دور الهجرات في تعمير الصحراء الجزائرية خلال العصر القديم
التاسيلي نزجر أنموذجا

The migration's role in the reconstruction of people in the Algerian Sahara during the antiquity (Tassili N'Ajjer as a model)

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Received: 14/04/2020 Accepted: 28/03/2024 Published:27/06/2024

Abstract:

Migration undoubtedly plays a crucial role in settling and channeling human waves, contributing to the emergence of human populations in any region. The geographic structure of Tassili n'Ajjer, strategically positioned between Egypt, the Gulf of Sirte, and Morocco, makes it a natural crossroad for major migration routes. This location has allowed humans to find various dwellings and played a significant role in the history of North African peoples. It's difficult to access passages and inlets provided a safe haven, facilitating the flow of migrations to and from the area.

This research paper is significant in identifying evidence of migrations in the region, primarily through rock art, which represents the region's distinctive cultural heritage. The human groups that appeared in this area sometimes formed strong unions and at other times separated, reflecting successive migrations over two millennia, from 4000 to 2000 BC.

In studying this topic, we aim to trace those migrations to and from Tassili n'Ajjer through three main directions, north, east, and south, to understand their impact on the human

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composition of the desert region and to highlight the importance of the Algerian desert in ancient times in establishing a civilization that has left its archaeological evidence clearly on both humans and the environment.

Keywords: Desert, Tassili n'Ajjer, Migration, Tuareg, Human Composition.

ملخص:

لاشك أن لعامل الهجرة دور مهم في استقرار أو عبور موجات بشرية تساهم في ظهور الأنواع البشرية بأي منطقة، ولأن بنية التاسيلي نزجر تسمح للإنسان بإيجاد مساكن متعددة بفضل موقعه الجغرافي الذي يتوسط مصر، شاطئ السرت والمغرب، أي تقاطع الطرق الكبرى للهجرات الطبيعية، فقد لعب دورا مهما في تاريخ شعوب الشمال الافريقي، كما أن منافذه واختراقه الصعب جعله يلعب دور ملاذ آمن. تكمن أهمية هذه الورقة البحثية في معرفة ما يثبت وجود هجرات بالمنطقة وهو عامل الفن الصخري، باعتباره الوجه الحضاري المميز للمنطقة، إذ أن الأنواع البشرية التي ظهرت فيه أمكنها أن تتعايش في بعض الحالات في شكل اتحاد قوي، وأن تتفرق في حالات أخرى، مشيرة إلى هجرات متتابعة خلال ألفي سنة: من 4000 إلى 2000 سنة قبل الميلاد. كما أننا نهدف من خلال دراستنا لهذا الموضوع إلى رصد تلك الهجرات بالتاسيلي نزجر، منه واليه عبر ثلاث وجهات رئيسية: الشمال، الشرق والجنوب، لمعرفة تأثيرها على التركيبة البشرية للمنطقة الصحراوية، ومن ثم معرفة أهمية الصحراء الجزائرية منذ القديم في تحقيق تعمير وثقافة ميزتها منذ تلك الفترة وخلفت دلائلها الأثرية أثرا واضحا في ذلك على الانسان والمكان.

الكلمات المفتاحية: الصحراء، التاسيلي نزجر، الهجرة، الفن الصخري، التركيبة البشرية.

- Introduction:

The desert is an expansive, flat landscape characterized by sedimentary areas that serve as reservoirs for once-flowing waters, known as hamadas, and by endless undulating dunes, called erg dunes, that cut through rugged mountain masses. It also features gravel or rocky flat stretches called regs, and basins referred to as chotts or sebkhas, which are beds covered with salt layers. Additionally, the desert contains fertile spots known as oases.

Tassili n'Ajjer, a geological formation in Africa's central Sahara, provides humans with multiple dwellings due to its strategic geographical location between Egypt, the Gulf of Sirte, and Morocco, making it a crossroads for major natural migration routes. Its structure has played a significant role in the history of North African peoples, with its difficult-to-

access passages and inlets offering a safe haven that has enabled migrations to flow to and from it.

Evidence of these migrations is primarily reflected in rock art, which serves as the region's distinctive cultural signature. The various human groups that appeared in Tassili n'Ajjer coexisted at times in strong unity and separated at others, reflecting successive migrations over two millennia, from 4000 to 2000 BC.

