

Situated Evidence: The Nexus between Cognitive and Institutional Dynamics of Scientific Practices

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I outline my HDV+SR evolutionary model (‘evolution with design’ expanding Campbell’s original BV+SR) of science dynamics which accounts for the dual nature of the advancement: cognitive and institutional. The cognitive dynamics is modeled as a heuristics-driven stochastic process (defined separately for i) breakthrough and ii) novel research) which via team-reasoning leads to the formation of scientific routines as the main unit of social practice in science [1]. I illustrate the transformation phases in the emergence of scientific routine with the example of the discovery of microRNA [2]. Selective retention of scientific routines depends on how the institutional setup is designed as evidenced by the recent arguments of e.g. B. Greenwald, J. Stiglitz and M. Mazzucato [3,4].

The epistemic nexus between the cognitive and social dynamics of scientific practices is constituted, I argue, by “situated evidence”. The notion of situated evidence is introduced here as a merger of agent’s scientific knowledge with her background knowledge (including the agent’s self-location). Next, I use this notion to capture the mutual influences of the cognitive and social dynamics of scientific practices. For that purpose I examine the evidential ‘lock-in’ phenomenon as exemplified by R. Koch’s “laboratory cholera” (vs. F. Pacini’s and J. Snow’s situated approach) and the juxtaposed viability of institutional designs and social learning as manifested the Europe-wide evolution of preventive measures between 1830 and 1884.

References

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