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3 The earliest inhabitants and their environment: context and the selected sample

3.1 Modern geography, climate and vegetation

3.1.1 GEOGRAPHY

Colombia is situated between 12°30' North and 4°13' South, the largest part lies north of the equator. The country has a surface area of more than 1.100.000 sq. km. (equal to France, Spain and Portugal). The Andes split up in the south of the country to form Eastern, Central and Western chains, which extend to the far north, ending on the Caribbean lowlands (Fig. 3.1). Between these chains run the two largest rivers, the Cauca creating the valley to the west of the Central cordillera and the Magdalena to the east.

Both rivers flow into the Atlantic ocean.

The territory can be divided into three major geographical zones: the Andino area, the Atlantic and Pacific coastal areas and the lower area of the Amazon and Orinoco. Within these areas there are many subdivisions to be made on meteorological and geomorphological grounds.

The Central Cordillera has the highest peaks and an average altitude of 3000 m. The wider Eastern Cordillera with many high plains (one of which is the high plain of Bogotá) has an average altitude of 2000 m and the Western Cordillera is slightly lower (Reichel-Dolmatoff 1997).

3.1.2 MODERN CLIMATE AND VEGETATION

One of the main differences between the climate and vegetation now and at different times in the past, consists in the lowering and rising of vegetation belts due to small fluctuations in temperature and precipitation. The vegetation within these belts has not significantly changed in the course of the millennia. Therefore, some data on the modern situation will be presented here, in as far as these are relevant for a better understanding of the palaeoenvironmental conditions.

There are no seasonal fluctuations in temperature, only differences in precipitation. The annual rainfall distribution and quantity depends on local factors. In the Chocó area for example (northern Pacific coast) it may rain the whole year through, but there is no marked dry season. In contrast, the Guajira peninsula in the extreme North is very dry and an annual rainfall of approximately 200 mm is very low compared to the 10.000 mm that falls in the Chocó. In the Caribbean lowlands there is a part with a rainy season of eight months (April to November) followed by a dry season

of four months (December to March), and a part where the rainy period is interrupted by a short dryer period in June and July. The average annual rainfall on the high plain of Bogotá lies between 500 mm and 1500 mm and in the middle Magdalena Valley between 2500 mm and 3000 mm. In both areas the rainfall is concentrated in two wet seasons.

The largest part of the country has a tropical climate, but the temperatures and the vegetation are linked to the altitudinal zones and therefore it is possible to find humid tropical areas and permanent snow within a short distance. There are no marked seasons.

To the northeast of the eastern Cordillera lie the savannah plains of the Llanos Orientales and the Orinoco. To the southeast are the tropical rain forests. West of this Cordillera lies the Magdalena Valley, with rain forest in the north and xerophytic vegetation in the south. The vegetation on the mountain slopes can be divided into horizontal belts that change approximately every 1000 m. (Fig 3.2).

The tropical belt extends from the lowlands to approximately 1000 m. The annual temperatures fluctuate between 24° and 30°C. Specific tropical taxa are restricted to this area, like *Byrsonima*, *Iriartea*, *Mauritia* and *Spathiphyllum*. Located between the Central and Eastern chain, the archaeological sites from the Magdalena Valley correspond to this climatological belt.

The next belt is that of the Subandean Forest, between 1000 and 2300 m, with genera as *Acalypha*, *Alchornea*, *Cecropia* and many *Palmae*, *Hieronyma*, *Ficus* and *Malpighiaceae*.

The annual temperature lies between 17.5 and 24°C.

Between 2000/2300 and 3500/3800 m grows the Andean Forest. This forest is dominated by *Weinmannia* sp. div. and *Quercus* (first appearance on the Eastern Cordillera towards the end of the Middle Pleistocene) with further *Alnus*, *Myrica*, *Styloceras*, *Podocarpus*, *Clusia*, *Rapanea*, *Juglans*, *Ilex* and *Hedyosmum*. The average annual temperature fluctuates between 6 and 17,5°C in the lower zones and between 12 and 0°C in the higher parts of this belt.

The archeological sites analysed in this thesis from the High Plain of Bogotá are located in the lower areas.

Between 3000 and 3500 m the vegetation becomes lower and is referred to as the Subpáramo with mainly dwarf forest and shrub formations. The upper limit of vegetation is found



Fig. 3.1 Geographical map of Colombia. Selected sites.

