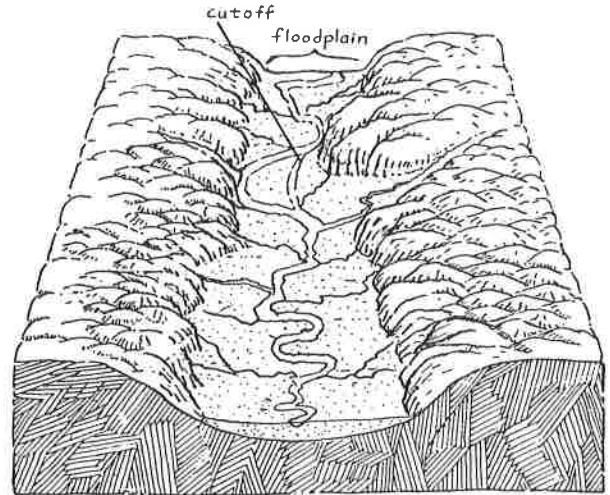
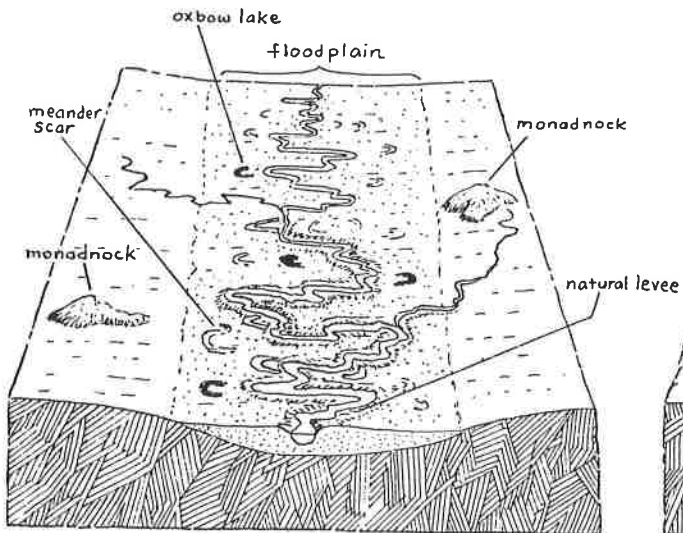


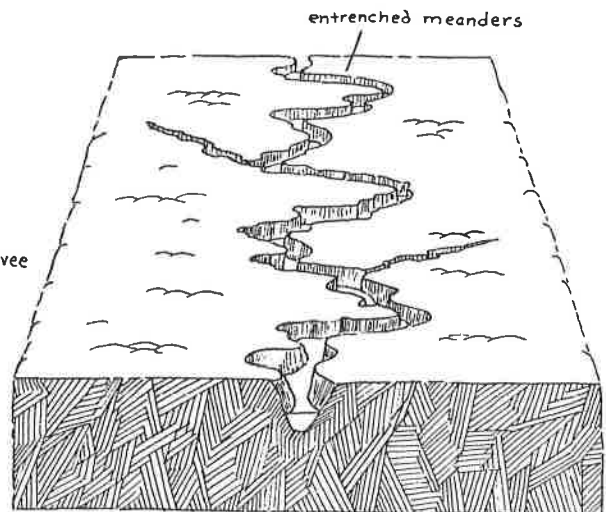
Youthful Stream
Early Stage Topography



Mature Master Stream
Middle Stage Topography



Old Age Stream
Late Stage Topography



Rejuvenation Stage

Stages in the stream cycle and related topographic evolution in humid regions

PRINCIPAL CHARACTERISTICS OF THE STAGES OF
STREAM DEVELOPMENT:

Youthful stage

high stream gradient (generally greater than 10 ft/mi)
narrow, V-shaped stream valley
little or no floodplain developed
few, if any, meanders
vertical erosion dominant

Mature stage

moderate gradient (generally less than 10 ft/mi, possibly
as low as 1 or 2 ft/mi)
wide, flat-bottomed stream valley with well defined valley
walls
floodplain well developed
meanders common; individual meander loops may oc-
cupy the full width of the stream valley
transportation and lateral erosion dominant

Old age stage

very low gradient (generally less than 2 ft/mi, often less
than 1 ft/mi)
extremely wide valley, perhaps with indistinct valley walls
extensive floodplain, with features such as natural levees
extreme meandering; a distinct meander belt may be de-
veloped
deposition dominant

Rejuvenated stage

Tectonic uplift of a region or a lowering of base level may
cause the stream gradient to be steepened and an old age
or mature stream may be thus rejuvenated. The charac-
teristic feature to look for is the presence of **entrenched
meanders** which show that the stream once achieved a
low gradient, but that the gradient has since been
steepened, reinitiating downcutting. Increased rainfall
due to climatic change may also initiate rejuvenation.

PRINCIPAL CHARACTERISTICS OF THE STAGES OF
TOPOGRAPHIC EVOLUTION:

Early stage

regional dissection very incomplete, with broad uplands
unaffected by erosion
poorly developed drainage system
few streams, mostly in the youthful stage, separated by
broad, uneroded interstream divides
local relief **due to erosion** is generally low

Middle stage

regional dissection advanced, few areas unaffected by
erosion
well developed drainage system, with maximum number
of tributaries
many streams, mostly in the youthful stage, separated by
narrow, rounded interstream divides
master streams mature or old age
local relief **due to erosion** is at its maximum development

Late stage

master stream drainage dominates the region, with the
master streams in the old age stage
fewer streams than in middle stage due to the merger of
stream valleys as interstream divides are completely de-
stroyed by erosion
remaining interstream divides are broad and low
local relief **due to erosion** is once again low, except where
monadnocks (erosional remnants) remain