

SEDENTISM, THE “POINT OF NO RETURN”, AND THE NATUFIAN ISSUE. AN HISTORICAL PERSPECTIVE

F. R. VALLA

Abstract: *In this paper I describe how the notion of sedentism gradually became central to Natufian studies. Described at first (1932) by Dorothy Garrod as a mixture of characteristic hunter-gatherer and agriculturalist features, the Natufian culture immediately raised difficult issues, including that of reconciling the mobility traditionally associated to hunting with the care of crops in sowed fields. Later findings of architectural constructions by Jean Perrot at Ain Mallaha (Eynan) led to the notion that Natufian people already experienced a sedentary way of life at least in some favourable environments. Simultaneously, however, based on faunal analysis and a lack of vegetal remains, Perrot asserted that they had not yet reached the stage of food production. Accordingly, he introduced the concept of sedentary hunter-gatherers, reversing the traditional supposition that sedentism appeared as a consequence of agricultural practices. I will address the further integration of sedentism in the theoretical framework of the origins of agriculture and describe the attempts made to clarify the modalities of occupation at specific sites. In a final discussion I will take a critical view of these attempts, acknowledging the difficulties in decoding the residency patterns of the Natufian people and advocating for detailed studies focused on each specific situation. I will furthermore acknowledge that the beginnings of the processes of both plant and animal domestication are still so obscure that, while Perrot's claim seems to be basically correct, more work is needed before we can reach a satisfying understanding of the role of sedentism in the neolithization process.*

Résumé: *L'article décrit comment la notion de sédentarité s'est imposée progressivement dans les études natoufiennes. Dès son individualisation en 1932 par Dorothy Garrod, le Natoufien est apparu comme un paradoxe à cause de l'association de microlithes traditionnellement associés à des chasseurs-cueilleurs mobiles et de lames de faucilles qui suggéraient des champs semés et surveillés par des sédentaires en possession de céréales domestiques. Plus tard, la découverte par Jean Perrot à Ain Mallaha de constructions impressionnantes, groupées, associées à des greniers et à des sépultures, dans un contexte où la faune était entièrement sauvage et où les végétaux n'étaient pas conservés, a conduit à la notion de chasseurs-cueilleurs sédentaires en opposition au point de vue traditionnel pour qui la sédentarité était la conséquence de la domestication. Les chercheurs se sont ensuite efforcés d'intégrer cette nouvelle donnée dans la théorie de la néolithisation de sorte que la sédentarité est devenue un enjeu central des études natoufiennes et que les modalités de l'occupation des sites ont été régulièrement discutées. Un rapide bilan de ces discussions s'efforce de prendre du recul par rapport à l'état des lieux. On insiste sur les difficultés rencontrées par les tentatives d'élucider les modalités de l'occupation des sites au Natoufien et sur le besoin d'examen scrupuleux dans chaque cas particulier. De plus, les origines des différents cheminements qui ont conduit à la domestication des plantes et des animaux sont encore obscures de sorte que, si l'opinion de J. Perrot semble globalement exacte, beaucoup de travail sera encore nécessaire avant qu'on comprenne comment la sédentarité est impliquée dans le processus de néolithisation.*

Keywords: *Constructions; Cultivation; Domestication; Commensalism; El-Wad; Ain Mallaha; Southern Levant; Fertile Crescent.*

Mots-clés : *Constructions ; Agriculture ; Domestication ; Commensalisme ; El-Wad ; Ain Mallaha ; Levant Sud ; Croissant fertile.*

To trace the origin of a social development is always a difficult challenge. While this is true even for recent history, for which there are many available written documents, the task is even more problematic in the case of prehistoric phenomena,

which date back thousands of years and are documented only by ambiguous remains buried in the ground. In this situation, according to any probabilistic calculation, social phenomena may become visible only when fully matured. The search for

origins is thus impeded by a lack of information concerning small-scale phenomena that emerged in limited areas, and which, even if successful and perhaps leading to major changes, initially occurred as limited pragmatic experiences. Even chance can play a key role in the origin of a new behaviour.

Under these circumstances, there is little hope for us to understand these phenomena from the time of their origins on. It is even difficult to formulate hypothetical scenarios that may conceivably describe the successive steps of the processes under scrutiny. Nevertheless, it is not unreasonable to believe that if a change, however limited it may have been at first, was eventually broadly adopted, it must have fulfilled a general need. Therefore, by observing the immediate result of a change one can imagine the need in question, the reason behind it and how it could have been satisfied. But even so, a large range of options remains open to imaginative researchers.

The situation described above is not mere fantasy. The large number of papers, and even books, devoted to "transitions," "beginnings," "origins," etc., attests to the endless efforts of both theorizers and field prehistorians to conceive of possible scenarios to explain individual cultural changes and to attempt to test them empirically. This multiplicity also attests to the inefficiency of such attempts, which are hindered by a lack of relevant data, the equivocality of the available information, the unreliability of interpretations, and even the limitations of our imagination when it comes to reconstructing complex past phenomena. In the last decade or so, we have finally reached a point where those researchers who still value the intellectual integrity that is supposed to subtend any scientific research must admit that our current discourse is slipping toward 'storytelling' under the influence of a feverish desire to provide explanations for phenomena beyond our current understanding.

The origin of food production is no exception. In this paper, I will explore how the discovery of the Natufian culture impacted theories on the origins of agriculture and, conversely, how these theories influenced interpretations of findings in the field. The main issues I will address are plant cultivation, animal domestication and sedentism.

THE TIME OF DOROTHY A.E. GARROD

When first identified in the caves of Shukba (1928), el-Wad (1928, 1929-1932) and Kebarah (1931) (fig. 1), the Natufian of Palestine came as a surprise. The assemblages included a microlithic flint industry whose most abundant tool was "the

small lunate." Medium-sized tools included the regular burins, a few end-scrapers and many "core-scrapers." Blunted-back knives were common "and a number of these have on their edges the peculiar polish produced by cutting corn or grass" (Garrod 1932: 258). These pieces were identified as "sickle-blades" (*Ibid.*: 261) and understood as "evidence of the practice of agriculture" (*Ibid.*: 268). A group of much larger tools made of chert was also identified, mainly in the early phase. Microburins were sometimes present (el-Wad upper B2, B1) and sometimes absent (Shukba). Along with the flint industry, worked bones were found in various frequencies. They were especially numerous in the lower deposit of el-Wad (layer B2), in which sickle hafts were identified (*Ibid.*: 265). In apparent contradiction with these finds, skin-rubbers resembled Magdalenian "lissours." Basalt and limestone artefacts were identified as pestles and vessels, the former occasionally stained with ochre. Careful examination demonstrated that no pottery was present.