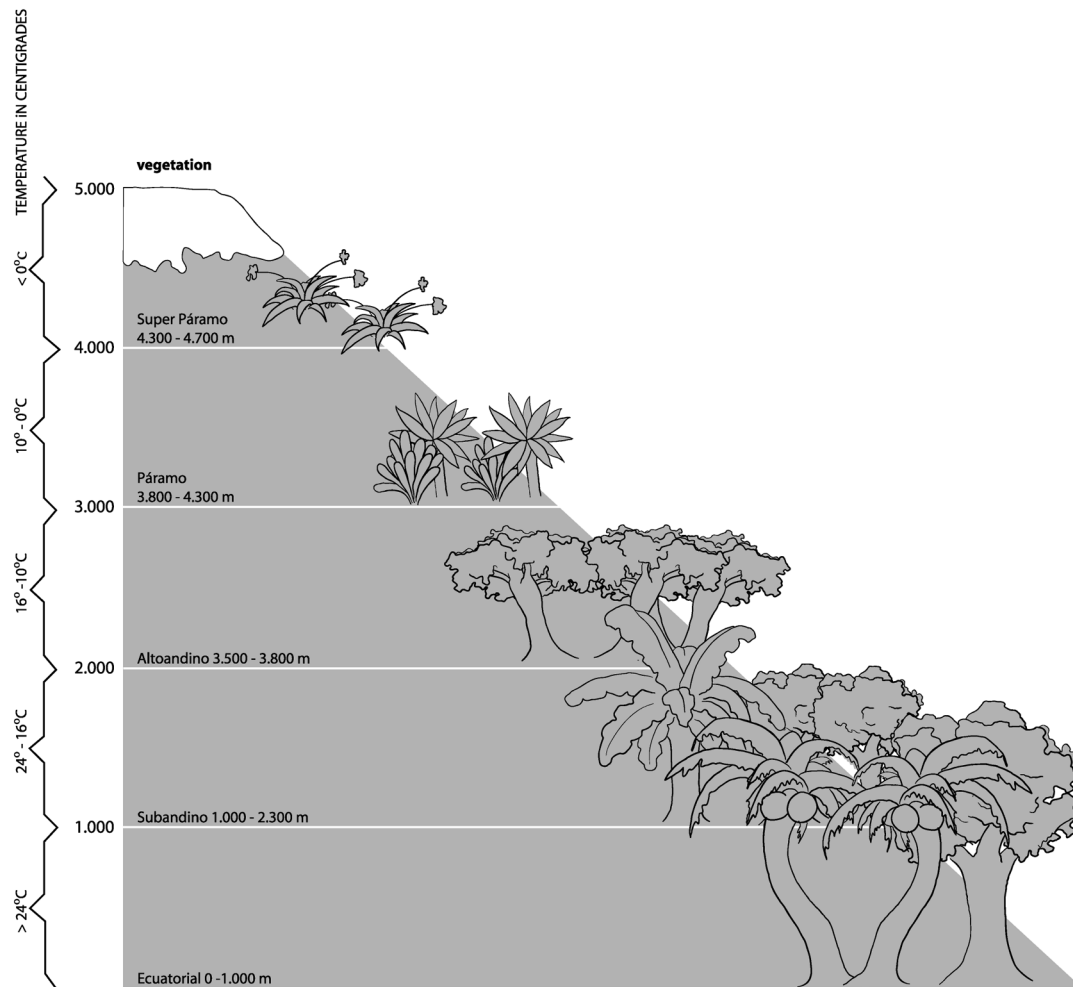


Fig. 3.2 Vegetation belts (after: Atlas Básico de Colombia 1989: 63)

at 4000 m. The most common woody taxa are various Compositae and Ericaceae, *Polylepis*, *Aragoa*, *Hypericum* and some species of *Espeletia*. Páramo temperatures do not rise above 10°C . Only recently has evidence been found of early human occupation within this area (above 3,300 m, the sites of Neusa, see Escobar 1992), though dating to a slightly warmer period (Hipsitermal, ca 9500 BP, see further 3.2.1) during which the area was more forested. The Páramo belt lies between ca. 3500 m and 4000-4200 m. It is characterised by open grasslands, bogs and mires and by species of *Espeletia*, *Bartschia*, *Geranium*, *Plantago*, *Ranunculus* and *Paepalanthus*. The Super Páramo belt extends from 4000 to 4200 m upwards. Vegetation is very scanty or absent. The nival zone covers an area from 4500 to ca 6000 m. The temperature is mostly below 0°C . The highest peaks may be permanently covered with snow and ice.

3.2 Palaeoenvironment

3.2.1 PALAEOENVIRONMENTAL STUDIES

Palaeoecological and palynological studies of the Quaternary in the South-American tropics started in the early fifties (a historical overview in Van der Hammen 1992). During that time, a number of longterm projects were initiated. In the sixties the project “*Geología Cuaternaria y Palinología de Colombia*” concentrated on Quaternary stratigraphy, glacial geography and palaeoecology, and was linked to the project “*Hombre Temprano y Medioambiente del Pleistoceno en Colombia*” that was designed to study early human occupation (Ch.1). In 1980, the interdisciplinary project ECOANDES was established to study the ecosystems in sections through the three chains of the Andes. The results of this are published in a series “*Estudios de Ecosistemas Tropandinos*”. In 1986 the Tropenbos-Colombia project began, focussing specifically on the Amazon forest area.