Hence, in this study, we will endeavor to explore several key questions: What specific geographical features distinguish Tassili n'Ajjer and make it unique? What underlying factors contributed to migrations flowing into the region at certain times and leaving at others? What were the primary migration routes that brought people to or took them from the area? And what tangible impacts have these human migrations left on the desert region's landscape and cultural heritage?

1- Geography and Boundaries of Tassili n'Ajjer:

The term "Tassili" translates to "plateau" in the Tuareg language[1], with Ajjer distinguishing it from another Tassili located south of the Hoggar. It is a vast plateau with an uneven appearance, divided by narrow rivers into elongated ridges. Tassili n'Ajjer has a corner-shaped structure extending from southeast to northwest, with its highest peak named Adrar.

It stretches from Fezzan to Wadi Agaragar, and separates Djanet from Ghat by 80 km. In terms of length, it spans more than 700 km, from Amguid in the northwest to the Nigerien border south of In Guezzam[2].

Tassili comprises two plateaus layered like steps. The first is the inner Tassili, extending from northeast to southwest and sloping northward into a schist depression called Between Tassili. It dominates the Tassili massif by 500 m through the second step-like degree, which is the outer Tassili, and is steeper than the previous one, extending from west to east.

Covering an area of approximately 350,000 km², the Tassili plateau includes various masses: Imidir and Ahnat in the northwest, Tassili Tim Missaw and Ouankhor in the south. The easternmost and largest mass is Tassili n'Ajjer[3].

Geographically, this is where Tassili n'Ajjer is located. In terms of climate, which has significantly influenced human movement, desert regions have experienced climatic changes since the first geological epoch, as evidenced by various continental and marine geological formations. The continental formations were shaped by humidity, represented by river channels left by ancient watercourses or depressions in the form of fresh or salty lakes. The dry phases, shaped by dynamic factors, created vast areas with various types and shapes of sand dunes[4].

Central Sahara has always been under the influence of low-pressure systems that fed into high tropical pressures. Although these transformations were significant, they did not blanket the desert with strong winds[5].

In light of these relatively modern concepts, we need to question how the climate of Tassili arrived at its current state, its formation stages that led to this dryness, and its contribution to shaping the desert's terrain, thus playing an important role in human settlement. Studies in the desert have shown that it went through three climatic stages during the Quaternary period:

_ The first humid stage, during the Lower Paleolithic, dates between 40,000 and 20,000 BC. It was characterized by humidity, with a dry episode around 35,000-29,000 BC[6].

_ The second stage was a long dry one, beginning during the Lower Paleolithic and extending throughout the Upper Paleolithic and part of the Neolithic[7]. It can be placed between 20,000-12,000 BC. The desert experienced a dry and cold climate that contributed to the depopulation of the region, leaving only groups that adapted to the dryness. Some of these people exploited fossil water sources, while other groups retreated to peripheral areas[8].

_ The third stage was the second humid stage during the Neolithic, centered around 11,000 BC and continuing until 2500 BC, interrupted only between 5500-5000 BC by a very dry phase[9].

After these three stages, around 2000 BC, atmospheric circulation that sourced from southern Europe or other climatic changes began to decrease, and the desert started drying out[10].

These climatic periods, particularly the humid ones, had significant effects on the water network during the geological era directly preceding ours, the Pleistocene. During this time, the desert, especially Tassili n'Ajjer, experienced a humid period. Rivers flowed across the desert, even though they couldn't reach the sea[11].

The continuous expansion of formations from the Pleistocene implies that there was no interruption of natural waters within the desert and that the only difference between past and present lies in that the now-dry closed basins were formerly seasonally or permanently occupied by gulfs or swamps[12].

Regarding Tassili n'Ajjer, it underwent successive bending due to folding that fragmented it and opened it up during humid periods, allowing water to spread and carve rivers with deep, narrow passages in its rugged surroundings[13], such as Wadi Djarat. These climatic conditions and the water network affected human settlement in Tassili, or caused people to migrate from it at certain times, influencing its human composition.

2. Inflows of Migration to Tassili and Their Directions:

One of the main indicators of migrations in the region, which is part of our study, is rock art, which represents the distinctive cultural face of the area. The human species that appeared in these rock arts were able to coexist in some cases in the form of strong unions and separate in others, indicating successive migrations over two millennia: from 4000 to 2000 BC, the era then allocated to shepherds[14] .

However, they might have started much earlier, according to Henri Lhote, if some dates obtained by radiocarbon dating (C14) from the Acacus confirm this[15] . In this context, we

need to trace those migrations in Tassili, whether from it or to it, to understand their impact and echo on the human composition of the region. Some experts in the history of the desert region have pointed out three main directions: north, east, and south.