Numerous graves were associated with the deposits. In the lower part of the layer at el-Wad terrace they were apparently related to a set of constructions including bedrock levelling, the cutting of four circular basins and "an irregular shallow trough," arrangements of tabular limestone slabs, and a curved wall.

The title Garrod chose to inform the scientific community of her discoveries is revealing: "A new Mesolithic industry: the Natufian of Palestine". Using this phrasing, she decided to follow the traditional approach in prehistoric research, focusing on flint assemblages and dividing them into flaked and polished entities, that is Palaeolithic and Neolithic, with the tentative Mesolithic referring to those industries thought to be post-Magdalenian and pre-polishing. It is remarkable that she refrained from using the word "culture." This word appears only in the body of the paper (*Ibid.*: 267) after she has described the wealth of data, which goes far beyond flint assemblages. In so doing, she stuck to the most secure method of classifying prehistoric evidence. She also avoided the pitfalls of economic reconstructions and their bearing on mobility. The reason for that was probably the embarrassing state of affairs as it emerged from the findings at hand. This is underlined in the last sentences of the paper. After suggesting a date of ca 4000-5000 BC for the Natufian, she wrote: "[...] it may seem surprising that we get evidence of the practice of agriculture at such an early date among a people who possess no pottery and do not appear to have domesticated animals" (*Ibid.*: 268).

This statement should be appreciated in light of the current knowledge at the time. It was unusual to find a microlithic flint industry in association with plant cultivation. The practice of agriculture was commonly associated with pottery.

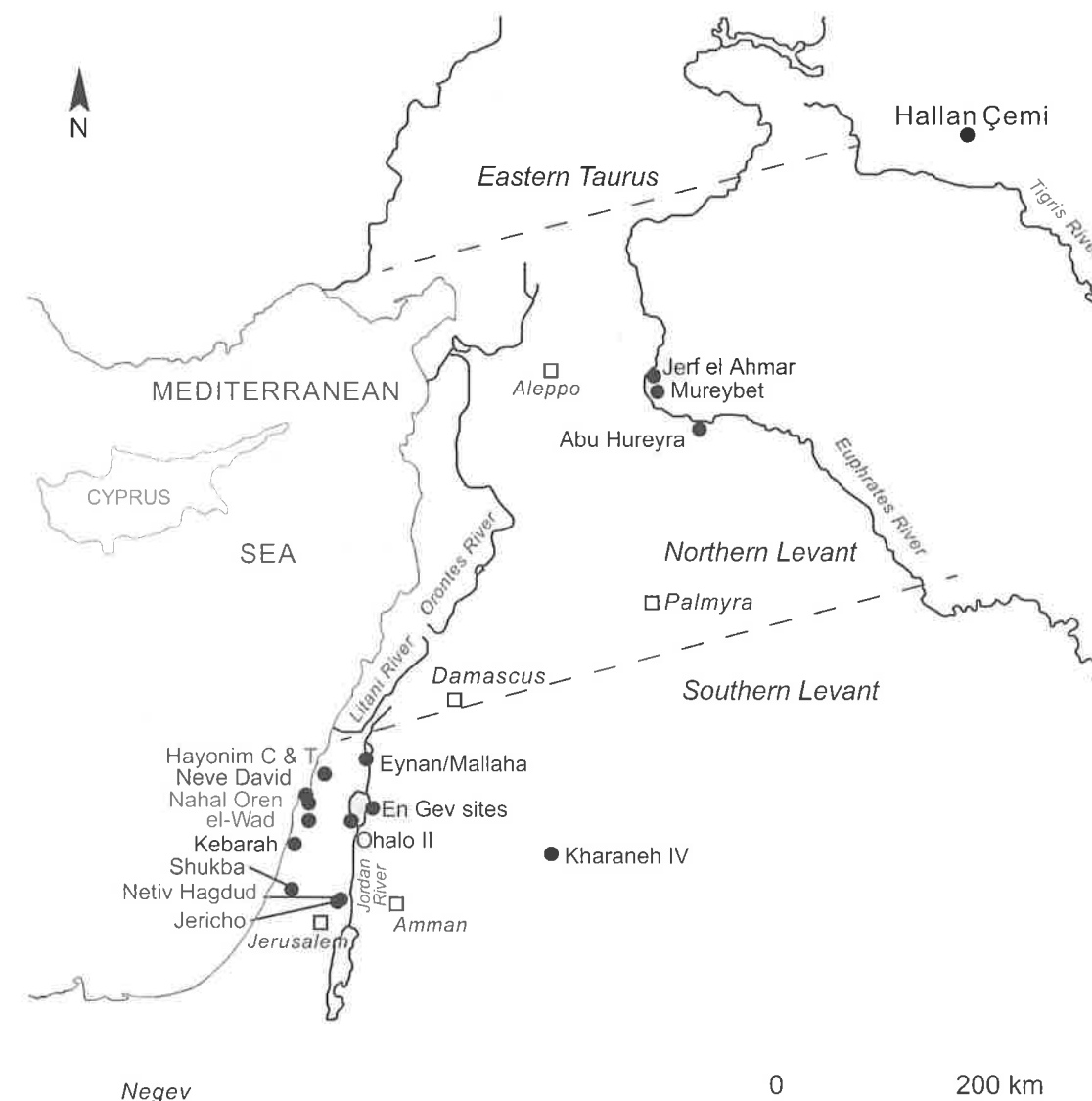


Fig. 1 – Map showing the locations of the sites mentioned in the text (CAD A. Bridault).