A central area of early and recent studies is the high plain of Bogota at 2600 m altitude. This plain is a compaction of lake sediments from the Late Pliocene and Quaternary. At the beginning of the Pleistocene, several hundreds of metres of lake sediment were deposited in the basin of the plain. The sedimentation stopped around 27.000 BP, when the lake of Bogotá drained, possibly by erosion of the Tequendama Falls, which served as the only outlet of the basin. This sediment is ideal for pollen sampling and thus for the reconstruction of vegetational and environmental history over millions of years. On this plain there are pollen records from lake La Herrera (Van der Hammen & Gonzalez 1965), from the El Abra corridor and rock shelter (Van der Hammen 1978), from deep boreholes at Funza (I and II, Hooghiemstra & Cleef 1995) and several other sites. A pollen record of the last 30.000 years is available from the lake Fúquene, located at an intermontane basin at ca 60 kms north of Bogotá at 2600 m (Van der Hammen 1992; Hooghiemstra & Cleef 1995). Early research in Colombia was also done in the Sierra Nevada de Santa Marta and the Sierra Nevada del Cocuy in the north, with altitudes up to 6000 m; in the Caribbean lowlands (the lower parts of the rivers Magdalena, Cauca and San Jorge; in Archila 1991); and in the tropical plains to the east, the Llanos Orientales (Van der Hammen 1992). Eustatic movements of the sea level were reconstructed on the basis of pollen from the coastal lowlands of Guyana and Surinam (Van der Hammen 1992:21; Van der Hammen 1961,1974,1986; Wymstra & Van der Hammen 1966). Specific studies have recently been carried out in the Upper Cauca Valley for palaeoclimatic reconstructions of the late Quaternary in the Andean lowlands (0-1000 m altitude) and subandean (= lower montane, 1000-2300 m altitude) vegetation zone (Behling, Negret & Hooghiemstra 1998). Unfortunately these do not include the timespan of interest for the first human occupation, as the pollen samples represent part of the Last Glacial and the Late Holocene.

3.2.2 THE PAST 30.000 YEARS

One of the first important phenomena that could be established with pollen diagrams was the contemporaneity of the European major climatic changes with those in the tropics. Glacials and interglacials appeared to correspond with strong fluctuations in precipitation rates, sometimes referred to as "Pluvials" and "Interpluvials". Climatic reconstructions can now be made for the Late Pliocene and Quaternary age, but the period of interest for human occupations are the past 30.000 years.

A little after 30.000 BP, at the start of the Upper Pleniglacial, the climate became gradually cooler. Glaciers must have had their maximum extension between 25.000 and 21.000 BP (Middle Pleniglacial), when the climate was very cold but relatively humid. At the glacial maximum the

ice may have touched the forest in some areas, when it extended downwards to ca. 3000 m. The glacial annual temperatures in the Andes must have been 6-8°C lower than today in the highest areas (Van der Hammen 1992:95). Between 21.000 and 14.000 BP the glaciers withdrew under cold and very dry conditions (Fúquene stadial). In the Fúquene area the precipitation seems to have been half of what falls today (Van der Hammen 1974). During the first millenia after this glaciation the dominating landscape was that of open Páramo and grasslands. The timber-line (and all vegetation belts) lowered between 1.200 and 1.500 m. The average height of this tree line during the glacial periods was around 2000 m.

During the late Pleniglacial (ca 14.000 BP), the Páramo vegetation must have been in contact with the open xerophytic or tropical lowland vegetation in parts of the western flanks of the eastern cordillera. This is suggested by data from the Laguna de Pedro Palo (at 2000 m altitude, to the west of the Bogota Plain; Van der Hammen 1974). The timber-line was at least 1300 m lower than today. Among the areas with low vegetation were: part of the Magdalena Valley, slopes of the eastern cordillera, the high plains and adjacent hills and mountains. It seems that the lower 2000 m of the eastern slopes were covered with rain forests, but it can be supposed that there were open areas between the tropical savannas of the oriental plains (Llanos Orientales) and the higher Páramo, like dry intermontane valleys and transects (Van der Hammen 1991). The large areas with low open vegetation facilitated faunal migration from the lower to the higher vegetation belts and vice versa.

Around 14.000 BP the climate became warmer: the Late Glacial. In general the annual temperature rose and the glaciers withdrew to higher valleys. The temperature was still colder than today but it was more humid, which led to an expansion of forests. This period lasted until 10.000 BP, with a number of fluctuations called stadials and interstadials. These shorter periods of change are often correlated with phases of human occupation and abandonment. There were two relatively warm interstadials.

Susacá interstadial

First there was the warmer interstadial of Susacá, between 14.000-13.000 BP (first described for the *Ciénaga del Visitador* and clearly represented in the diagram from the Laguna Ciega in the Sierra Nevada del Cocuy), which was slightly more humid. It was immediately followed by a short cold stadial "*de la Ciega*" between 13.000 and 12.500 BP.

Guantiva interstadial

This cold stadial *de la Ciega* was followed by the warm interstadial Guantiva (12.400-11.000 BP) corresponding with the European Allerød zone. The oldest undisputed

traces of human occupation in Colombia date from this period. Pollendiagrams from the area of Fúquene, from the páramo of Guantiva and from the valley of El Abra on the high plain of Bogotá confirm that the temperature rose in that period to about what it is today or only 2°C lower. There was more precipitation and consequently an expansion of lakes and marshes. The timber lines rose to 3200 m. Dense forests covered what used to be open páramo. These forests were characterised by the presence of *Alnus* and lower bushes like *Myrica* and *Symplocos*. *Weinmannia* grew in the lower mountaneous areas. In the North there was *Quercus*.

The Fúquene area was covered with *Dodonaea* (*Sapindácea*, Pérez Arbeláez:682), a pioneer of bare soil (Van der Hammen 1974; 1992:45). Around 12.000 BP the area of the Laguna de Pedro Palo was again invaded by andino forest and towards the end of the Guantiva interstadial by subandino forest.

