Computer science seems to be undergoing a paradigm shift. Much of earlier research was conducted in the framework of well-understood formal models. In contrast, some of the hottest trends today shun formal models and rely on massive data sets and machine learning. A canonical example of this change is the shift in AI from logic programming to deep learning.

I will argue that the correct metaphor for this development is not paradigm shift, but paradigm expansion. Just as General Relativity augments Newtonian Mechanics, rather than replace it — we went to the moon, after all, using Newtonian Mechanics — data-driven computing augments model-driven computing. In the context of Artificial Intelligence, machine learning and logic correspond to the two modes of human thinking: fast thinking and slow thinking.

The challenge today is to integrate the model-driven and data-driven paradigms. I will describe one approach to such an integration, making logic more quantitative.