Plant cultivation before animal domestication was another problematic issue. D.M.A. Bate, the palaeontologist with whom Garrod worked, defended the opposing opinion, as expressed in this sentence: "[...] it is well known that the early domestication of animals, which may take place during the nomad existence of people, usually precedes the practice of agriculture" (Garrod and Bate 1937: 163). Facing so many paradoxical findings that made the new cultural entity different from those known at the time, Garrod avoided interpretative difficulties by relying on the most basic and least controversial manner of classifying prehistoric sites, using the classic subdivision of worked flint.

Meanwhile, suspending her interpretation of the new cultural entity was not the only censure Garrod imposed on herself in her 1932 contribution. As M. Weinstein-Evron has revealed (Weinstein-Evron 1998: 157-179 and 2009: 22-36; Weinstein-Evron *et al.* 2013), during the first tests (1928) at the site of el-Wad, Charles Lambert had noted stone groupings in three of his trenches, which he considered to be parts of "primitive constructions." Some of those were still visible in the cave when Garrod came to the site. The most impressive was a row of six large standing stones forming a curved line, part of which had been preserved by the excavator (Weinstein-Evron 2009: 27 and 44, figs. 3-4). Garrod ignored those features,

attributing them to her recent disturbed layer A. While it seems that her suspicious mind inclined her not to rely on observations made by others, there is also no doubt that she was reluctant to credit the bearers of a "Mesolithic industry" with generalized building activities. She connected the unusual finding of "constructions" on the terrace (the quotation marks are hers) with the graves and interpreted them as ritual rather than mundane (Garrod and Bate 1937: 13). To her, and to her readers, this understanding was definitely the less daring hypothesis. No one was ready to accept that Natufian people could have regularly engaged in this kind of work.

The title of the second, and last, paper Garrod devoted to the Natufian culture—"The Natufian Culture: The Life and Economy of a Mesolithic People in the Near East" (Garrod 1957)—is in total contrast to that of the one just described. With the introduction of words such as "culture," (way of) "life" and "economy" her focus has shifted from "the industry" to "the People." These changes reflect the rising interest among prehistorians in the societies responsible for the excavated assemblages, beyond just flint. But they also resulted from new insights into the Natufian culture, itself now pushed back to the 9th millennium BC, from clarifications of the prehistoric sequence in Palestine, where a true Neolithic without ceramics had been observed, and from improvements in the general knowledge of the neolithization process in the Near East due to Braidwood's work. Consequently, the approach to the Natufian culture was much less European-geared by 1957 than it was by 1932.

Prehistorians had accepted the notion that prehistoric "cultures" were not simply collections of tools and weapons but were, rather, complex social achievements, that cannot be separated from the natural environment in which they developed. Moreover, the suggestion of a long "level of incipient cultivation and domestication" preceding the "level of primary village communities", in Braidwood's words, strongly modified the approach to the problem of the beginnings of agriculture in the Near East. All of this can be detected, implicitly or explicitly, in the new paper by Garrod.

Under these influences, she now insisted on the geographical setting of the Natufian seen as indigenous to Palestine in areas affected by the proximity of the Mediterranean Sea. In the same vein, she underlined an old observation by Bate who had emphasized the unusual variety of landscapes and environments around the Carmel Caves. This led to considerations about possible Natufian ways of life. These people had clearly not yet achieved (farming) village life, but there are indications, at least in the Carmel area, for "fairly long continuous habitation" (*Ibid.*: 214). Even in the much dryer Judean Desert "flint sickles suggest that the cultivation of grain, the first step

to a more settled life, had clearly begun" (*Ibid.*: 214). She purposefully avoided Braidwood's vocabulary but she could not escape referring to his level of incipientcy when she stated: "[...] new traits are beginning to appear, which foreshadow the next stage (that is village life)" (*Ibid.*: 214). Nevertheless, and quite significantly, despite the new traits, she continued to believe that Natufian constructions (this time without brackets) were most probably related to "the dead rather than to the living" (*Ibid.*: 222).

It is worth trying to decipher the meanings hidden behind some of the apparently insignificant affirmations of Garrod. Those connected to ways of life are of special interest and even the allusive path she chose deserves mention. When she wrote that grain cultivation is the first step to a more settled life, she made a far-reaching statement bearing on the process of neolithization. She did not feel the need, however, for further explanation since there was a consensual agreement on the matter. It was accepted that mobile hunter-gatherers had become attached to restricted pieces of land by the need to protect their sowed fields. In the case of the Natufians, who were still mainly hunting and fishing people (*Ibid.*: 216), there was no doubt that despite a tendency toward "fairly long continuous habitation" they were still a mobile society. This explains why she stuck to the opinion that Natufian constructions were dedicated to the dead, believing that only they needed such stable structures. Even the recent finding at Ain Mallaha (Eynan in Hebrew) (1956) of "an oval pit, 1 m deep and 3 m long, of which the walls were covered with a thick mortar of clay and sand showing traces of red paint" (*Ibid.*: 223) was understood as a grave, despite being reminiscent of the "houses of Neolithic Jericho, with their plastered floor" (*Ibid.*: 223). This demonstrates how a web of over simplified theoretical preconceptions (as all theoretical preconceptions are) may prove to be misleading.

JEAN PERROT AND AIN MALLAHA (EYNAN)

When Garrod wrote her second paper, she knew the discovery at Ain Mallaha only through a brief preliminary note (anonymous 1957) and she had to rely rather blindly on the interpretation of the excavator, Jean Perrot. More information was given in a detailed paper published at the same time as her essay (Perrot 1957). Of course Perrot was much more impressed by his own discoveries than by the old findings from el-Wad. Accordingly, the exposure of some rows of stone that could be walls, together with a few lined pits (possible granaries) led him to suggest that Natufian people lived at open-air sites, such

as Ain Mallaha, where they eventually built houses, taking advantage of caves only during the short Palestinian winter (*Ibid.*: 103). Granaries and sickle-blades could indicate cereal harvesting, either in the wild or sowed. Domesticated animals were not ruled out, pending analysis of the numerous bones, supposedly goats, recovered (*Ibid.*: 109). Nevertheless, Perrot adhered to the same intellectual framework as Garrod. In his mind, the Natufian people were a Mesolithic population that had not yet achieved a Neolithic way of life. This point of view along with his undying fascination with graves led him to overlook the details of the above mentioned findings and to describe a grave instead of the house associated with burials that he had in fact uncovered.

