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New data for the chronology of the Mesolithic in the Dolomites. The radiocarbon dates from Plan de Frea (Selva Val Gardena, Italy)

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A new set of radiocarbon dates from the Mesolithic mountain sites of Plan de Frea (Gardena Valley, Dolomites, Italy) is presented and discussed. Conventional radiocarbon dating was performed on charcoal samples collected during the 1994 fieldwork at the site. The dates from Frea IV indicate that the occupation of the rockshelter occurred during the Preboreal and the Boreal and agree with the preliminary data collected on the lithic assemblages; the date obtained from Frea II falls within the Atlantic. Some considerations are made on the chronology of the appearance of hunter-gatherers on the mountain territories and on the settlement system during the Mesolithic.

PAROLE CHIAVE: *Mesolitico, cronologia, radiocarbonio, Dolomiti, Plan de Frea.*

KEY WORDS: *Mesolithic, chronology, radiocarbon dating, Dolomites, Plan de Frea.*

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1. FOREWORD

A large number of Mesolithic sites – some hundreds – have been identified since the early '70s in the Adige basin, both along the main valleys (Valle dell'Adige, Valle dell'Isarco, Valle della Rienza) and at mid-high altitude between the Alpine watershed and the northern margin of the southern Prealps (see *e.g.* BAGOLINI *et al.*, 1984; BROGLIO, 1994; DALMERI & PEDROTTI, 1994).

At present, the Mesolithic chronological and cultural framework of the region is fairly well established, due to the study of well preserved continuous successions at the valley bottom sites.

The most relevant data derive from three rockshelters which are located on the right of the river Adige in the surroundings of Trento (Vatte di Zambana, Pradestel and Romagnano III). These sites were examined by means of an interdisciplinary approach, taking into account the pollen (CATTANI, 1977), faunal remains (BARTOLOMEI, 1974;

Boscato & Sala, 1980), human remains (Corrain *et al.*, 1976) and lithic assemblages (Broglio, 1971, 1980; Broglio & Kozlowski, 1984); several charcoal samples were submitted for conventional radiocarbon dating (Alessio *et al.* 1969, 1978, 1984; Broglio & Improta, 1995). The comparison and correlation amongst the sites enabled the construction of a reference Mesolithic succession spanning from the Preboreal to the early Atlantic, the latter corresponding to the transition to the Neolithic.

The cultural sequence was divided into several conventional phases (old, middle, recent and final Sauveterrian; old, middle and recent Castelnovian) on the basis of the typological characteristics of the assemblages, and especially on the frequency of the different types of armatures (Broglio & Kozlowski, 1984).

In contrast, the record from the mountain sites, which are often open sites, is rather poor because of the post-depositional modifications which act at higher altitudes, and which mainly consist of soil formation processes and erosional phenomena; the only record for the upland Mesolithic settlement is often represented by scatters of lithic artefacts without any evidence for stratigraphy or site features, and with no preservation of ecofacts. Few Mesolithic mountain sites have been radiometrically dated: Colbricon 1 (Bagolini *et al.*, 1984), the Lago delle Buse sites 1, 2 and 3 (Dalmeri & Lanzinger, 1994), and the Mondeval de Sora rockshelter (Alciati *et al.*, 1994).

The available data suggest that the valley bottom and the mountain sites formed a complex settlement system during the Preboreal and the Boreal, and that they were most probably occupied according to a seasonal pattern. A gradual abandon of mountain territories is recorded at the beginning of the Atlantic, perhaps related to the shift to the mid Holocene climatic and environmental conditions. No mountain sites of the early Neolithic with lithic assemblages deriving from the Castelnovian tradition have been found so far; the increase in the number of sites in the lowland and on the Alpine margin is recorded at the same time.

The exploration of the Frea IV rockshelter and the dating now available from the site brings new data for the chronology of Mesolithic mountain sites and contributes to an understanding of the relationships between valley bottom and upland sites.

