Le Perigord étude morphologique


region of transition between the high lands of Limousin and vast plains of Aquitaine basin

preponderance of Middle and Upper Cretaceous limestone and tight network of valleys

Jurassic limestone in thick; compact bands but only from Terrasson

mostly composed of cretaceous sediments

Coniacien and Campanien limestone less homogenous, permeable and resistant to erosion than limestone Rauracien and Bajocien

stone horizons sometimes very weak and lots of variability in structure laterally and vertically providing a topography that while not as grand as the Massif itself, is much more variable with hills and valleys sometimes bordered by steep slopes, sometimes shallow slopes

Cretaceous outcrops make up the study area and have an important role in the topography but the valley bundles also play a role especially when considering human geography

Vézère one of four major river valleys in Périgord that runs from NE to SW

Vézère along with Dordogne is less influenced by the northern Perigord (where capital is)

Capital not along Dordogne or Vezere because there is no place along the water that naturally favors creation of regional center; only at Bergerac, 30 km away from confluence where the valley is wide enough to offer a convenient urban site

Bergerac not a capital because too close to Bordeaux and only plays a role in the local market

Valleys at Terrasson and Manaurie reach out towards valley of Manoir which descends from Perigueux and Isle/Auvezere confluence (not connected though)

Perigord united by waterways and their valleys and made of petite countries with complementary resources (not defined by geologic or topographic limits)

Coly valley when it draws near Condat and Montiganc has some characteristics? for Brive Bassin and northern extremity of Martel cause (Jurassic?)

Gallic territory of Petrocorii existed long before Caesar wrote that the furnished 5000 men

Vesunna (Perigueux was the capital)

etymology of Petrocorii suggests that the territory was composed of 4 clans (curiously mirrored in the organisation of arrondissements)

cannot say the precise limits of the Gallic, or Gallo-Roman territory; some reconstruction possible by looking at diocese records

suggests that Merovingian and Carolingian leaders (Félix Auréol under Clovis and Wuidbode under Charlemagne extended their power up to the frontiers of the diocese

The Middle Ages saw great political fragmentations, more and moer numerous and overlapping creating judicial, administrative, and fiscal disorder up to the Ancien Régime (ecclesiastical organization only remains of Roman Gaul)

arrondissements correspond roughly to hydrological systems Sarlat arrondissement is in Vezere and Dordogne

"Depuis cent soixante ans, le département de la Dordogne a redonné au Périgord son unité administrative perdue sous les Carolingiens, et son unité religieus détruite par Jean XXII en 1317." p.12
5-6 smaller territories united by river systems

South eastern part of perigord in the petite territory Sardalais

enormous hills with steep slopes often bordered by limestone cliffs

blunted and rounded plateaux covered is residual deposits, are covered in chestnuts, oaks, and pines

before phylloxera vinyards covered slopes

villages lost over half their inhabitants and interior is less populated than the plateaus of Causse

valleys are very good for growth, climate of Provence or Tuscany

steep limestone cliffs have impeded circulation in the valley; Sarlat for example is in a fertile bassi but is cut off from major communication paths

dry tributary valley known by local name of combe

between Vezere and Dordogne wooded hills with slopes lessened by scree

Rouffignac greyish gullies

topography created by a cycle of erosion and structural nature

during periods of stability chemical reactions and run off erode the rocks; during periods of instability the waterways eat against the rocks and different terrains have different levels of resistance

towards the southwest the slope of the geological layers is greater than the topographic slope so that the topographic relief does not mirror the geological slope

Tectonic folds and events have affected secondary sediments in the region, but erosion has leveled these events and made them difficult to see

Plateau sediment at Rouffignac does not conserve its original structure: here the chalky limestone of the Campanian and the Upper Jurassic marls are covered by a layer of blackish clay and flint; Santonien sandstones are buried under the sands of their own erosion; Coniacien and Maestrichtien limestone disappears underneath red sands.