Ain Mallaha was a large site and further explorations were necessary. In so doing, Perrot expected to fill the gap between the Natufian of el-Wad and the supposedly economically fully developed Neolithic (albeit devoid of pottery) of Jericho PPNB. The plaster, the granaries and even the flimsy walls that had been observed during the preliminary excavations fostered these expectations. They proved deceptive, but the excavations were not (Perrot 1960a and b; 1962a). The gap in question was filled by Perrot's rivals, K. Kenyon and M. Stekelis at Jericho (PPNA and Proto-Neolithic levels) and at Nahal Oren (levels then called Tahunian) (Kenyon 1960; Stekelis and Yizraely 1963). Perrot's own findings belonged to the same cultural horizon as the Natufian of el-Wad, as testified by the flint industry. Its interest consisted of bringing to light an unexpected aspect of the way of life of those early people. At Ain Mallaha there were "true houses" built of stones, making it a "permanent settlement" (Perrot 1960a: 546).

Perrot was disappointed. He had not met his intended target. His discoveries were significant only in that they changed the understanding of the Natufian culture. For the first time, clear evidence for "houses" had been found. These houses were clustered in groups that could accommodate up to two or three hundred inhabitants according to Perrot's estimation. Together with the associated burials they indicated "a fair degree of permanence" (Perrot 1962a: 606). This development was even more meaningful since it appeared before the end of the Pleistocene (ca 8000 BC according to ¹⁴C tests from Jericho) as an adaptation to a particularly friendly environment. Probably in line with the famous "culture was not ready" of Braidwood, he interpreted Natufian houses, if not yet as "a sign of the aggressiveness of man," at least as "one of his first answers to the challenge presented by Nature" (*Ibid.*: 607).

The finds at Ain Mallaha in fact had much more far-reaching implications than those Perrot was able to understand

at the time. Their significance was much greater than just filling the gap between the Natufian culture and the PPNB that Perrot was so depressed to have missed. They were so unexpected, however, that no one had been able to anticipate them, and no one at the time could fully appreciate their meaning. This situation is indeed a clear counterexample of the popular axiom that says that, in science, one finds only what one is looking for. Perrot was not looking for houses in the Natufian culture. He was so far from expecting such a find that he misinterpreted the first house he uncovered and took it for a grave pit lined with plaster. His fellow researchers were taken by surprise as well. A few years of reflexion were necessary before a full recognition of the significance of Natufian houses would be possible.

The reason behind this lack of understanding lies in the theoretical reconstruction of the beginnings of agriculture at the time, as is best expressed in the scenario K. Kenyon proposed for Jericho. "During this period (as will be seen, probably centuries) represented by its accumulation [the accumulation of the Proto-Neolithic layer] an economy based on agriculture must have been developed, on the one hand making it possible for the group to live continuously on the spot, and on the other tying it there by the need to tend the fields and await the harvest" (Kenyon 1960: 99). According to this conception the practice of agriculture provides both the means and the need for sedentism. It necessarily precedes settled life. The sequence at Jericho perfectly reflects that succession of events. On the contrary, the houses at Ain Mallaha, by supporting the hypothesis of settled life as early as the Natufian culture, undermined this reconstruction, and this is an idea that was difficult to accept.

Though Perrot was not ready to accept the notion that during the PPNA Jericho was a town inhabited by agriculturalists practicing irrigation, as suggested by Kenyon, he admitted that the large community living there could not have sustained itself without food production. If this was so, since the culture of the PPNA was doubtless of Natufian tradition, and since the agricultural techniques had to be imported to Jericho, where their origin could not be local due to climatic conditions, it was most likely that they had developed in a Natufian context, taking advantage of the Mediterranean environment. If this opinion was correct, the succession of events in Palestine did not differ from the sequence observed by Braidwood and his team further east in the hilly flanks of the Fertile Crescent (Perrot 1962b). It also had the advantage of conciliating Natufian houses and the at least local sedentism that they denote with the accepted theory by tying settled life to food production.

This reconstruction could not hold for long. Faunal analyses demonstrated that no food animal was domesticated at Ain Mallaha (Ducos 1968). The same was true at Jericho PPNB. A stage of plant and animal proto-domestication was reached there millennia later, during the PPNB. It thus seemed that the PPNB settlement, which was undoubtedly fully sedentary, was linked to a population of food gatherers, not producers. The architectural tradition together with the flint tradition showed that the roots of the PPNB should be sought in the Natufian. Accordingly, the data suggested sedentary settlements developing during the Natufian in favourable conditions and totally unrelated to food production, which must have appeared much later in the Levant. This was exemplified at the open air-site of Ain Mallaha, where fishing and wild vegetal food collection, including cereals kept in storage pits for the lean months, made it feasible (Perrot 1966: 477 and 481-482). The sequence of events observed elsewhere in the Levant was not the only possible path towards agriculture. The current opinion that sedentism should be a consequence of agricultural practices had to be revised since the evidence from Palestine demonstrated a different sequence in which sedentism preceded any food production. Perrot was therefore able to establish what he considered to be a point of general theoretical interest: there is no link that makes the first sedentarization depend on the beginnings of food production (Perrot 1968: 175).

ELABORATION, CRITICISM AND DEBATES

Since this time, Natufian sedentism has been subjected to keen scrutiny as part of the debate concerning the origins of farming communities. Braidwood himself called for such scrutiny (Braidwood 1975: 129). Some adopted the notion because it fitted their theoretical views (Testard 1982: 137). Others dismissed it for lack of unambiguous archaeological evidence (Edwards 1989). The debates were further complicated when it appeared that the Natufian culture was more geographically widespread than originally thought and extended far beyond the modern limits of the Mediterranean environment in the region. Natufian or Natufian like occupations were found from the Middle Euphrates Valley in Syria to the Azraq Basin in Jordan and to the Southern Negev in Israel (Goring-Morris 1987; Bar-Yosef and Valla 1991). Moreover, stratigraphic observations combined to ¹⁴C dating and flint seriation led to a threefold division into Early, Late and Final phases (Valla 1984). Finally, its duration was also much longer than

expected, probably continuing for more than four thousand years (*ca* 13,500-9500 cal. BC) rather than the single millennium initially assumed (Bar-Yosef 2000). As a result, the Natufian culture, which had never been seen as a monolithic entity, appeared to defy any reduction to a uniform description in terms of both time and space.