The Plan de Frea Mesolithic sites are located at the head of the Gardena Valley, at 1,930 m above sea level, just north of the steep rock faces of the Sella Group. They are set around a large limestone boulder which lies on the smooth valley bottom, next to a small creek and a spring. The research allowed the identification of four distinct sites: three of them are under rockshelters (Frea I, III and IV), whilst the fourth one (Frea II) is placed along the vertical northern wall of the boulder. The sites were discovered in 1977 and excavated between 1978 and 1981 (Broglio *et al.*, 1983). New researches were carried out in 1994 in order to collect further data from Frea II and Frea IV, the investigation of which was not completed during the previous fieldwork.

2. FREA IV

2.1. *Pedo-stratigraphic layout*

The Frea IV rockshelter is located at the SE corner of the boulder. The external limit of the Mesolithic sequence roughly corresponds with the shelter dripline, which defines an area of *ca.* 20 m². The layers are well preserved only in the inner part of the rockshelter; the unit boundaries are not easily identifiable externally, due to the thinning and to the exposition to post-depositional processes.

The profile is briefly described in the following from top to bottom (Fig. 1).

1. Reworked layer composed of gelifracts.

2. A horizon of the present day soil profile: dark brown loam, organic, with abundant biological activity. It is almost absent near the shelter wall and thickens outwards reaching 30 cm depth on the dripline; a discontinuous stone line emphasises its lower boundary;

3. It is the main body of the archaeological sediment and is further arranged into several units. All of them are clearly anthropogenic; they are moderately to highly organic, with low chroma, usually granular, soft, moist; the cultural components are abundant and consist of lithic artefacts, bones, charcoal fragments, and ash which is often dispersed in the sedimentary matrix; calcareous gelifracts and volcanic gravel range from few to common. The whole sequence has been affected by pedoturbation (mainly frost action, burrowing, root activity, and graviturbation) which led to a partial homogenisation and obliteration of site features in the upper part, while the involution and breaking of unit boundaries occurred at the lower layers. The maximum thickness of the anthropic sequence as a whole is about half a meter. The units recognised are as follows:

- unit 3A is the pedoturbated layer at the top of the Mesolithic sequence; its upper boundary is