El Abra stadial

Finally there was a cold stadial, named El Abra, between 11.000 and 10.000/9.500 BP (synchronous with the European Young Dryas zone), which ended with at the beginning of the Holocene. After this, the climate gradually warmed up to modern temperatures. The annual temperature during this cold stadial must have been 4-6°C lower than today. The forest partly disappeared from the high plain of Bogotá and withdrew to the edges. Lake levels lowered as there was less precipitation, and the lake in the valley of El Abra became a swamp. Subpáramo landscape dominated, with many open páramo grasslands with low bushes, in the valley of El Abra the presence of Cactaceae in the pollendiagrams supports this. The forest-limits lowered almost to the level of the plain (2600 m). On the plain, many faunal remains in sites dated to this period are from animals typical of forest-edge or subpáramo landscapes: *Odocoileus*, *Mazama*, rabbits (*Sylvilagus*), rodents like *Sigmodon*, *Cavia*, and others. The high plain must have been an excellent area for hunting during this interstadial (see further 2.3). Data from the Fúquene area confirm that the el Abra stadial marked a lowering of the temperature and of the timber-line to the height of the Fuquene lake, at 2580 m.

Holocene

From the early Holocene onwards, around 10.000 BP, the climate changed to modern conditions. As the temperature rose, there was more evaporation which caused the lakes and swampy areas to dry. Again forests invaded the area, with *Alnus* dominating in the lower and humid zones. *Myrica* (myrte) grew on the dryer grounds and near the El Abra shelter there was a mixed forest with Myrtaceae, Melastomaceae, *Viburnum*, *Ilex*, *Borreria* (lower vegetation,

Pérez Arbeláez:528/657). *Weinmannia* grew in the lower areas but probably also on the High Plain.

In the Fúquene area and in pollen diagrams from the Páramo de Palacio (3500 m, NE of Bogota), proof was found that the climate got ca 2°C warmer than today, during a climatic optimum within the Holocene, the “hipsotermal” (Atlanticum, between 6000 and 4000 BP). Forest tree species (*Cecropia* (= Yarumo), *Acalypha*) from the subandino vegetation could then grow several hundreds of meters higher than they do today.¹⁹ This lasted until around 3000 BP when climatic conditions became what we know today, and the forest limits lowered to their present hight (between 3200-3500 m). Precipitation fluctuations in the Holocene are visible in the rising and lowering of the lake-levels in the Andes. In the Lower Magdalena Valley these fluctuations can be registered in the lower waterlevels of the river and the growth of peat in the swampy areas. Low water levels are found around 7000 BP, 5500 BP and a number of later dates (Van der Hammen 1992:109).

3.3 Archaeological data on the early preceramic period

3.3.1 FIRST PEOPLE IN NORTH AND SOUTH AMERICA
Although there is a lively debate over the first occupation of the “New World”, the most accepted theory still seems to be that the first inhabitants of the American continent entered by crossing the Bering Strait. Leaving their first traces in Alaska (sites along the Old Crow and Porcupine rivers, Northern Yukon (debatable dates between 30.000 and 25.000 BP and sometimes older; Irving 1971; Bonnichsen 1978 a.o.), they are thought to have moved southward to finally reach the extreme southern end of the continent at least around 13.000 BP (Monteverde in Chili; Dillehay 1989, 1992, 1997).

In the past thirty years there has been a lively discussion on the acceptability of sites that seem to predate the North American Folsom and Clovis sites and on the consequences for models on “first occupants” (Ardila & Politis 1989; Gnecco 1990; Lynch 1991 vs. Bryan & Gruhn 1992; Jaimes 1992; Dillehay et al. 1992; Lynch 1992, 1998; Whitley & Dorn 1993; Meltzer *et al.* 1994; Roosevelt *et al.* 1996; a.o.). By now, it is accepted by most scholars that South America was certainly inhabited at the same time as Clovis, and some consider the possibility of a pre-Clovis option. Claims for earlier dates are growing in number. An example of such a claim is the Pedra Furada site in Brazil, which has been used as a (not convincing) testing ground by advocates and opponents (Meltzer 1995; Meltzer, Adovasio & Dillehay 1994). Most seem to accept the pre-Clovis dates of Monte Verde in Chile (Dillehay 1992; Adovasio & Pedler 1997), which would imply that the “Clovis was first” thesis is no longer supported by the archaeological evidence.

For scholars who accept that the area was inhabited at least in Clovis times, one of the issues is whether the groups are in any way related to Clovis or whether they developed independently. Research on this subject tends to focus on technological (like fluting and basal thinning) and stylistic (morphological, like lanceolate, fishtail etc.) characteristics of bifacial projectile points, a distinctive and diagnostic artefact category. In Panama there are stratified complexes with fluted, fishtail and waisted points that are interpreted as undisputedly associated with Clovis (Lake Madden, La Mula-West; Ranere & Cooke 1996). In northwest Colombia, an undatable isolated stemmed fishtail point and a lanceolate point, both fluted, were found in the Cueva de los Murciélagos (Gulf of Urabá, Correal 1983). A number of other fluted points, called “Restrepo”, were collected from the surface in other parts of the country as well (Ardila 1991). In the southwest of Colombia a broad stemmed fluted point dated between 10.000 and 9000 BP was found at the site La Elvira (Gnecco & Illera 1989). There are possible parallels further from the Clovis-centre, in Venezuela, Ecuador, Peru, Chile and Argentina. However, a detailed analysis of technological features makes the proposition of an exclusive North-American origin for fluting, and its usefulness as a chronological marker, questionable (Ranere & Cooke 1991; Dillehay et al. 1992; Gnecco 1994; Mayer-Oakes 1996). Fluted fishtail points may also be considered a South American innovation which spread northward (Ranere & Cooke 1991; Mayer-Oakes 1996). The stylistic similarity between all the different point-types further confuses the debate on origins and diffusions (Ardila 1991).

