ovshinsky recognized this many years ago. Contrarily, quantum mechanics states there can be no temperature change in submicron thick films and instead charge is produced that changes the resistance. If multi-level memory is being observed, it is discrete levels of charge that allow the change in resistance to be distinguished and not melting. See <http://www.nanoqed.org/> at "IEEE Nano 2012," 2012

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