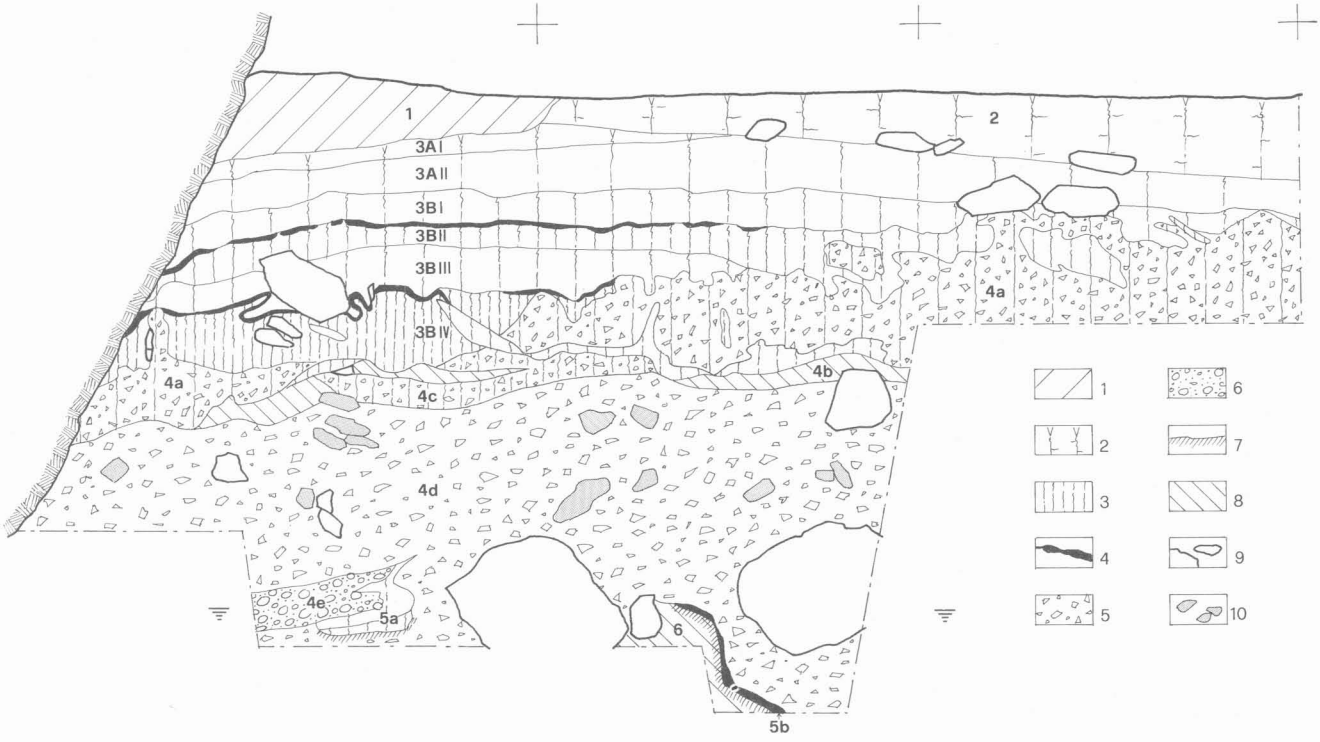

Fig. 1 - Cross section of the 1994 excavation at Frea IV.
List of symbols: 1 - reworked layer; 2 - A horizon; 3 - anthropogenic units (the line density is proportional to the organic matter content and to the cultural input); 4 - charcoal layer; 5 - angular gravel; 6 - rounded fluviatile gravel; 7 - burnt soil; 8 - silt; 9 - carbonatic stone; 10 - volcanic stone. The numbers indicate the field unit names. (Drawing D.E. Angelucci, elaboration F. Nalin).
Fig. 1 - Frea IV: sezione dello scavo 1994.
Legenda. 1 - strato rimaneggiato: 2 - orizzonti A; 3 - unità antropiche (la densità del barrato verticale è proporzionale alla quantità di sostanza organica e al contenuto archeologico); 4 - livelli di carbone; 5 - ghiaia ad elementi angolari; 6 - ghiaia ad elementi arrotondati; 7 - terreno arrossato per combustione; 8 - limo; 9 - pietre carbonatiche; 10 - pietre vulcaniche. I numeri corrispondono al nome delle unità di scavo. (Rilievo D.E. Angelucci, elaborazione F. Nalin).

not preserved because of the younger pedogenesis which originated unit 2. It was dug by means of two arbitrary levels (3AI and 3AII); some potsherds were collected from 3AI;

- unit 3BI is a silty layer which gave relatively few finds;

- unit 3BII consists of a highly organic living-floor with abundant charcoal and faunal remains, and without observable anthropic structures; the charcoal fragments form an involuted and broken centimetre thick layer at its top;

- unit 3BIII is less organic and with many carbonatic stones, but cultural components are abundant;

- unit 3BIV is formed of a thick layer which derives from the dispersal of ash, charcoal and waste material; it fills an artificial depression with some anthropic features: two small hearths which are cut in form of shallow basins in unit 4 and filled with abundant charcoal and ash; a large flat calcareous stone which seals one of the hearth; and a probable post hole (Fig. 2);