2.1 Human Migrations from the North to Tassili

In this direction, we can focus on the possibility of the Maghreb inhabitants migrating from the north to the south, specifically from the Tell to Tassili n'Ajjer. We need to identify those responsible for this migration, the period during which they took this path, the reasons that pushed them southward, and their effects on both areas: materially, reflected in their tangible traces in Tassili and its surroundings, or morally, contributing to the Saharan breakage.

Regarding the beginnings of the Holocene, around the eighth to seventh millennium BC, we find that the northern Maghreb completes its Iberomaurusian civilization (dated between 20,000–8,000 BC), where the Meshtta el-Arbi human representative was also known.

The end of this civilization coincided with the emergence of another civilization, the Capsian (between 7000–3500 BC), where the early Mediterranean human stream would become the direct ancestor of today's Maghreb inhabitants. The Capsian peoples would occupy the Maghreb from east to west, expelling or assimilating the Meshtta el-Arbi people, who would gradually disappear without leaving any historical record of their human type except for the Canary Islanders[16].

2-1-1. Owners and History of This Migration:

We can rely on the findings of some researchers about the identity and even the period of migration from north to south. L. Balout believes it is an appealing hypothesis to consider that the Capsian human might be the direct predecessor of the Berbers and that during the Neolithic, they crossed the Maghreb's eastern and continental borders to spread their civilization throughout the land. In other words, they ventured into areas that remained far from the influence of Capsian and Iberomaurusian civilizations, like the vast desert areas[17].

This opinion is not limited to Balout alone, as we find it also supported by H.-J. Hugot, who argues that the Iberomaurusian and Capsian together formed what is known as the "Epipaleolithic" in North Africa (Mesolithic period) in the entire Maghreb. From here, they would influence the desert during the Neolithic period.

Starting from the Maghreb Capsian, the Neolithic culture with Capsian customs would form around the seventh millennium BC, with rare Capsian invasions in the northern desert. From where a true human migration would succeed and cover the entire area, stretching from the pre-Saharan Atlantic in the north, Mauritania in the west, and an irregular line between the Adrar des Iforas and northern Tassili in the south, to the Tibesti in the east[18].

Referring specifically to Tassili n'Ajjer and its rock art, we find among the most recent groups depicted (the Cattle Period) clear Mediterranean facial features. They represent the earliest Mediterranean human groups that ventured into the desert. It is believed that the cattle herders ascended from the lower Algerian Sahara, and Tunisian desert of that time, and advanced to the central desert masses where they came into contact with the successors of the Neolithic Sudanese[19] desert blacks[20].

2-1-2- Reasons for this Migration:

If we seek the reasons behind the movement of these early Berber desert dwellers, who are deeply rooted in the Neolithic customs of the central Sahara, and who, through the cattle-art period they represent, prove that they are an extension of previous peoples in the region with no discontinuity, as this period represents a mixed race and coexistence of both blacks and whites, then we find ourselves facing a phenomenon of adaptation to favorable climatic conditions[21].

The studied "Tihoudin" deposit supports this view, as it is located in an area of contact between an old northern region and an Ethiopian domain, leading to two hypotheses. The first one deals with climatic balance and the convergence of ancient and Ethiopian species in the region's animal cover, which explains the alternate exchanges between the north and the south in synchrony with climatic succession during which the desert region was isolated.

These migrations moved along a migration corridor oriented northwest-southeast, between Tassili n'Ajjer and the Hoggar[22].

We also find anthropological data analyzed by "Dutour," taking us further back in time (before the Capsian man) and further south (even to the southern Sahara), as they investigate the existence of "Meshta Afalo" man during the ancient Holocene in the southern Sahara.

The fixed fact is that "Meshta Afalo" man lived in the Maghreb, while his presence in the lower regions, around 19° north, relies on that colonization coming from the Maghreb that gained land during the ancient Holocene thanks to the favorable environmental conditions at the time, such as the presence of steppes, proven by the discovery of extensive areas of well-developed black soil 400 km west of Télémcsi.

Dutour attributes the driving force of this migration to a wave of early Mediterranean conquest that colonized the Maghreb from east to west, assimilating and hunting down "Meshta Afalo" man along the way[23]**.**

2-1-3- . Effects of the Early Mediterranean Migration on Tassili n'Ajjer:

The series of dates obtained through radiocarbon (14C) was entirely sufficient to provide the chronology of the Neolithic culture with Capsian customs, covering a period extending from the sixth millennium BC.