Further elaborations started with Kent Flannery who is possibly the first (Flannery 1969: 80 and 1973) to have used Perrot's views (semi-sedentary Natufian hunter-gatherers taking advantage of wild cereal storage) to enhance a theoretical reconstruction of the origins of agriculture in the Near East. Ain Mallaha demonstrated that there was no need to grow plants artificially in the rich Mediterranean areas in order to sustain the year-round sedentism of large groups of people (up to 200 persons according to Perrot's reconstruction). That in turn must have induced population growth until a point of disequilibrium was reached that forced people to migrate into less favourable peripheral lands where they had to create and maintain cultivated fields. With Flannery, sedentism became a key factor because it started an unprecedented demographic expansion with a series of consequences that had to be coped with.

Charles Reed took it a step further (Reed 1977a and 1977b: 884 *sq.*) in an effort to explain the meaning of the famous "culture was not ready" of Braidwood. He wrote: "[...] in evolution, biological or cultural, one thing happens after another." In the case of the origins of agriculture in the Near East he reconstructed a succession of four cultural "adaptive plateaus" following each other in an obligatory order, each one being dependant of the preceding one to happen. One of these "plateaus" was described as "storage of grains, initial sedentism, increase in population, stone-based round houses" (Reed 1977b: 898, fig. 2). In other words, Natufian sedentism was elevated to the rank of an obligatory (if early) step in the long process leading to agriculture in the region.

The emphasis on sedentism in the theoretical reconstructions of the start of agriculture in the Near East reached its highest point in the thinking of Anna Belfer-Cohen when she stated: "It seems that the establishment of sedentary communities may be considered a point of no return, because it seems that farming communities emerged among these sedentary groups" (Belfer-Cohen 1991: 179). According to her views, in contrast to Flannery's model, early field cultivation was probably developed among communities in the Mediterranean "core area" of the Natufian to accommodate growing populations in limited territories (*Ibid.*: 179-183). Sedentism in this interpretation, and Natufian sedentism in particular, appears not only as a necessary step in the nurturing of agricultural communities but also as a threshold that initiated a fatal process.

Belfer-Cohen's argumentation was based on weak data concerning Natufian food production that we will not discuss here. We will instead concentrate on the sedentism issue. Despite the intellectual developments just mentioned, demonstrating actual sedentism during the Natufian never ceased to be a challenge to investigators in the field and in laboratories. An often quoted argument was offered by Davis (1983). This author explained the increase in juvenile gazelle kills in the Late Natufian deposits at Hayonim Terrace relative to older ones, especially the Aurignacian layer D at Hayonim Cave, as a shift in the residential habits of the hunters. Hayonim Cave D may represent only winter kills whereas the Hayonim Terrace sample may represent winter and summer kills, and perhaps more accurately reflects a natural gazelle population in which young fawns are born in spring. This was later included within a broader framework. Increased pressure on smaller game from the end of the Middle Palaeolithic through the Upper Palaeolithic and Epipalaeolithic was interpreted as the result of depletion by humans of higher ranked preys until the need for secure resources led to the domestication of plants and animals. In this model "sedentism" is replaced by "intensity of site occupation" to avoid the difficulties of discussing seasonality but the notion is taken into account to explain population growth and maximum hunting pressure during the Early phase of the Natufian, whereas pressure release on low ranked preys is related to less intensive site occupation during the Late phase (Davis *et al.* 1988; Davis 1991; Munro 2004 and comment by Davis).

Latter findings supported Davis' opinion. Analyses of alternating translucent (spring-summer) and opaque (fall-winter) acellular cementum bands in gazelle teeth demonstrated that Natufian gazelles in the main Mediterranean sites were killed during both periods of the year, as opposed to Palaeolithic sites and Natufian sites in arid areas. The new pattern established during the Early Natufian seemingly continued in the later phase (Lieberman 1998). These conclusions were shown to be disputable, however, due to possible taphonomic disturbances that were not taken into consideration (Stutz 2002).

More efforts to demonstrate Natufian sedentism were attempted by J. Pichon (1991) through a study of sedentary birds (sparrow, partridge) at Hayonim Cave as well as of the availability of migratory avian fauna at Ain Mallaha and by J. Desse (1987) based on the seasonality of fish captures as shown by vertebrae from Ain Mallaha. These works were rarely mentioned in subsequent literature, however. The work initiated by E. Tchernov, who tried to infer human sedentism from the rise of commensalism, attracted more attention, possibly because a

variety of species were involved, some of them (mouse, dog, rat, etc.) still of utmost concern to our contemporaries.

According to Tchernov, commensalism occurs when "two or more species are mutually associated in activities centering on food, support, protection, locomotion, etc., and, as a result, at least one of the species benefits from the association, while the other is neither benefitted nor harmed" (Tchernov 1991: 317). The interest of this approach is that it does not focus on human behaviour but rather on responses from other species to that behaviour. Due to this aspect, the mechanical/compulsory dynamic involved in the phenomenon appears much less disturbing than similar chains of actions and reactions in the realm of social human transformations as advocated by some other theories. The appearance of *Rattus rattus* in the Natufian layer at Hayonim Cave, as well as the abrupt rise in the proportion of mice (*Mus musculus domesticus*, the house mouse rather than *Mus musculus spretoides*, a wide range mouse), house sparrows (*Passer domesticus*) and other species is interpreted in light of the creation of new ecological niches in and around human sedentary settlements. Furthermore, it is suggested that the domestication of dogs started as a process of commensalism of segregated populations of wolves around villages, some of them being then tamed and introduced into human communities (*Ibid.*: 327-328).

Expanding this line of thought, Tchernov was led to a more comprehensive synthesis. He saw Natufian sedentism as the outset of an irreversible process resulting from universal thermodynamic laws acting in human societies. These laws produced an abrupt reorganization from small mobile bands to larger sedentary groups with new acquired properties. Ultimately, after thousands of years, sedentary communities would consume themselves out of the rich environment and animals would be brought into the primeval villages, a phenomenon which is seen in the Southern Levant during the PPNB (Tchernov 1997).

