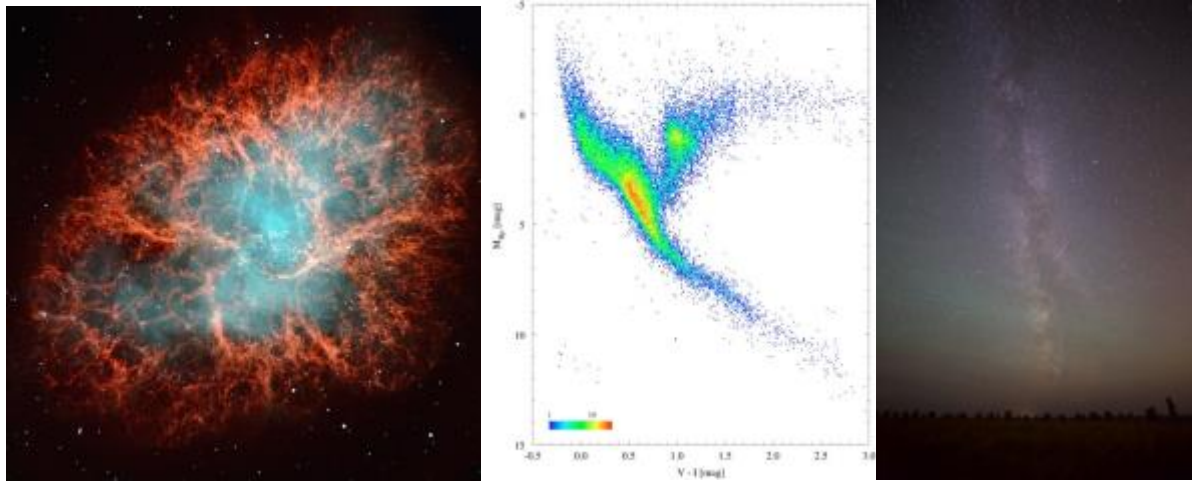


# Reading the Sky and The Spiral of Teaching and Learning in Astronomy

Dr. Urban Eriksson,  
Sciences department, Kristianstad University, Sweden

---



Teaching and learning astronomy is known to be both exciting and challenging. To learn astronomy demands not only *disciplinary knowledge*, but also the ability to discern meaning from disciplinary specific representations (*disciplinary discernment*). This includes the ability to *think spatially*, in particular, extrapolating three-dimensionality from a one- or two-dimensional input i.e. to be able to visualize in one's mind how a three-dimensional astronomical object may look from a one- or two-dimensional input such as from a visual image or a mathematical representation. In this talk I demonstrate that these abilities are deeply intertwined, and that to learn astronomy at any level demands becoming fluent in all three aspects (disciplinary knowledge, disciplinary discernment and spatial thinking). A framework is presented for how these competencies can be described, and combined, as a new and innovative way to frame teaching and learning in astronomy. It is argued that using this framework "*Reading the Sky*" optimizes the learning outcomes for students. The talk also suggests strategies for how to implement this approach for improving astronomy teaching and learning overall.