From their arrival in the desert, the Capsian Neolithic people moved from a phase of mollusk gathering to hunting game, as evidenced by the abundance of arrowheads they left behind. Their invasions of the desert left many traces, such as on the Tadmait Plateau, where they transitioned to the Neolithic without showing significant depth in their industries[24].

Additionally, tracing the origins and different directions of the currents that led to their spread reveals that they moved from southern Tunisia toward the major desert rivers of the Igharghar and Wadi Mia. They are distinguished by somewhat crude forms, such as arrowheads and miniature steel blades, although not microlithic[25].

In the same context of material evidence of this migration, we find that in rock art, Neolithic settlement ended with the pre-white dominance (during the mixed cattle period). The pre-

dominance of white people is confirmed by the pre-Berber rock art, where images of blacks are considerably reduced, as if they had been expelled, perhaps lithically but also socially.

Herodotus placed us in this vision when he attested that the Garamantes chased the Ethiopian cave dwellers in their chariots. The reasons for these migrations of white people and the significant influxes from the Mediterranean region to the central Sahara, which would later face inevitable drought, remain unknown. The only explanation can be found in those climatic motives, as the central Sahara was still humid back then[26].

On a moral level, we find that the effects of this migration became evident starting from the third millennium BC. This Capsian colonization of the desert was first manifested by cattle herders registering a mixed type in the region and later by white horse riders.

From this period onward, these peoples came into contact with the Neolithic Sudanese desert blacks and their successors. After the desert entered the dry phase, the desert pushed the successors of the Proto- Mediterranean people northward, while the blacks were pushed southward[27]. Thus, we can possibly talk about a reverse migration from Tassili n'Ajjer toward the north.

With increasing drought, the blacks settled in the oases, where they lived off small-scale farming and moved toward more suitable regions. It is clear that the wetter Sahel attracted many mixed (melanoderm) peoples. Although not widespread, these migrations succeeded in reversing the central desert areas northward, as evidenced by some Saharan Atlas drawings (e.g., the Ksour Mountains)[28].

2.2. Human Migration from the East to Tassili n'Ajjer and Vice Versa

From the chronology of the early Berber phase in the central and southern Sahara, united little by little, since the seventh millennium BC, in the middle Neolithic, there were migrations of pastoral peoples coming from the east, settling in the central and southern Sahara. The reasons for these movements of people are clearly linked to climate. They were the early Berbers, the early Berber cattle herders who occupied the desert around 3000 BC, evolved in place, and became desert Libyans by about the middle of the second millennium BC, opening the doors to History[29].

When we analyze the peoples behind these migratory or invading waves and their timeframe, we find ourselves facing three currents: migration of East African peoples, including those known as Peuls; migration of the Nilotic peoples (related to the Nile); followed by the migration of the Cretans or Aegeans in what was known as the Sea Peoples invasion, followed by a reverse migration of those eastern Libyans toward the Nile Valley.

2-2-1. Migration from East Africa:

The Sahara experienced an influx of new arrivals, who seem to have completely overwhelmed their predecessors, as the artistic representations pointing to them disappeared. These herders, according to "Lhote," came from the east, driving large herds of cattle before them[30].

This is evident from the synchronicity in the "Tin Hanakaten" site (Tassili n'Ajjer) between the Negro type and the so-called "melano-African" type, presenting a somewhat complex reality associated with multiple migrations emerging from the south and the Sahel, as well as from East Africa.

To elaborate, these mixed groups ("melano-African") coming from the east bear similarities to current inhabitants like the Somalis, Djibouti ethnicities, and Ethiopians (Des Valla, Des Tigrés)[31]. Specialists believe they correlate with the migration of the Peuls people, who have sometimes sought their origin among the groups depicted in desert rock paintings.

The evidence supporting this migration lies in the pastoral lifestyle details found to be similar in murals and the ethnography of the current Peuls. The connection some researchers claim to find between the Tassili Neolithic people and the modern Peuls provides a valuable insight, especially the similarities between the cattle in the rock paintings and those owned by the Peuls.

The existence of an East African current in general in Tassili n'Ajjer is greatly reflected in the so-called Sudanese Neolithic which, based on dates, stretches up to the eighth millennium BC (in Tin-Torha and Tagalagal), but also descends to the second millennium BC. Diverse cultural groups scattered from Lake Turkana to the Atlantic present shared features.