Despite its obvious interest, this approach to sedentism was still based on indirect evidence and was thus open to criticism. Accordingly, archaeologists kept searching for hard data that would demonstrate human presence year-round and month after month at a given site. This is the path followed by A. Moore, G. Hillman and T. Legge at Abu Hureyra in the Euphrates Valley. There, the rare combination of floral and faunal remains allowed them to suggest successive seasonal activities covering the whole year (Moore *et al.* 2000: 484 and fig. 14.3). This reconstruction is weakened, however, by several assumptions, one of them being the reliance on storage, especially of gazelle meat, which cannot be demonstrated. The main game in this area, the migratory *Gazella subgutturosa*,



Fig. 2 – Ain Mallaha, two Early Natufian houses one inside the other. In the upper part of the picture a Late Natufian house overlaps one of them (photo F. R. Valla, 1972).

contrary to the sedentary *Gazella gazella* and *Gazella dorcas* in Palestine, was available for only a short period in April and May. It should also be emphasized that the year-round availability of some food resources does not prove that they were exploited continuously. At best, it indicates that people could have found them year-round, provided they were there.

This last problem also hindered a similar attempt in the case of the Final Natufian at Ain Mallaha. As explained above, this site had been at the origin of the concern for sedentism in the Natufian culture. However, further stratigraphic observations led to another important concept, namely that village life, once established during the Early Natufian, did not follow a gradual uniform development but was instead subject to fluctuations. A tendency to return to a more mobile way of life had indeed been detected through the available data (Valla 1987 and 1998).

The large Early Natufian houses, with stone walls up to one-meter-high, were followed by smaller buildings with lower walls during the Late Natufian (fig. 2). Until the most recent excavations (1996-2005) no architecture was known in the layer associated with Final Natufian objects. Only graves continued to be present. The finding of possible storage pits in the Late Natufian phase balanced the feeling that there was less investment in housing during this phase, but the lack of buildings in the Final episode was seen as clear indication for a return to a more ephemeral use of the site. Hints at a similar trend were also noted at Hayonim Cave where the Late Natufian deposit had no buildings (Belfer-Cohen 1988a; Bar-Yosef 1991).

The question of Final Natufian sedentism at Ain Mallaha was renewed when architectural remains, some of them understood as houses, were at last revealed during the last set of excavations to date (Samuelian *et al.* 2006). On the one hand, the buildings were even more flimsy than those in the Late Natufian (fig. 3) and there was little evidence for storage, thus suggesting that the previously suspected trend toward more mobility was real. On the other hand, the houses were associated with other facilities and with graves, which seemed well in accordance with the Early Natufian tradition and long-term residency. The theoretical background of the approach to the question was also modified: there was a growing understanding that, rather ironically, the word 'sedentism' is currently used to cover a broad range of mobility patterns and not, as had been naively assumed by many archaeologists, a clear-cut distinction between mobile and settled populations¹.

Three main approaches to the modalities of the site occupation by Final Natufian people had thus far been attempted. First, detailed field observations of the succession of floors and graves in individual buildings suggest that some of them may have been occupied without a temporal break, sometimes with changes in function. Others apparently show signs of successive desertion and reuse (Valla *et al.* 2007: 211-215; Bocquentin *et al.* 2013). Second, floral (phytoliths) and faunal remains brought to the site indicate that people may well have been

1. See below.

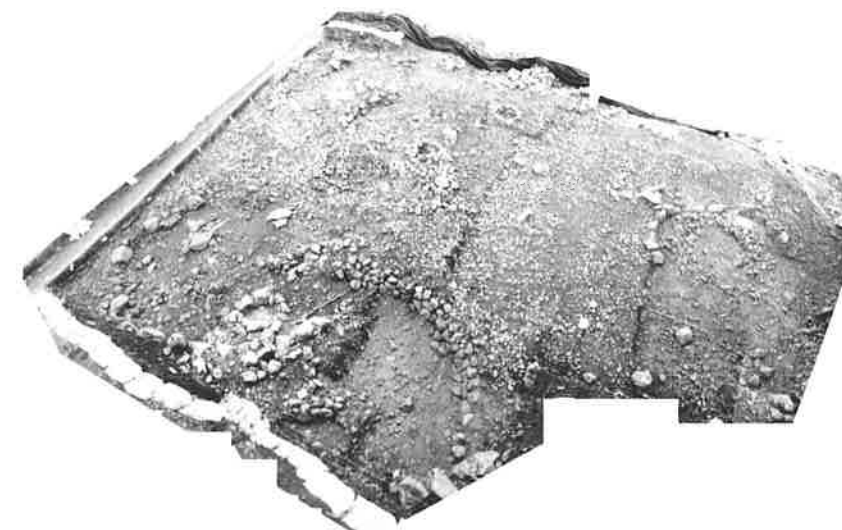


Fig. 3 – Ain Mallaha, general view of the Final Natufian excavations during the 1996-2005 excavations. Note the relatively light character of the buildings compared to those of the earlier periods (photos F. R. Valla, assembled by M. Barazani [CRFJ]).

there year-round. This is feasible since there was no shortage of resources even during the lean months of fall (Ashkenazy 2013), but unequivocal proof of their presence is lacking. Winter occupations, even if probable due to the frequent presence of some migratory birds in the deposit, cannot be ascertained because small colonies of the very same game do not leave during other seasons (Bridault *et al.* 2008). Third, the first molars of mice indicate that not less than 79% of the animals belong to the commensal species *Mus musculus domesticus*, versus 21% (N=53) to *Mus musculus spretoides*, the wild mouse. This result is interpreted as indicating a tendency for long term, year-round, occupations with intervals of abandonment. At a wider scale, it is part of a trend suggesting long term sedentary stays during the Early Natufian (100% *Mus musculus domesticus*, N=27), ephemeral stays during the Late phase (100% *Mus musculus spretoides*, but N=10 only) and again sedentism at PPNA Netiv Hagdud (100% *Mus musculus domesticus*, N=6) (Weissbrod *et al.* 2017).