clay, silex, sands, and millstones are secondary formation of various origins

Some areas of the Perigord show very flat surfaces in opposition to the geological slope. Analysis of superficial deposits, tectonic active, and topography show that these represent peneplains or erosion levels; shows that topography partially dependent on subaerial erosion

major river valleys have several levels of erosion with deposits that were either carried there by the river or by other water; these deposits vary from level to level

several flats which rise on the flank of the valleys are evidence of incomplete erosion and old valleys below highest peaks; especially prominent above the Beune valley near Tamniès; Marquay and Saint-Quentin-Marcillac

All the Jurassic stages present in the Perigord, but above this there are missing strata from the early Cretaceous. Valenginien to Albien layers are missing, seas covered only the Cénomanien

return of sea water did not effect horizontal layers

surface of erosion after the Jurassic that predates the middle Cretaceous

as the sea regressed, epeirogenic movement (which began the formation of the Pyrenees) caused the upheaval of Limousin, Quercy and the Perigord with a slope down towards the SW—this slope along with the retreat of the sea provided enough power to the watercourses to form the valleys and runoff shaped the hill flanks

in the Vezere the age of the erosion of the Cénomaanien seems to be the upper Cénomanien or lower Turonien
anticline passes under the houses of les Farges

lower part of Turonien, marine sediments known as Ligérien

Ligérien passes from Condat to Aubas; 225 m above Condat, and passes below Valley at Aubas meaning that it drops 150 m in 5 km; however it is pushed up near Les Farges by the outcrop of Cheylard. The push of the anticline becomes so great towards Saint Amand and LaCassagne that the sediments are stretched and failing

synclinal depression near Rouffignac and Saint-léon-sur-Vézère explains the distribution of Cretaceous upon Jurassic and reveals the deformations of the Cénomanien

second anticle of Saint Cyprien passes through Le Bugue?

syncline passes near Mortemart; parallel to it, runs the anticlinal of Saint-Avit-Sénieur-Trémolat-Les Farges almost merges with the Vezere valley; cuts the anticlinal of Saint Cyprien

influence in the Vezere can be seen by a slight rise in Coniacien

day second anticle of Saint Cyprien passes through Le Bugue?

creates rise to the north east of Montignac of Angoumiens limestones

synclinal of Monpazier-Velvès-Archignac affects region of Archignac bringing Coniacien almost in countact with Upper Jurassic (disappears underneath the Jurassic at Terrasson)

excellent hand drawn image on p.113 of the tectonic accidents in the area

Upper Creatceous levels were at such high levels that erosion has destroyed them so that only the lower levels remain

Cretaceous layers are of variable thickness suggests some slow slumping during their deposition or that the underlying Jurassic layers had variable resistances to the pressure of water.

*Cretaceous sediments of variable thicknesses throughout study area*

tectonic effects more prevalent in the SE than the NW

Starting with the Upper Cretaceous Perigord no longer sumberged and it is only subaerial erosion
evidence of tertiary levels of erosion

1. lack of relation between slope of the region and the geological strata towards the SW
2. tertiary deposits are evidence of long-term denudation

Eocene erosion levels characterised by presence of siderolthic surface deposits

Siderolithics deposits: situated underneath Sables du Perigord directly upon Cretaceous levels; represents a particular mode of erosion

annotation e3s actually stands for a variety of formations and it should be noted that run off and chemical reactions have so changed siderolithic deposits that it is very difficult to find them in their original state including between Le Bugue and Ladouze, les Eyzies and Fossemagne, and the Barade Forest

"le sidérolithique se présente sous deux aspects différents: 1. tantôt ce sont des argiles...surtout roses et rouges avec des pisolithes de fer et des sables très fins incorporés à l'argile; 2. tantôt ce sont des dépôts...avec du sable très fin, du minerai de fer en petits grains polis et luisants; çà et là apparaissent des croûtes ferrugineuses très dures et d'un rouge sombre avec des blocs de limonite creux et tapissés à l'intérieur d'une couche vitreuse semblable au laitier des haute fourneaux; aux sables se mêlent des argiles versicolores et des graviers quartzeux."
p. 132-133

clays and sands of decalcification from Campanien, Coniacien, or Angoumien (Upper Cretaceous)

