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Epistemological Dimensions in Niels Bohr's Conceptualization of Complementarity GREGORY DERRY, Loyola College In Maryland — Contemporary explications of quantum theory are uniformly ahistorical in their accounts of complementarity. Such accounts typically present complementarity as a physical principle that prohibits simultaneous measurements of certain dynamical quantities or behaviors, attributing this principle to Niels Bohr. This conceptualization of complementarity, however, is virtually devoid of content and is only marginally related to Bohr's actual writing on the topic. Instead, what Bohr presented was a subtle and complex epistemological argument in which complementarity is a shorthand way to refer to an inclusive framework for the logical analysis of ideas. The important point to notice, historically, is that Bohr's work involving complementarity is not intended to be an improvement or addition to a particular physical theory (quantum mechanics), which Bohr regarded as already complete. Bohr's work involving complementarity is actually an argument related to the goals, meaning, and limitations of physical theory itself, grounded in deep epistemological considerations stemming from the fundamental discontinuity of nature on a microscopic scale.

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