Evidence from other sites shows very distinct subsistence patterns and a different toolkit when compared to Clovis. Such a site is Pedra Pintada at Monte Alegre in the Amazon in Brazil (C14 dated between 11.200 and 10.000 BP), where plant fragments, a highly diverse river and land fauna and (bifacially and unifacially) chipped stone artefacts suggest a subsistence based on generalized foraging (Roosevelt et al. 1996; Roosevelt 1998). The earliest rock shelter sites on the High Plain of Bogotá (El Abra, Tibitó and the oldest level of Tequendama) can be placed among these sites as well. An important insight obtained from the data found at these sites is that not all Palaeoindians relied principally on megafauna for subsistence.

Late Pleistocene sites appear to be very diverse throughout the continent. It can be proposed that contrasting cultures may have evolved from a common ancestor, (e.g. Clovis, but not necessarily) and that interaction with different environments, isolation and diffusion led to technological and stylistic diversification (Ranere & Cooke 1996). The theory in favour of “Clovis first” is based on the similarity of the artefacts from different parts of North and South America. This similarity would reflect a cultural relation between

specialised big game hunting groups, or at least be linked to groups that share the same lifestyle in a large variety of environments (see Gnecco 1998). From the Clovis-core there may have been a migration of very mobile hunters that manufactured the same type of artefacts and expanded over an immense area in a relatively short time (Martin 1973; Tankersley 1994 in Gnecco 1998).

In an opposing model, the Clovis bifaces are seen as regionally different because, although they share technical features like fluting and the general morphology, they were manufactured in a different reduction-sequence. This implies that they do not represent a demographic but only a technological expansion. The fluting technology was adopted by manufacturers of other existing technologies and styles in a time of rapid climatological change which led to regional differences: this may be what the archaeological record indicates (Bonnichsen 1991 in Gnecco 1998). In the Intermediate Area, the timing of the cultural diversification correlates with the Guantiva interstadial (12.400-11.000 BP) which could in part be an explanation of the phenomenon: groups became more isolated as the open savanna-areas were reduced due to an increase in precipitation and consequently of forests (Ardila 1991; Dillehay et al. 1992). Clovis (read: “fluting”) can be regarded as a technology which moved between pre-existing groups rather than as an archaeological “culture” in a strict sense (Stanford 1978 in Adovasio & Pedler 1997).

In summary, most researchers now support a model for the initial population that combines both elements of horizontal continuity (through space, e.g. specific technological achievements) with diversification resulting from different responses to local environmental and social conditions.

3.3.2 INTERMEDIATE AREA CONCEPT: THE STRATEGIC LOCATION OF COLOMBIA

The concept of an “Intermediate Area” is generally used to refer to “a 1500 -mile stretch of mountains, tropical valleys and coastal plains between the areas of the great native American civilizations of Mesoamerica and Peru” (Willey 1971). From a physical geographical point of view, the area comprises the Ecuadorian and Colombian Andes, Pacific coasts, the Colombian Caribbean coast, the Andes of Western Venezuela, the adjoining Venezuelan coast and all of Lower Central America from the Gulf of Nicoya to the North-Central Caribbean coast of Honduras. From a cultural historical perspective the name refers to the area squeezed between the majestic prehispanic Mesoamerican and Mesoandean civilizations. For long, the area was studied as being intermediate in all aspects, which implied that the cultural phenomena were qualified in their relation to the northern and southern neighbours: the Intermediate Area was easily regarded as of less interest.

When the first colonisation of the Americas became a serious subject of study, most scholars realised that this area could have crucial information on mobility and adaptive strategies of the people who, for whatever reason, crossed the Darien Gap, in whatever direction (a.o. Bray 1984). If — for the time being — coastal navigation on a large scale as an option is excluded,²⁰ the position of the area as “a funnel through which the earliest inhabitants of South America passed, is inescapable” (Drennan 1996).

Due to its geographical location, Colombia forms the central part of this Intermediate Area and can be seen as a gateway of South America. The river valleys that run from south to north with the bordering terraces and the intermontane valleys must have been an easy passway for migratory hunters/gatherers and an attractive settlement area for more sedentary groups.

3.3.3 COLOMBIA, THEORIES BEFORE 1990

The generally accepted oldest period for human occupation in Colombia is the Late Pleistocene. All evidence of human occupation is dated long after the maximum depression of Pleistocene glaciers around 21.000 BP. Although there are two claims for presence of very early hunters (16.400 BP Pubenza; Correal 1993 and 22.910 and 19.760 BP Duitama Tocogua, Becerra 1994), the oldest undisputed evidence for occupation is dated between 12.500 (El Abra: Correal, Van der Hammen & Lerman 1969; Correal, Van der Hammen & Hurt 1972; Hurt, Van der Hammen & Correal 1977) and 11.000 BP (Tequendama: Correal & Van der Hammen 1977; Tibitó: Correal 1981).