Within Sarladais siderolithic mixed with quartz sands (lies upon the Coniacian moyen and Santonien) which comes from the Massif Central by erosion and river deposits
decomposition that led to siderolthic formation a result of tropical climate over Western Europe in the Eocene which aggravated chemical erosion

Eocene erosion layer can be seen on the summits of hiss between Le Bugue, Vergt, and Rouffignac

siderolithic deposits rare east of Les Eyzies and west of Le Bugue

Eocene erosion layer plays a role in the topographic relief where it makes up the level of the highest summits north of Sarlat
SABLES DU PERIGORD

different from sidrolithics by origin, age, and their placement in the stratigraphic column of Jurassic and Cretaceous materials

in Sarladais mingles with decalcification deposits

mixed with fine Santonien sands with silex and red clays w/o glauconitic or lateritic debris allows it to be distinguished from siderolithics

pocket of kaolin at Les Eyzies

formation between Lutétien and Stampien

don't really find them in Sarladais; only in remnants of large overgrown valleys and shoulders of some plateaus: near Audrix; Meyrals, Marquay; Saint Amand de Coly

Ia residue of erosion cycle dating to Miocene or Pliocene period

brought by water from Limousin; not as strong as the waters that eroded the Sables du Perigord

located near Proissans, confluent du Coly and Vezere

useful table of surfaces, their alternative nomenclature, and their altitude in various regions including the Vezere p.190-191

map of surface of erosion p. 193

The surfaces created by the tertiary levels of erosion only apply to the summits and the highest hills

Large valleys like the Vezere were formed as part of a more recent period of Erosion dated to the beginning of the Pliocene

not made as a result of chance and their formation by river erosion is not their only characteristic

along the hills that encase the rivers, their erosional history is written in the form of terraces covered in alluvial gravel (allow us to reconstruct original hydrological system)

two major slopes guiding river formation

1. slope from Massif Central to Garonne running NE-SW fixed general direction

2. subtle undulations (orientation varisque) running NNE-SSW) (this is why the lower Vezere coincides slightly with snyclinal)

two types of river terraces: 1. erosion, 2. embankments

terraces dated by archaeological finds

great image on p.220 of the different surfaces exposed in the topographic relife around Le Bugue

at Terrasson, the difference between low water and the first terrace is only 3-4 meters; this results in frequent flooding in the winter

this low terrace can by explained the by t=proximity to a rupture in Slope at the confluence of the Crooèze and Vézère

cant date oldest, upper two terraces

combes with thalwegs above 180m date to the end of the Pliocene; those between 140-180 date to the beginning of the Quaternary
could reconstruct the general construction of side valleys in the area!

formation is a cycle of activity and calm: during active cycles vertical erosion happened quickly shaping the talus that divides the terraces; during calm periods lateral erosions flattened tops of terraces

Beune unusual because it is rather larged and encased in sharp slopes and cliff faces; it is filled with 12-15 meters of limestone deposits but the upper part retains its branching profile; The river is full of marshes so that when it does empty into the Vézère a cascading effect happens (MILLS!) (no terraces like Vezere)

Beune has changed over 50 years (lots of infilling) so that it is now largely fields

Both Beune and Blàme (nea La Boissière) have been filled due to the calcium rich waters which has encouraged plant growth and impeded flow

most recent terrains toward SW, older NE
valley between Terrasson and Condat 1-3 km wide, only 80-90 m high result of Massif Central depresion

limestone above laVilledieu has more vulnerable underlayers allowing river to widen; Between Villediue and BOuillac stones more resistant and valley not as large, by Condat Bathonien limestone means that the valley is not more than 500 me wide

Bajocien inferieur around Coly is particularly susceptible to underground river erosion (CAVES)
kartic system above 120/130m are no longer active (dry/dead) source LaDoux plays important role

Aubas marks transition to Cretaceous

Coniacien superior one of the most recognizable horizons;40 m thick at LEs Eyzies; hard and compact (may ahve zones les hard where chemical erosio can work)
Coniacien inferior soft; brittle, easily eroded by water; not very thick no more than a dozen m
Santonian soft; brittle, easily eroded by water; easily decomposes to from fine , white sands

karstic systems developed prior to the existence of the Quaternary river valleys; oldest formed at the biginning of the Tertiary under siderolithic deposits but continue today; contemporary systems are those in limestone not affected by subaerial erosion
oldest zone of karstification higher than 200 m
caves around Les Eyzies carry evidence of seismic activity (1902 last one?)