The idea of a large-scale migration of human groups specific to the Sudanese Saharan Neolithic can be traced by reconstructing the routes taken by these Neolithic people with Sudanese customs[32]. Leaving the east, their progressive paths are horizontal, occasionally advancing in certain points northward, leaving their lakeside to ascend those of the rivers, which can be found at higher altitudes in the pre-Tassili mass. Naturally, they followed the edges of Télémcsi, and it's believed that the Neolithic people with Sudanese customs were racially mixed or had lighter skin[33].

2-2-2- Migration from the Nile:

The concept of human migrations from the Nile Valley far to the western Sahara has often been expressed through the Hamitic hypothesis proposed by some. It was believed that the great empires of the Sahel at the dawn of history were forged by non-Negro herders or horsemen coming from the east[34].

However, if we go back to the Neolithic, it is marked by a new opening of the swamps and a re-inhabiting of the areas that had been deserted during the Upper Paleolithic. It also featured a wide spread of industries originating from the Nile River, collectively forming the "Neolithic with Capsian customs," shaped by an ancient Capsian capital imbued with Egyptian imports[35].

The Egyptian influences of the Late Neolithic are also evident in the Saharan artifacts through various items and techniques that produced sharp axes, arrowheads, and shapes with particularly pierced bases. Exceptional items like large flint blades attest to the direct influence of Egypt in the heart of the desert.

From the scattered discovery points, it seems that this influence emerged via continental rather than maritime routes[36]. If we examine it closely, we find that there are two routes through which the currents of this Nile civilization advanced into the central and southern Sahara:

_**Northern route:** through Jebel Uweinat, the Tibesti or Fezzan, Tassili n'Ajjer, and Hoggar, which was the route for hunters and cattle herders.

_**Southern route:** through Kordofan (Niger), Bahr el Ghazal, Chad, Aïr, and central Niger via human groups of hunters and farmers[37].

When considering the geographic location of the rock art, we find that the three main centers where cattle are heavily represented -Tibesti, Tassili, and Tefadest- are located on the eastern edges of the masses, leading to the suggestion that the Egyptians entered from this direction.

The details of the rock art from this period remind us of the Ethiopian or Nubian aspect, somewhat diluted into the copper-colored skin of Upper Egypt and the Abyssinian highlands in cases where individuals were depicted with delicate features and moderate muscles, these latter characteristics being more Mediterranean than Negro[38].

2-2-3. Migration of the Aegeans and Cretans to Tassili n'Ajjer:

By the end of the Neolithic, eastern migrations had not ceased, especially since the East at that time had begun to show significant progress in its civilization. While relations between the north and the south across the Sahara seemed to have ceased, Mediterranean sailing and trade were developing.

When the early sailors brought Mediterranean elements of their civilization to the north, in the southeast and along the "Tripoli" and desert route, we find human contributions of eastern origin somewhat influencing the human composition of the desert[39].

Referring to the rock art to support or refute this view, we find that the old Libyan murals (Horse Period) are linked to war chariots of a specific type used for rapid attacks. The belonging of these chariots and their owners is unrelated to those of the cattle herders, covering Tassili and Hoggar, even reaching Tim Missao north of Adrar des Iforas.

Further east, toward Uweinat, the Tibesti, and Upper Egypt, the Libyan warriors and chariots depicted as running quickly diminish further west in the western desert. The influence this time is Mediterranean, with the style being an Aegean suggestion that should correspond to the arrival of Cretan invaders to the Cyrenaica, known in classical history as the "Sea Peoples."

Their first descent dates back to 1300 BC, but we consider that the production of the chariots and some subjects reflect a "Dorian" influence and will consequently be more recent by

several centuries. Perhaps it is impossible for the oldest images to be contemporaneous with the reign of Ramses III.

However, when questioning the evolution that this Aegean-Cretan influence followed in its arrival to the desert, we find ourselves with what Lhote and Breuil pointed out: it was realized through some groups of Cretan warriors after their defeat in battles they led against Egypt.

After a clash with the local Libyans, they withdrew with them to the rocks of Tassili n'Ajjer. We must link this event to the considerable expansion of the white peoples (the Libyans) inside the desert during this era, reaching Niger centuries before Christ. We should also link it to the fact that the eastern Tassili region is the richest in rock paintings in the entire desert, not only in terms of images but also in terms of various styles, tipping the balance in favor of the geographical factor for the spread of rock art[40].

