Neural networks and `the aim of science' dispute

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In *The Scientific Image* (1980), Van Fraassen famously characterized scientific realism and anti-realism (constructive empiricism) as competing hypotheses about `the aim of science.' According to this view, realists hold that science aims at the true theory of the world, a theory that correctly describes/represents the world including its unobservable aspects, whereas constructive empiricists hold that science aims at the *empirically adequate* theory, a theory that can accommodate and predict all the empirical data. It is important to note that these are not hypotheses about scientists' intention or what they think are doing, but about the possibility of rational reconstruction of scientific activity as aiming at those goals. In order to defend constructive empiricism, Van Fraassen (1980) illustrates how research activities that apparently include belief in the truth of background theories can be re-interpreted from the constructive empiricists' perspective. In doing this, their strategy is that, as far as any theoretical consideration has some empirical implication and any research activities must check the theory against empirical data, they are described as construction of a theory that fits to empirical data (viz., as a pursuit of empirically adequate theory based on the empirically adequate background knowledge). Recent developments in machine learning, especially those called `unsupervised machine learning,' appear to provide further support for constructive empiricism, as they enable us to successfully accommodate/predict phenomena while excluding human understanding of its nature, a feature that Hooker and Hooker (2017) calls `naked predictions.' Importantly, while the above strategy of constructive empiricists provides a recipe for creating an underdetermination concerning the interpretation of scientific activity and thus tying the game, these research practices may go against the realists' view of science and thus provide evidence *exclusively for* constructive empiricism. In this talk, however, I will first point out that some research practice with unsupervised machine learning *could* provide a kind of evidence *exclusively for* scientific realism, but then discuss possible ways that constructive empiricists account for the research practice.

講演時の使用言語：英語