"On peut attribuer l'absence de vallées subséquentes importantes aux faibles différences de structure dans les roches cretacées et jurassiques et à l'enfoncement des rivières les plus importantes dans les plates-formes déblayées au pied des cuestas. Il eu résulte un paysage morphologique assez original, puisqu'on voit les côtes, hautes de 20 à 40 mètres, se profiler sur des dos de terrain et attaquées seulement par des cours d'eau obséquents." p.376

Vezere one of the oldest generations of waterway in the Perigord, has maintained longitudinal direction since erosion of eocene surface; in contrast valleys of Manaurie and Joumaica more recent stampien or Burdigalien

structural relief map p.397

Coniacian superior dominates the Vezere from MOntignac to Les Eyzies

Cretaceous moyen and superior only dominate in NW and SE; only revealed along valley borders or slopes; in the interiour of plateaus and hills disappear under layers of siderolithic and sands

4 forms of erosion: 1. dry valleys;; 2. crozes;; 3. grottes, 4. pechs

dry valleys at confluence rise gently, but after 3-4 km the sides become abrupt and close the valley; often deepend by underground rivers

"Quand un fermier veut creuser un puits ou établir un mare ou une <<serbe>> pour alimenter son bétail en eau, il choisit toujours dans une combe un point situé au-dessus du cours d'eau souterrain, révélé à la surface du sol par des traces d'humidité ou une végétation plus fournie, à moins qu'il n'ait recours aux lumières d'un sourcier ou, ce qui est mieux, d'un bon géologue." p. 405
croze is a type of trou whose base terminates in a natural well no more than 50 m in diameter and 10 f deep; particularly abundant in the Campanien inferior
grottes often connected with crozes; grottes usually created in Coniacian and Maestrichtien levels
Santonian not good for dissolution or maintaining kartic walls
pechs numerous in Upper Coniacien; rounded butte/cone
"Le cours d'eau est formé par la réunion sous Sireuil des Beunes de Tamniès et d'Allas0l'Evêque. En aval du confluent, le fond de la vallée, très plat et marécageux, cache en partie sous ses dépôts les escarpements de Coniacien qui le bordent; le remblaiement est évident et desgisements de silex taillés, appartenant au Paléolithique supérieur, sont enfouis sous 2 ou 3 mètres de débris constituées, non par des éboulis descendus des pentes voisines, sauf au débouchée de quelques vallons latéraux, mais par des racines mortes enrobées de calcaire, par des masses d'humus aggloméré par du carbonate de chaux, par des tufs et des travertine formés sur place" p.408

all streams near Les Eyzies an Sireuil drain regions of souble limestone making their water rich in lime

between the moulin de Gaurenne and forge of Eyzies slope broken up and water stagnates in floow a bit=marshy

humidity varied during Quaternary but Prehistoric peoples knew streams that were larger, stronger than today

last Wurmian glaciation saw floods 15-20 m above water level; caused small tributaries to become torrents with limestone, gravel, and sand creating larger and larger thalwegs

beginning of Neolithic saw upsurge in rains which probably multiplied water sources

small rivers don't have the power to regulate their profile; instead have found fissures and moved underground

stronger rock above weaker rock in most valleys

karstic erosin in Coniacian superior and Maestrichtien moyen

caves often cemented between levels of hard rock

p.417 have not changed in size important for cave size comparison

lots of meanders between Thonac and Les Eyzies because this is the location of strong/hardConiacian superior

Vezere still active between Tursac and La Madeleine