We can further support the arrival of Mediterranean peoples via the east to Tassili n'Ajjer by pointing out the introduction of horses to "Egypt" during the second millennium BC by the "Hyksos," followed around 1225 BC by the desert, during the Sea Peoples' invasion, where the Achaeans and others landed in "Libya" with horses and war chariots, and their use spread rapidly.

This is evident in the paintings of Tassili and the vast desert down to the south in "Tim Missao," proving that horse-drawn chariots were able to cross the desert during the first millennium BC[41].

2-2-4 .Migration of the Tassilians to the East:

When discussing rock engravings, we notice that the art of hunters from the North African buffalo period predates pre-dynastic Egyptian art. Undoubtedly, the origin of the latter is in the former, leading us to believe in migrations from west to east. Egypt is precisely where, for the first time in history, we find a reference to the Libyan peoples, the ancestors of today's Tuaregs[42].

If we ask about the reasons for this migration, we find that under the pressure of newcomers, the Capsian Neolithic people from the north and the Sudanese Neolithic people from East

Africa, the Libyan peoples that had formed were forced to leave. Some experts suggest that their crossing of the Red Sea is indisputable, and that their remaining centered in the Delta facing the Mediterranean was also without an outlet.

The likelihood that they crossed the Libyan desert formed a solid barrier along the Egyptian west, and it was only through Bahr el Ghazal, a tributary of Lake Chad at the time (now dead), that this path was followed intermittently by the successors of those who were prehistorically called "Eastern Invaders"[43].

However, instead of focusing on the details of the routes those migrants might have followed, we will emphasize their presence on the Nile River. In this regard, "Lhote" claims that due to drought, desert inhabitants left their countries and invaded the Nile, thereby mixing with people of a different civilization.

We can confirm the influence of those desert dwellers generally in the Nile region in the physical face of Egyptian civilization, from some archaeological findings like a flint knife with an ivory handle found in Jebel el-Ark, dating to around 3500 BC, depicting a struggle between people wearing short skirts (like tails), with large heads, striking their enemies, who have thin heads topped with a crest hanging over their shoulders.;

These distinctly represent Libyan peoples. We also notice in the art appearing on printed pottery in the possession of the "Amratien" (an Egyptian Neolithic civilization) on schist or ivory plates, animals and plants depicted in a style identical to that of Saharan rock engravings from the prehistoric cattle phase. According to experts, this art would have merited the arrival of people of a Saharan type who left their countries under the influence of climate change, which turned their lands into deserts, with the aim of invading the Nile and then mixing with people of a different civilization and customs (Egyptian Badri civilization)[44].

2-3 - Migration from Tassili n'Ajjer to the South:

Determining the origin of the black inhabitants of Tassili n'Ajjer through rock art, where they lived in strong unions with cattle herders, makes us think about whether these elements were imported from neighboring areas or if they were remnants of the round-

headed era. This data leads us to talk about the migration of these blacks under the pressure of the invading cattle herders.

Contemplating the murals of Tassili n'Ajjer, we notice that after the arrival of the herders, no trace of the round-headed art continues in any form, making us think of a migration to the south while not dismissing the possibility of elements remaining in place that the cattle herders absorbed and mixed with[45], nor the possibility of the herders themselves migrating.

2-3-1 Owners and Date of this Migration:

Most researchers interested in the identity of the Tassilians who migrated south focus on the cattle period, as this transition aimed to remove the herders from the enclosed world of Tassili n'Ajjer, forcing them to penetrate further into the Sudanese desert, where they occupied all the vast plains between Senegal and Chad at the time[46].

2-3-2- Reasons for this Migration:

Around the end of the Neolithic period, the summer winds (monsoon) retreated southward, and the accelerated drought of the land killed all human life, turning the desert barren. The inhabitants left the dry land and migrated south, leaving behind many traces of their existence, such as weapons, tools of hewn stone, pottery, engravings, and rock paintings[47].

This climatic change seems to indicate the disappearance of the Sudanese animal species, which may have prompted the cattle herders to head south in search of better lands. However, we see through the rock art that cattle held firm as their new masters possessed and depicted them in their murals, or perhaps these cattle herders were eradicated by the better-armed newcomers.

Both factors may have played a role, as "Lhote" confirms this migration southward, supporting his opinion with the existence of what are called Peuls today. The Peuls in Sudan today are the largest cattle breeders and are considered the successors of the cattle herders by several experts.

