In recent years, a more unified understanding of the functioning of the neocortex has emerged. This understanding sees the neocortex as a hierarchically structured Bayesian prediction machine that perceives and acts according to a delicate interaction between direct inputs from the body and environment, and feedback within the brain concerning what it expects those inputs to be. This hierarchical predictive coding model provides an elegant account of how attention, perception, cognition and action can be understood as different aspects of a single process that aims to minimise prediction errors. Nevertheless, predictive coding models are not immediately concerned with predicting the future, but rather with predicting what is to happen now. As such, the predictive coding paradigm leaves the temporal horizons of experience unexplained. These horizons were first clearly identified in Husserl’s investigations of the unified tripartite structure of temporal consciousness. Several recent attempts have been made to explain how such a tripartite structure could be realised within current understandings of neocortical processing, but, as yet, none have been convincing. In this paper I introduce Jeff Hawkins’ model of neocortical processing that extends hierarchical predictive coding by proposing that the entire neocortex is engaged in sequence learning. This hierarchical temporal memory (HTM) model provides a coherent mapping between processes occurring in the brain and the structures of temporal consciousness. The paper also provides a phenomenological examination and re-interpretation of the meaning of the HTM model. This re-interpretation takes both consciousness and neocortical functioning to be fundamentally structured in terms of intentionality.