These studies are currently the most complete attempt to document seasonality versus sedentarity at a given site during the Natufian culture. More studies will be undertaken using fish vertebrae from selected areas to check whether they confirm the year-round presence of people during the Final Natufian. The available data apparently indicate long-term residency, which may implicate year-round occupation, but they are not focused enough to bring this into full light.

DISCUSSION

Since 1966, the residency pattern of Natufian groups has been a concern to every researcher interested in their culture. Any study of an individual site must tackle the issue of the duration of its occupation. All aspects of the finds have been approached through this lens, including architecture, burial customs (Byrd and Monahan 1995), human bones (Bocquentin 2003: 376-432), fauna (Bar-Oz 2004), basalt and limestone implements (Wright 1994), art and symbolic items (Belfer-Cohen 1988b; Valla 1999), and flint knapping (Delage 2001). Each of the many overviews published since then have discussed the matter. Notions such as "base-camp" (Bar-Yosef 1970: 182-84), "core area" (Henry 1989: 180; Belfer-Cohen 1991: 167), "homeland" (Bar-Yosef and Belfer-Cohen 1991: 187), and "centre and periphery" (Valla 1998) are all linked to this question. Needless to say, this has generated an enormous amount of literature. The present paper cannot account for such a huge effort. It only intends to trace some of the most significant steps in theoretical thinking and in field research, with an emphasis on the developments at Ain Mallaha because this site holds a pivotal position in the history of the discussions around Natufian sedentism.

Considering the amount of work involved in analysing Natufian sedentism, the results may seem relatively deceptive. We are not able to concretely define the pattern of occupation at any site at any moment of the long duration of the Natufian

culture. This is in part due to the ambiguities inherent in the data itself. What may seem to be the easiest task, demonstrating year-round stays season after season, has proven to be a difficult enterprise and to this day has never been satisfactorily achieved. The demonstration of long-term site use is more straightforward but is still shadowed by many grey areas that make it equally unsatisfactory, so much so that the results may appear to contradict each other to some degree. For example, many researchers see the Late Natufian as a period of reversal to greater mobility after a “sedentary” Early Natufian period, at least in the Mediterranean area (Bar-Yosef and Belfer-Cohen 2002; Goring-Morris and Belfer-Cohen 1997; Grosman and Belfer-Cohen 2002). Nevertheless, a study of gazelle teeth from Hayonim Terrace, a predominantly Late Natufian site, suggested year-round occupation to Davis (1983).² At Ain Mallaha, this is the period when possible storage pits become evident, a find often emphasized by the advocates of Natufian sedentism. On the other hand, mice teeth, albeit a small sample of them, may indicate short term occupations.

If the data at hand do not allow a sufficiently precise understanding of the modalities of a given occupation at any Natufian site it is worth asking whether investigating Natufian sedentism is scientifically meaningful, or whether it is little more than ‘storytelling’. In Kantian philosophy a question that cannot be answered based on current knowledge and with the available methods is a false question. Is Natufian sedentism a false question? To a certain extent, the answer should be yes, but only to a certain extent.

It is a false question because the concept of sedentism is rather imprecise. Perrot himself did not bother formulating a definition of sedentism. In his mind, it was self-evident. At Ain Mallaha he described a fixed population on the basis that enough food was available to sustain it year-round provided a few short expeditions were made to nearby areas in due time to collect wild grains to be stored and consumed when needed. As underlined by many researchers, these views are clearly simplistic considering the variety of situations accounted for by ethnographic observations (Bar-Yosef 1983: 25; Byrd 1989: 183; Bar-Yosef and Belfer-Cohen 1991). The problem of the modalities of human stays at any particular location should not be formulated in terms of sedentism *versus* mobility but rather as a search for refined data relevant to behaviour related to occupation duration in each particular situation.

It is also a false question because even in the most favourable case study the data are not such that they can demonstrate indisputable long term stays at a given stage. For the time being, the best evidence is provided by the mouse population from the Early Natufian at Ain Mallaha. But this is an isolated case that, even if accepted as such, cannot be generalized. In the fluctuating context of the Natufian culture, its significance is open to debate as is suggested by other results at Ain Mallaha in the Late and Final Natufian and at Hayonim Cave (Weissbrod *et al.* 2017).

The lack of a clear definition, combined with unfocused data in a fluctuating situation where each case is different, opens the door to conclusions based on preconceptions of all kinds. A supposedly harsh Younger Dryas sufficed to make acceptable a reversal to mobility during the Late Natufian, but the argument of climatic determinism proved irrelevant when it was understood that this event had little impact in the Southern Levant (Lev-Yadun and Weinstein-Evron 2005; Langgut *et al.* 2011). On a more limited scale, a desire to link Nahal Ein Gev II to the forthcoming PPNA of the Lower Jordan Valley incited its excavators to admit sedentism there, based on arguments—architectural planning, construction methods, faunal assemblage—that would have been judged insufficient under other circumstances (Grosman *et al.* 2016). There is thus undoubtedly a certain degree of ‘storytelling’ in our approach to Natufian sedentism, a situation that justifies the prudent attitude held by Edwards through the years (Edwards 2013: 398).

On the other hand, the question of how Natufian people inhabited the land is essential to the Natufian issue and cannot be overlooked. Theorists have rightly emphasized the far-reaching consequences of a tendency toward sedentary life among hunter-gatherer populations at the end of the Pleistocene. This tendency appears in the Levant during the Natufian period. Earlier groups were certainly mobile, with evidence for only rare occurrences of longer stays or recurrent occupations as attested at Ohalo II, Kharaneh IV, Neve David, Ein Gev I and III (Simmons and Nadel 1998; Maher *et al.* 2012; Kaufman 1987; Stekelis *et al.* Bar-Yosef 1965; Bar-Yosef 1970: 109-122; Martin *et al.* Bar-Yosef 1979) and some other sites. It is assumed without any discussion that later populations were fully settled in such places as Jericho, Netiv Hagdud, Mureybet, Jerf el Ahmar (Kenyon 1981; Bar-Yosef and Gopher 1997; Ibáñez 2008; Stordeur 2015) and many others. By then, manipulations of vegetal foods are well attested, even if the plants recovered are still morphologically wild. The Natufian culture stands as the turning point, but it seems that a highly unstable situation prevailed at this stage depending on time and location. The state of affairs is all the more difficult to decipher given that adaptations originally

2. This issue is not directly addressed by Munro in her recent study of the fauna of Hayonim Terrace but she confirms juvenile gazelles kills (Munro 2012).

linked to settled life were not necessarily forgotten in situations of mobility. This is well illustrated by the Harifian of the Negev where stone-built dwellings, garbage pits and bedrock mortars are associated with a mobile system (Goring-Morris 1987 and 1991). The Natufian culture is a strange mix of diversity underlain by a web of links that surge unexpectedly without apparent continuity. Striking examples of this are the similarities between Early and Final Natufian dwellings at Ain Mallaha or the Early Natufian decorative patterns on some objects from Nahal Ein Gev II (Grosman *et al.* 2016).

