INTRODUCTION

The origin of isolated marine sand bodies, exemplified by the Campanian Shannon Sandstone of the Powder River Basin in the Western Interior of the United States, is highly controversial. As pointed out by the editors of this volume in the lead paper, deposits of this general class have considerable economic importance, but the problem has taken on a greater significance to sedimentary geology. As the Cretaceous is widely believed to have been a period of high average sea level, and these sand bodies are encased in marine shales, they were initially interpreted as shelf sands, becoming the archetypal "offshore bars." Later, with the advent of sequence stratigraphy and its emphasis on relative sea level change and incised valleys, "offshore bar" became a term of scorn, and shelf sands fell into deep disfavor, although some adherents kept the faith.

A series of mutually incompatible interpretations have been put forward to explain the occurrence of isolated marine sand bodies, in many cases using the same data for the same unit.

1. Storm-dominated shelf sand bodies (Spearing, 1976; Tillman and Martinson, 1984; Swift and Parsons, this volume)
2. Tide-dominated delta within an incised valley (Sullivan et al., 1995, 1997; the "Exxon model")
3. Transgressed forced regressive and lowstand shorelines (Bergman, 1994; Bergman and Walker, 1995, and this volume)
4. Tidal sand ridges within a mixed wave-tidal regime open embayment (Tillman, this volume) and/or estuary-mouth shoals (Elliot, 1995).
5. Some combination of any or all of the above.

These interpretations vary in their reliance on outcrop and subsurface (well log motifs and correlations, and core description and interpretation) data and modern analogs. Each requires a particular set of paleogeographies, sea-level conditions, and dominant processes. Each also has implications for other types of deposits that should exist in the basin.

In 1995, a SEPM Research Conference, "Tongues, Ridges, and Wedges," was convened to consider the evidence for these multiple interpretations and move toward a resolution of the question of isolated marine sand bodies. The success of that effort (or lack thereof) can be judged by the multiple interpretations still extant in this volume and elsewhere. The major model proponents left with their interpretations intact, largely unconvinced by other concepts. What does this say about the state of the art of sedimentary geology at the close of the 20th century?

Sometimes in the middle of heated debates over interpretations, we lose sight of the real purpose of the exercise. Is the mode of formation of a set of rocks in Wyoming worth the expenditure of so much physical, mental, and emotional energy? At present, it seems there are several justifications for the debate swirling around the Shannon and its "isolated" marine sand body siblings:

1. The immediate economic significance of similar deposits in the Western Interior.
2. General exploration models. Depending on how we interpret the Shannon, it has implications for exploration in frontier foreland basin settings, unless we believe that deposits of this type are unique to the Cretaceous Western Interior.
3. Usefulness as analogs for field development and reservoir modeling. Tillman and Martinson (1984) stated that application of their model was highly successful in the original drilling of the Hartzog Draw Field. Sullivan et al. (1997) claimed a 40% increase in the success of infill drilling using their considerably different interpretation of the same field. This success is especially interesting in light of the differences between the two models.
4. The importance to sequence stratigraphic models.
5. The intellectual exercise! Deciphering the Earth's history is important in its own right, and we all want to improve our understanding of different deposits, so as to be better prepared for the next interpretation challenge.

Currently, the controversy seems more focused on intellectual exercise and importance to sequence-keyed models, although the greatest economic significance presumably lies in models for exploration, field development, and reservoir modeling. Our purpose in this summary paper is to attempt an objective evaluation of the various interpretations, given our own backgrounds, experience, and resultant biases. One of us (JRS) has worked on the Shannon sandstone in the outcrop and subsurface and participated in the SEPM Re-