A quick check of a list of radiocarbon dates from Colombia, published in 1990 (Uribe 1990²¹), reveals that the number of dates from the early preceramic period (roughly between 13.000 and 6000 BP) is limited to two areas: the high plain of Cundinamarca and Boyacá (four sites: El Abra, Tequendama, Tibitó and Gachalá) and the Calima Valley (Sausalito and El Recreo: Herrera et al. 1992). In these same areas there are a number of later preceramic sites as well (a.o. Chia, Galindo, Nemocón and Sueva on the plain and El Pital in the valley), but in the rest of the country there was no dated evidence of human presence in the preceramic period.²² Hypotheses on early inhabitants of other areas were based on survey results (a.o. Correal 1974, 1977, 1991). By the early nineties the preceramic cultures were relatively well documented on the high plain of Bogotá but data were extremely dispersed or absent in the rest of the territory (see also Correal 1980; Ardila 1986; Botiva et al. 1989). Interestingly enough, isolated retouched projectile points were found in different parts of the country, but none on the High Plain of Bogotá.

Palaeoindians

The distinction of two separate artefact-classes (Abrian and Tequendamanian) plays a crucial role in the traditional hypothesis on the subsistence strategies of the earliest occupants of the Colombian territory. The hypothesis is in part based on the availability of large game during the late Pleistocene, environmental change and the extinction of the large mammals at the beginning of the Holocene. This “History of Mastodon, Man, and Environment”, was initially designed and elaborated upon by Correal and van der Hammen (1977; Van der Hammen 1992:50).

Many of the Mastodon remains were found in the area of the Magdalena and the Bogotá Plain. There are three 14C dates on mastodon remains or directly associated organic material: 20.570 ± 130 BP, 16.300 ± 150 BP and 11.740 ± 110 BP. Van der Hammen (1992) proposes that all remains are possibly dated between 25.000 and 11.000 BP, which corresponds with the dry and cold climate of the last part of the last glacial period, when the timber-line had lowered to 2000 m and the high plains in the Eastern Andes were covered with Páramo vegetation. To the east of the central cordillera the hills were probably covered with relatively humid montane forest. To the west, into the Magdalena Valley, there were large dry open areas on the mountain slopes, directly in contact with the cold open páramo vegetation.²³ This must have been an ideal environment for large mammals like mastodons.

Around 11.800 BP the Andean forest began to invade the area. These forests again separated the lower dry and open areas from the higher Páramo and at the onset of the Holocene the situation became what it is now: the xerophitic vegetation or dry forest is limited to the lower areas of the Magdalena Valley and to a very narrow strip in the far western end of the high plain of Bogotá, an area that is relatively sheltered from the rains. The open areas shrank in size and number. In these areas small populations of mastodons must have lived during the end of the Glacial period. It was in this period that the first human occupants seem to have appeared on the scene, and human hunting may have given the final blow for extinction. At Tibitó, mastodon remains were found associated with artefacts and radiocarbon dated to 11.740 ± 110 BP, within the interstadial of Guantiva (Van der Hammen 1991, 1992; Correal 1981). This must have been a small remnant of the much larger population of megafauna, surviving in the dryer low and open vegetation of the occidental side of the high plain of Bogotá.²⁴ Hunters from the rock shelters probably hunted this megafauna occasionally but did not transport the heavy bones to the shelters. Mastodon bones are not found at El Abra and Tequendama.

When the megafauna disappeared, hunting concentrated on *Odocoileus* and smaller fauna. At El Abra, Deer (*Odocoileus*)

and guinea pig (*Cavia porcellus*) appear to be the most important meat-supplying animals. Analysis of the faunal remains of this site suggests that the animals were not eaten at the shelter itself, which is consequently interpreted as a temporal hunting camp where the animals were butchered and prepared for consumption elsewhere (IJzereef 1978).

Tequendamian and Abrian artefact classes

The dispersed pressure retouched artefacts and bifacial projectile points found on the surface, and the small number of this type of artefact excavated at Tequendama which gave the name to this “Tequendamian” class, were always associated with a period in which hunters had designed a specialised toolkit to hunt large mammals, e.g. mastodons, which were amply available during the Late Pleistocene. When these animals disappeared, the technically complex artefact class was supposed to have disappeared with it, to be replaced totally by the simple “edge trimmed tool tradition” (Hurt 1977) or “Abrian” industry (Correal & Van der Hammen 1977 etc). This toolkit was seen as an adaptation to new environmental conditions: more forests, smaller fauna. The Abrian tools were for a large part interpreted as being manufactured to make more elaborate implements from other — perishable — material like wood (more forests!) and bone. In other words, many of the Abrian tools should be seen as tools to make tools (Correal & Van der Hammen 1977; Correal 1979; Dillehay et al. 1992 a.o.).

The number of Tequendamian artefacts found on the High Plain of Bogotá is extremely limited, but apparently sufficient to hypothesise that, at the end of the Upper Pleniglacial, group hunting on large and small fauna ascended to the plateau during part of the year, carrying with them Tequendamian tools which they had manufactured in the Magdalena Valley. While staying on the plain, they made use of simpler tools of locally available material. They may have spent most of the year in the valley (Correal & Van der Hammen 1977, Van der Hammen 1992; Ardila 1991 a.o.). A system of seasonal mobility between the lowlands and the highlands is one of the subsistence models generally proposed for the Tequendamian and Abrian complexes (e.g. Dillehay et al. 1992).