Natufian sedentism is probably another example of a case in which the origins of a social phenomenon are difficult to trace and subject to controversy due to relatively sparse and equivocal data, but it is no doubt a case that should be investigated. Apparently contradictory results should encourage more refined interpretations, rather than simply dismissing them as meaningless. The ambiguities inherent in the data, combined with the multiplicity of possible situations, from short year-round stays separated by times of absence to long term residency, cannot be ignored. With this concern in mind, and with a clear awareness of the dangers of preconceptions, hasty conclusions can be avoided. Careful excavations geared at uncovering data bearing on the manners in which individual buildings were occupied, by means of microstratigraphic analyses combined with refined laboratory techniques, open new and promising avenues for the study of Natufian sedentism (Edwards 2015; Yeshurun *et al.* 2015; Samuelian 2013).

Finally, to return to the issue of the relationship between sedentism and the process of domestication as raised by Perrot, we should briefly consider the current state of research on this matter.

First, an effort has been made to reach a better understanding of what is identified as domesticated in each realm. As summarized by Helmer (2008: 193), botanists identify domestication based on morphological changes. These genetically controlled changes may require more than one and a half millennium of human manipulation to appear. Zoologists hold a different point of view. To them domestication means integration into a human group and manipulations so that the animal becomes fully dependant on humans. This process may occur after a short interval of time: from a few years to one or two centuries.

In the Near East, most morphologically modified plant taxa appear during the Middle PPNB (8200-7500 cal. BC). Some researchers point to a single core area in Southeastern Turkey where modern wild progenitors of emmer wheat, einkorn wheat, barley, pea, lentils, chick pea and bitter vetch overlap as the place of agricultural origin (Lev-Yadun *et al.* 2000). Others prefer a model of multiple origins in the Fertile Crescent asso-

ciated with a long period that covers the 10th and 9th millennia BC (PPNA and Early PPNB) when pre-domestication cultivation can be detected (Fuller *et al.* 2011). According to these views, domestication is rooted in an ancestral knowledge of plant tending, helping them “to multiply and manipulating landscape compositions” (*Ibid.*: 642). In the Natufian context and in northern contemporary sites such as Hallan Çemi, the scarce information available suggests an opportunistic collection often centred on a variety of small seeded plants depending on the local environment and not focusing on cereals (Rosen 2013; Rössner *et al.* 2017; Savard *et al.* 2006).

The relationship between humans and animals in early husbandry is difficult to trace as well. Goats, sheep, pigs and cattle were already domesticated or in the process of domestication during the time span of the Early PPNB (8700-8200 cal. BC). According to present knowledge this probably occurred in the Eastern Taurus/ Northwestern Zagros and Middle Euphrates regions (Peters *et al.* 1999; Zeder 2008; Helmer 2008). However, the finding of wild boars imported from the continent to Cyprus at the time of the PPNA and probably earlier led to a reevaluation of the domestication process now thought to have been preceded by a long period of animal management in the wild (Vigne *et al.* 2009 and 2011). Moreover, the motivations behind the development of animal husbandry are still under discussion. Milk and hair procurement may have provided a strong stimulus for the spread of animal care (Vigne and Helmer 2007).

Based on the picture emerging from these data it seems that Perrot was right in claiming that sedentism was not a consequence of agricultural practices but predated the domestication of both plants and animals. Moreover, there is apparently little connection in terms of time and space between Early Natufian sedentism in the Southern Levant during the 14th millennium cal. BC and the fully matured “agriculturalization” during the 9th millennium cal. BC in the Northern Fertile Crescent. Early Natufian societies knew only domesticated dog (Davis and Valla 1978; Tchernov and Valla 1997), which they transmitted with their cultural heritage. If this is the case, the hypothetical link suggested long ago between sedentism and the domestication of either plants or animals is perhaps much weaker than once thought, meaning that it was perhaps a mistake to think of this link as a mechanistic and fateful enchainment.

Nevertheless such a conclusion would be premature. We must still clarify the behaviour of Natufian communities in terms of space occupation and how this behaviour was eventually modified during the long millennium of the Natufian culture. In the case of Ain Mallaha at least, there is no evidence of food scarcity that could have justified a return to mobility after

the Early Natufian experiment of sedentism. Similarly, our current knowledge of both plant and animal management during the long span of time between early sedentism and full domestication is hampered by an obscure zone that is not easy to elucidate. Our current approach to these problems, based on a strictly economic and utilitarian perspective, is definitely inadequate. It ascribes to past societies an understanding of themselves that is typically modern and as such anachronistic, as is shown by ethnographers (Descola 2005). Finally the apparent geographical dissociation between early sedentism in the Southern Levant and early domestication in the Northern and Eastern Fertile Crescent also needs further examination since a large number of obsidian pieces found in the Final Natufian layer at Ain Mallaha (Khalaily and Valla 2013) demonstrate physical links between the two areas, probably implying the exchange of ideas as well.

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- FRANÇOIS R. VALLA
CNRS, MAE, UMR 7041
21 allée de l'Université
92023 Nanterre cedex – FRANCE
francois.valla@wanadoo.fr

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FRANÇOIS R. VALLA
CNRS, MAE, UMR 7041
21 allée de l'Université
92023 Nanterre cedex – FRANCE
francois.valla@wanadoo.fr

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