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A SEDIMENTOLOGICAL EXPLANATION FOR THE DISTRIBUTION OF ARCHAEOLOGICAL SITES IN A MEANDER BELT AS STATED BY THE "RELICT CHANNEL RULE"

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ABSTRACT

Archaeological surveys performed for the U.S. Army Corps of Engineers within the Lower Mississippi River and Red River Valleys have noted that archaeological deposits found on the natural levees of relict river channels consist only of surficial sites that postdate the abandonment of the associated river channel. From the results of these surveys, Richard Weinstein and David Kelley proposed the "Relict Channel Rule" in 1989. Their rule states that the archaeological deposits associated with the natural levees of an abandon river channel will consist only of surficial sites that postdate the abandonment of the river channel.

The Relict Channel Rule has been explained as the result of preferences by prehistoric cultures to avoid the occupation of natural levees of active river channels. Archaeologists have suggested that the lack of rich biotic resources associated with an active channel and the hazards created by periodic flooding caused prehistoric cultures to avoid settling the natural levees of active river channels. Rather, it has been proposed that prehistoric cultures settled around oxbow lakes within abandoned channel segments. In addition, archaeological studies of the Red River within Arkansas have speculated that the danger posed by rapidly eroding cut banks was another factor that discouraged the settlement of the natural levees of active river channels.

Sedimentological processes provide an alternative explanation for the Relict Channel Rule. While active, a typical meandering river channel rapidly migrates back and forth across its meander belt. During this time, its channel would rapidly migrate away from any archaeological deposits that formed adjacent to an active point bar. Simultaneously, overbank processes would quickly bury them. Also, an actively laterally migrating channel would consume the sites that form on the natural levee of a rapidly migrating cutbank. If a river cutbank was to migrate up to and stop at a preexisting site, that site would by that time be buried beneath natural levee deposits. Finally, archaeological sites formed during the initial establishment of a river course would eventually be either deeply buried by aggradation of natural levees or destroyed by lateral migration. As a result, only those archaeological deposits that date to a few tens of years prior to and postdate the abandonment of the channel will occur as surface sites. Therefore, regardless of whether the natural levees of a channel of an actively meandering river were used before or after its abandonment, the rapid lateral migration of its channel while active will produce the distribution of surface sites noted by the Relict Channel Rule.

An active segment of the Mississippi River between Donaldsonville and Port Allen, Louisiana is an exception to the Relict Channel Rule. Along this segment, numerous surface and scattered buried sites containing transitional Coles Creek and Plaquemine components have been recorded from the natural levees along both sides of the currently active Mississippi River. These sites, which include several mounds, occur most commonly on the cutbank side of a meander loop. Along one twenty mile segment, at least one prehistoric site is associated with each meander loop.

Preexisting archaeological deposits are present along this active segment of the Mississippi River, because of the slow rate of lateral migration of its river channel. The slow rate of lateral migration has permitted the preservation of archaeological deposits that faster rates of lateral migration would have destroyed. Also, historic maps show that historic Native American villages heavily occupied the natural levees of this active segment of the Mississippi River. Thus, this study strongly indicates that the distribution of archaeological sites as expressed by the Relict Channel rule is a result of fluvial rather then cultural processes.

It is concluded that the rapid lateral migration of a channel within a meander belt badly biases the temporal distribution of both surficial and buried archaeological deposits within it. First, the formation of a meander belt destroys any archaeological deposits that predate it. Second, rapid lateral migration of a river will destroy many of the archaeological deposits contemporaneous with its activity. A few archaeological deposits contemporaneous with an active river course might survive destruction along the outer edge of the meander belt as buried or surface sites associated with the natural levees of abandoned meander loops. Finally, any archaeological deposits that formed after the abandonment of a river course will occur as surface sites. Because of the extensive destruction and burial of sites by meander belt processes, reconstructing settlement patterns from the distribution of recorded sites can be difficult, if not impossible, for the archaeological deposits of many cultural groups.

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