With the onset of the Holocene and the significant change of the climate the hunters are supposed to have become more generalized, targeting more prey species, and to have depended on a wider variety of food resources, a.o. more plants were included in the diet. This period has been called the “Archaic” stage, but this term was never clearly defined in the Intermediate Area (Nieuwenhuis 1991). Generally, “Archaic” refers to a stage of transition from a Palaeoindian to a more sedentary lifestyle (a.o. Lynch 1998), an adaptation to changing environmental conditions, characterised by a less specialised toolkit, more signs of plant processing and

settlement in a large variety of environments (which, as we know now, is not different from the preceding late Pleistocene period). This stage has no obvious starting point, nor an end. For some scholars the start of the “Archaic” stage is marked by the end of the lithic period (but when does this end?) and is related to the mid-Holocene climatic optimum (Ardila 1983), and by others it is related to the shellmound dwellers on the coast (Reichel-Dolmatoff 1965) or the appearance of the first ceramics (Correal 1980). It may be less confusing to avoid the term and only refer to late Pleistocene hunters and early hunter/gatherers (e.g. Dillehay et al. 1992).

Abrian-like artefacts are found in very different ecological settings, suggesting that the technology is culturally conditioned, rather than determined by environmental conditions alone (Bray 1984). The simple technology is found throughout the whole Intermediate Area (from Cerro Mangote in Panama to the Las Vegas peninsula of Ecuador), and thus could be interpreted as belonging to cultures which were in some way related, either directly or through indirect contacts over larger distances. This broad distribution pattern and the persistence through time, can be seen as characteristic of non-specialized, broad-spectrum food gathering in mixed environments (ibid).

New data

Shortly after 1990 new data became available and the information on early preceramic occupation was no longer restricted to two or three areas but was found in nearly all the different ecological settings of the country. On the Bogotá plain, new evidence was found as well. It was generally supposed that material evidence of early occupation would most likely be found in rock shelters. The excavations of the open air sites Galindo and Checua on the High Plain of Bogotá changed this vision. Both were occupied during a sequence of periods by hunter/gatherers and are characterized by large concentrations of Abrian artefacts. At Checua (occupational zones from 8500 BP onwards) there are wooden artefacts as well. Among these is a flute. Besides, there is evidence of a possible circular house-construction and there are several burials (Groot de Mahecha 1992). At Galindo (occupied from 8740 BP onwards) there was only one burial found and no bone artefacts (Pinto unpub. ms.; see further Chap. 5). In the páramo de Guerrero, in the western part of the Eastern Cordillera, a number of small excavations under rock shelters for the first time revealed early preceramic occupations in a páramo landscape: Neusa I, II and III (Escobar 1992). At the time of the oldest occupation (after the cold El Abra stadial (11.000-9500 BP)) the area was covered with open páramo vegetation, like it is now, but the sub-páramo forest limit was somewhat higher than today, closer to the rock shelters. This implies that two different ecosystems could be

exploited. There are three levels of occupation, one between 9500 and 6500 BP, one from 6000 to 3500 BP and a ceramic stratum between 3500 and the present day. The first occupants appear to have principally hunted deer and small rodents. There are Abrian artefacts, choppers and chopping tools.

An area where important new evidence was collected from surface and small excavations is the Middle Magdalena Valley. On a number of terraces and lower foothills of the central and eastern Andes chain, material was recovered that could be dated to the early preceramic period (see further Ch.6).

In the Southwestern part of the country two early sites were excavated with distinct sets of artefacts. At La Elvira (5.600 BP but possibly older), a site in the valley of Popayán, obsidian tools were found, including Planoconvexes and a large number of bifacial projectile points that could typologically be related to artefacts found in the north of Ecuador (Gnecco & Montoya 1989). At San Isidro, in that same area (dating to ca 10.000 BP), a variety of unifacial and finely retouched bifacial artefacts was found in one compacted occupational zone. Besides the artefacts, charred remains of a variety of plants were found that indicate that the occupants exploited the forest that surrounded the site, especially palm fruits. The site is interpreted as a knapping station where everyday activities were also carried out (for both sites see Gnecco PhD ms; for San Isidro: Gnecco & Mora 1997; a.o., see further Appendix II).

The first stratified preceramic site excavated in the Amazon was the Guayabero rock shelter, with the oldest date at ca 7000 BP and most intensive occupation probably between 5000 and 2000 BP (Correal, Piñeros & Van der Hammen 1990). The lithic artefacts are described as typical Abrian. Use of plant resources is suggested by the remains of seeds, resins and very small charred organic material. Ochre was found as well. Other evidence of Amazonian pre-ceramic occupation was found along the river Caquetá, at Peña Roja (dating to ca 9000 BP), with unifacial and unretouched artefacts, flat mortars, grinding tools and a fractured milling stone. These last artefacts and the macro remains of a large variety of plant species indicate that the group relied to a certain extent on plant resources (Cavelier *et al.* 1995; Rodriguez & Herrera 1993; Gnecco & Mora 1997).