The second factor also carries weight: the newcomers, who were Mediterranean whites known as Libyans, organized themselves in the region, occupied all of the central desert with

their chariots, and reached Sudan, where the chariots were found not only in Tassili n'Ajjer but also in Hoggar and Adrar Iforace region[48].

2-3-3- The Effects of This Migration:

We can observe the traces left by the probable migration of the Tassilian cattle herders to the south on two levels: the first is material, through graves. In the Aïr massif, "Breuil" found some engravings of the cattle herders that date back to relatively late periods but reflect Hoggar-Tassilian origins, originating from the fact that this massif was highly penetrated from the north.

The major rivers open to the south, confirming that the spread of cattle in West Africa occurred through the desert rather than the coastal strip of the time. The same observation is found in the Adrar des Iforas massif, where penetration was older and denser but less than in the Hoggar and Tassili n'Ajjer. Here, the spread from the north was more accessible than in the Aïr massif, through the multiple and widely open rivers[49].

The material traces of the migration also manifest through stonework, where its shape is unified throughout the vast central and southern desert region, supported by cultural contacts between various bands of terrestrial and marine hunters[50].

The fingerprints of the Tassilian migration to the south are also evident in the scattered graves of the southern desert, which we benefited from through the study conducted by "F. Paris" in the Nigerien desert during the Neolithic. He concluded that the distribution of the monuments and burial methods allows us to see how the successive appearance of this new culture was made in an environment exclusively Sudanese to date, more by people than by civilization.

The anthropological study of the skeletons shows that the individuals buried in the funerary monuments have a morphology that also distinguishes them from the Sudanese Neolithic people. Can we associate them with the migrations of "Berbers" coming from more eastern or northern regions?

The southern part actually represents the final region of these migrations, so "Paris" was able to identify it easily, considering that the tumulus with the corridor and the "Emi Lula" stone

circle, witnessing the southeastern boundary of this monument's spread, found its origin in Tassili n'Ajjer[51].

The migration of the Tassilians to the south had not only material effects but also left moral imprints reflected in the human composition of the southern region. The discoveries made in the northern regions show that, from the sixth millennium BC, a type of humanity with a Proto-Mediterranean appearance inhabited the northern desert.

Meanwhile, the Télémcsi River only received pastoral settlement after 4000 BC, without specialists being able to determine its physical type. Some similarities with Hoggar remains, dated to the Middle Holocene, such as those of Tamanrasset, can be noted here, but nothing can be definitively confirmed due to the sporadic nature of the remains[52].

Some link those nomadic herder groups living in the Senegalese and Chadian steppes, known as the "Peuls Bororo," to this migration. Based on their ethnic type, neither black nor white, with copper-colored skin, thin features, thin lips, and long non-curly hair, and also based on their pure stories that they came from the north, there is no doubt that these are distant successors of the Tassilian cattle herders. But this hypothesis is still being studied and needs deeper evidence.

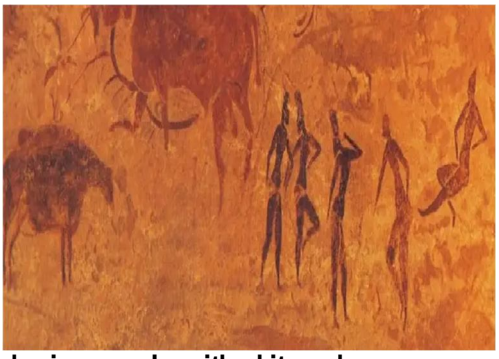
CONCLUSION

The migrations to and from Tassili n'Ajjer through three main directions- north, east, and south- profoundly impacted the human composition of the desert region. This highlights the historical importance of the Algerian desert in ancient times in establishing a unique culture that has left a lasting archaeological impact on both humans and the environment, as reflected in the rock art.

The human groups that appeared in the region sometimes formed strong unions and at other times separated, undeniably indicating successive migrations over two millennia, from 4000 to 2000 BC, a period associated with herders. It can also be observed that the equestrians and cattle herders influenced each other, with the latter learning to tether their cattle.

From the wall paintings, it is also evident that the relationships between these two groups were not always peaceful, as the cattle herders adopted spears and shields from the newcomers, demonstrating a definite migration to the region. This has, in turn, shaped the human composition of today's desert dwellers.

