Dynamic Epistemic Logic for Classical and Quantum Information Flow

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The pre-eminence of logical dynamics, over a static and purely propositional view of Logic, lies at the core of a new understanding of both classical and quantum information flow. Quantum logic can be best understood as the logic of physically-constrained informational interactions (in the form of measurements and entanglement) between subsystems of a global physical system. Similarly, (multi-agent) epistemic logic is the logic of socially-constrained informational interactions (in the form of direct observation, learning, various forms of communication and testimony) between ``subsystems" of a social system. Dynamic Epistemic Logic (DEL) provides us with a unifying setting in which these informational interactions, coming from seemingly very different areas of research, can both be represented, compared and analyzed. The DEL formalism comes with a powerful set of tools that allows us to make the underlying dynamic/interactive mechanisms fully transparent.