3.4 Selection of sites to be studied

Sites studied for this project were selected to assess the old theories with data from newly discovered sites. Chronological and geographical factors were the basis for selection, but the choice of sites for detailed analysis was also guided by the availability of the artefacts and by the accessibility of the contextual information. As research advanced, several adjustments to the original plan had to be made, due to the

discovery of new sites and the fact that a number of sites appeared to be either unrepresentative or otherwise unsuitable for the achievement of the project goals.

To start with, a sample of artefacts from Galindo, one of the open air-sites on the High Plain of Bogotá was analysed as a pilot-study to check the applicability of Micro wear analysis on the raw material of artefacts in the study areas. All data from this excavation were available and I had participated in the 1987 excavation. The site comprised four occupational levels, three of which belonged to the preceramic period, with dates of 8740 and 7730 BP. The sample was chosen by the excavator, M. Pinto, and consisted of a selection of “most probable tools” on the basis of the traditional typomorphology. Among the 200 artefacts selected almost all type categories were represented in the three preceramic levels (see further section 5.2).

The site Tequendama was then chosen for analysis as it was the best example of a systematically excavated rock shelter from which all data had been published. A large part of the argument on the earliest occupants of the territory was based on data from this site. Though excavated in 1977, all material was available at the Institute of Natural Sciences of the National University in Bogotá, then headed by one of the excavators, G. Correal Urrego. Here too, a selection of “most probable tools” was made, which was in its turn partly selected from a representative sample that the excavators had made after the excavation. The selection also included a grab sample from the thousands of bags filled with artefacts randomly chosen from the different occupational levels. Of the 1300 artefacts selected, 400 were actually analysed in detail (see further section 5.1).

Initially it was planned to analyse material from two more rock shelters (El Abra and Nemocón) on the High Plain of Bogotá, but in the course of research it became clear that they would not yield new essential information. The material of these sites and others like Sueva and Tibitó was all stored at the Institute of Natural Sciences with no restrictions as to the accessibility. However, it had become clear that it would be impossible to reconstruct the exact provenance of the artefacts within the excavated area.

In the Magdalena Valley most data consisted of surface finds. However, four small terrace sites were said to have stratigraphic dates and both Abrian and Tequendamanian material in a single context. These four sites were originally selected for analysis, based on data from preliminary reports. As it appeared, the context of the excavated evidence was not always clear from these sources. Most excavated material derived from small test pits. The larger part of the Tequendamanian artefacts were not dated and only two were from an excavated context. In some cases the material itself was untraceable. The principal site, which was included in the original selection from the Valley, is La Palestina, dated

to 10.400 BP. A selection of 50 artefacts was made and analysed, including three bifacial implements. At a later stage 35 artefacts from a dated test pit from Puerto Nare (10.300 BP) were also included.

One of the adjustments made as the project advanced was that, due to a lack of appropriate material from dated, stratigraphic and reconstructable contexts, the research aims were partly shifted towards more typo-morphological and methodological issues. These and fundamental methodological questions will further be addressed in chapter 4. For the typo-morphological questions, it was decided to extend the scope of the samples. Three sites included were initially either considered to be too remote from the focus area, both chronologically and geographically, or were not yet known at the time the project started.

Two of these sites are in the middle Magdalena Valley, but are of later occupations. It was considered important to include material from these sites as reference material in the total sample because of the artefacts typomorphology, all characterised as “Abrian”. One of these sites is Peñones de Bogotá. Though still aceramic, it dates from a later period (5.900 BP) than the other sites. From this site, 50 artefacts were analysed. The other site, La Miel, actually included a cluster of excavations carried out in the La Miel river area,

all dating from the ceramic period (dated between ca 1.395 and 535 BP) but with lithic material that, for the greater part, resembles the material of La Palestina, Puerto Nare, Peñones de Bogotá and other sites (see further chapter 6). As the “Abrian” technology does not seem to have any chronological limits, it seemed interesting to study whether the use of the artefacts within one geographical area was as persistent as the manufacturing technique.

Geographically remote is a site in the Cauca Valley, San Isidro, dating from 10.000 BP and excavated in the early nineties. Of this site a small sample was also analysed. The artefacts from San Isidro are very different from what is found in other areas: there are many finely retouched implements from a fine-grained chert, that seem to belong to an industry that is not related to the traditional “Tequendamian” class. Thirty-one artefacts from this site were analysed. This sample was principally analysed for the detection of residues rather than to address the specific objectives of the present thesis. Therefore the results are presented in an appendix (I).²⁵

In total, seven sites were selected, roughly covering four periods and totaling 798 artefacts. This selection was expected to be large and representative enough to reach the original thesis objectives (Table 3.1).

| SITE | PERIOD | AREA | N° ARTEFACTS |
|-------------------|-------------------------|----------------------|--------------|
| La Palestina | Late Pleistocene | Magdalena Valley | 50 |
| Puerto Nare | Late Pleistocene | Magdalena Valley | 35 |
| San Isidro | Late Pleist.-Early Hol. | Cauca Valley | 31 |
| Tequendama | Late Pleist.-Early Hol. | High Plain of Bogotá | 400 |
| Galindo | Early Holocene | High Plain of Bogotá | 200 |
| Peñones de Bogotá | Late Holocene | Magdalena Valley | 50 |
| La Miel | Ceramic | Magdalena Valley | 22 |
| Surface | Undated | Magdalena Valley | 10 |
| TOTAL | | | 798 |

Table 3.1 Sites selected