-Appendices:



-bovines peoples with white and negro races-

-An Ethiopian hunter from the bovine stage -(Tassili n'Ajjer)-

-A rock drawing of the Cowboys Camp in Tassili n'Ajjer, showing features and customs similar to those found by the Peuls.

-Rock painting of the horse and carriage stage, Tassili n'Ajjer-

-References:

[1] (H. Lhote, 1955, p. 26).
[2] (H. Duveyrier, 1864, p. p. 14, 55).
[3] (M. Hachid, 2000, p. 18-19).
[4] (E. Sergent, 1953, p. 3).
[5] (M. Leroux, 1991, p. 202).
[6] (G. Aumassip, 1994, p. 18).
[7] (H. Lhote, Op. Cit, p. 32).
[8] (M. Hachid, 2009, p. 101).
[9] (G. Aumassip, 1997, p. 61).
[10] (D. Basil, 1966, p. 43).
[11] (E-F. Gautier, 1950, p. 66-67).
[12] (R. Capot-Rey, 1953, p. 77-79).
[13] (H. Lhote, 1958, p. 27).
[14] There are five stages of rock art in Tassili N'Ajjer: the Bubaline Period, which is the scientific name for the ancient buffalo. As the oldest stage of rock art, its engravings date back to the early Neolithic period with connections to the Upper Paleolithic and lasted until the fifth millennium BC. The second stage concerns the Round Heads, which date back to the end of the sixth millennium and the beginning of the fifth millennium BC. The third stage is the Bovidian Period, where the cow became the most widespread subject in rock art. This pastoral period lasted for a long time, starting around the fifth millennium and continuing into the historical period. The following stage is the Caballine Period, which coincided with the arrival of the horse in Libya by the Sea Peoples around 1200 BC, leaving its mark on the murals of Tassili N'Ajjer. The final stage is the Cameline Period, which occurred during the third and fourth centuries AD.
[15] (H. Lhote, 1970, p. 102).
[16] (O. Dutour, 1994, p. 39).
[17] (L. Balout, 1954, p. 178).
[18] (H . J. Hugot, 1974, p. 108).
[19] The Neolithic period in North Africa is divided into three: the Sudanese-origin Neolithic, whose oldest remains were found in the desert highlands of the Hoggar at the Amikni site (northwest of Tamanrasset), dating back to 7600 BC. The Capsian-origin Neolithic, whose remains were found

in eastern Algeria, as in the northern desert, and the Tell Neolithic, represented in many of the caves along the Algerian coast » (121-118 ص ،ابراهيمي ،ك).

[20] (G. Camps, 2007, p. p. 73-74).
[21] (R. Vernet, J. Onrubia-Pintado, 1994, p. 57).
[22] (T. Herbert, p. 114).
[23] (O. Dutour, 1989, p. 273).
[24] (H-J. Hugot, Op. Cit, p. p. 94, 114).
[25] (H. J. Hugot, 1960, p. 260).
[26] (M. Hachid, 2001, p. 284).
[27] (O. Dutour, R. Vernet et G. Aumassip, op. cit, p. 40).
[28] (M. Hachid, 2009, p. 116).
[29] (M. Hachid, 2001, p. 285).
[30] (H. Lhote, 1959, p. 26).
[31] (M. Hachid, 2009, p. 110).
[32] (A. Muzzolini, 1983, p. p. 540, 436).
[33] (H. J. Hugot, 1960, p. p. 142, 144).
[34] (A. Muzzolini, 1983, p. 538).
[35] (R. Capot-Rey, op. cit, p. 83).
[36] (L- R. Nougier, 1955, p. 645).
[37] (R. Capot-Rey, op. cit, p. 83).
[38] (A- H. Breuil, 1955, p. p. 138, 139).
[39](G. Camps, 1968, p. 10).
[40] (A-H. Breuil, Op. Cit, p. p. 144, 145).
[41] (R. Furon, 1958, p. 34).
[42] (H. Lhote,, 1955, p. 92).
[43] (H- J. Hugot, op. cit, P. 138).
[44] (H. Lhote, Ibid, p. 92).
[45] (H. Lhote, 1970, p. 100).
[46] (H. J. Hugot, op. cit, P. 84).
[47] (E. Sergent, 1953, p. 30).
[48] (H. Lhote, 1959, p. 27).
[49] (A. H. Breuil, op. cit, p. p. 140, 141).
[50] (R. Vernet, G. Aumassip, 1994, p. 248).
[51] (F. Paris, 1996, p. p. 151, 313).
[52] (O. Dutour, 1989, p. 276).

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