Monday, February 11, 2002

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Social 5:30 p.m., Dinner 6:30 p.m.

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HGS General Dinner Meeting

by Janok P. Bhattacharya, A. Robinson, C. Olariu, M.M. Adams, and C. D. Howell
University of Texas at Dallas, Richardson, Texas

Distributary Channels, Fluvial Channels or Incised Valleys?

Many deltas show several orders of branching resulting in a wide range of sizes and shapes of distributary channels. There is thus no such thing as "a distributary channel" in many deltas. At the largest scale, trunk rivers become distributive at the point where the river becomes unconfined (nodal avulsion). Intermediate-scale delta plain channels tend to be few in number, may be separated by wide interfluves, and may be exceedingly difficult to distinguish from fluvial channels. The smallest scale "terminal distributaries" lie in the delta front. Because discharge decreases downstream, terminal distributary channels tend to be narrow and shallow, rather than wide and deep.

In many mid-continent reservoirs, such as the Pennsylvanian Booch sandstone in Oklahoma, 100 m thick channelized deposits cut into 10 m thick prodelta and delta front deposits, but have been historically interpreted as distributary channels. These interpretations were strongly driven by using the deep distributary channels of the Mississippi delta as a modern analog, which is probably not appropriate because it feeds into deep water, rather than an interior sea. These deeply incised channels might be better interpreted as multi-story incised valleys rather than single-story distributary channels.

Outcrop examples of terminal distributary channels in the Cretaceous Panther Tongue sandstone in Utah show multiple shallow channelized sandstones, intimately associated with more extensive delta front clinoform beds. These better match modern shoal-water deltas such as the Atchafalaya delta in the Gulf Coast.

Biographical Sketch

JANOK P. BHATTACHARYA is an associate professor at the University of Texas at Dallas. His research interests include deltaic sequence stratigraphy and the local control of structure on stratigraphy. He received his BSc in 1981 from Memorial University of Newfoundland, Canada, and his PhD in 1989 from McMaster University, Hamilton, Ontario, Canada. Following an NSERC post-doc at the Alberta Geological Survey in Edmonton, Janok worked for ARCO and then the Bureau of Economic Geology at Austin. □