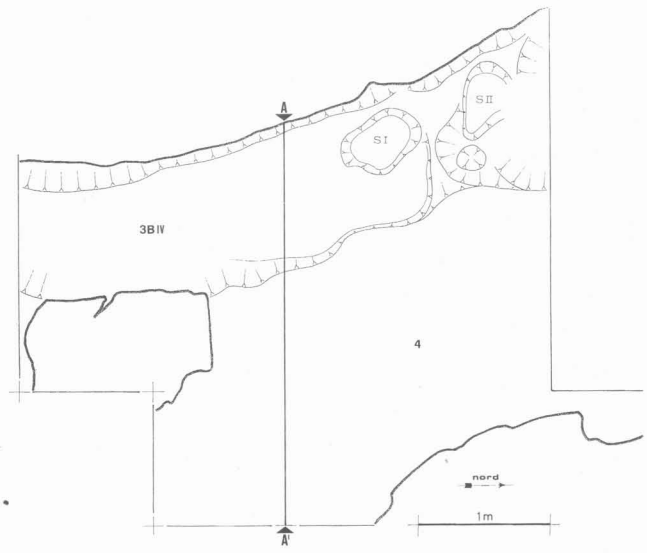

Fig. 2 - Simplified plan of the living-floor 3BIV. A-A' is the trace of the cross section (Fig. 2). (Drawing D.E. Angelucci, elaboration F. Nalin).
Fig. 2 - Planimetria schematica del suolo d'abitato 3BIV. A-A' è la traccia della sezione di Fig. 2. (Rilievo D.E. Angelucci, elaborazione F. Nalin).

- unit 3C fills a small pit which was later used as a hearth appertaining to unit 3BIV.

4. It is a thick succession of dominant natural sediment which is composed of slope waste deposits (units 4a, 4c and 4d), reworked residual sand (4b) and fluviatile fine gravel (4e).

5. Two small hearths which were partly deformed by post-depositional modification and truncated by erosional phenomena were found at the base of unit 4. They were originally dug into unit 6, the matrix of which is reddened next to the boundaries with the hearths. Just a few lithic artefacts were collected from this unit. The sediment of unit 5, like the underlying one, is water saturated due to the depth of the groundwatertable level.

6. The lowermost unit is composed of a limestone breccia in brown silty loam matrix.

The pedo-stratigraphic sequence of Frea IV begins with a layer whose fine matrix probably derives from the reworking of a loess sediment and indicates bare slopes and the action of frost on the shelter roof (unit 6); after its deposition a temporary human occupation occurred (unit 5), followed by the activation of slopes, which originated the thick complex 4. The decrease in the rate of slope deposition, probably the result of hillslopes stabilisation, is contemporaneous with the beginning of the formation of the main archaeological deposit; from this moment onwards, cultural processes became the main formation processes under the rockshelter, although a slight input from the hillslopes and the shelter roof was still present. The abandon of the site was responsible for the almost complete interruption of the sedimentary processes, leading to the pedogenesis of the upper part of the cultural sequence (units from 3AI to 3BI); the evidence for the long duration of the stability phase is given by the occurrence of protohistoric potsherds at the top of the Mesolithic layers. A younger phase of slope deposition followed, laying down part of the parent material of unit 2, which has been later pedogenised during a new stable phase which has lasted until the present.

According to the pedo-stratigraphic layout, six occupation phases can be distinguished at Frea IV (Fig. 1):

- phase 1: unit 5;
- phase 2: units 3BIV and 3C;
- phase 3: unit 3BIII;
- phase 4: unit 3BII;
- phase 5: units 3BI, 3AII and 3AI;
- phase 6: upper interface of unit 3AI, and unit 2.

The earlier three phases may have been formed in a very close time span, taking into account the sedimentary nature of their components. Phase 5 is the result of the homogenisation of layers which might have been laid down during a long time span; its stratigraphic reliability is therefore low.

2.2. *The lithic assemblage*

The lithic assemblage from Frea IV is composed of cores, tools, armatures, shatter and unretouched flaking products.

Owing to the preliminarity of the paper, only some indications are given here on the cultural variability observed in the succession; the assemblages have been analysed from a typological perspective according to the type list of Romagnano III (Broglio & Kozlowski, 1984); their main features are reported in Table 1.

As far as the raw material is concerned and considering the assemblage as a whole, the artefacts are mainly made with flint collected from the Jurassic-Cretaceous cherty limestone of southern Trentino or Veneto (80-95%, depending on the unit). The local chert, which outcrops at the head and along the slopes of the Gardena Valley, was used in small amounts; artefacts made from transparent quartz were occasionally found (always less than 1%).

Considering the assemblage as a whole the predominance of armatures over tools can be noticed; armatures range between 74% and 90% according to the phase (Tab. 1). The cores are common; at the present state of the research, only the predominance of small types which were used for the production of both bladelets and flakes can be mentioned.

Taking into account the significant features of the single phases, it must be observed the extreme scarcity of unit 5 (phase 1): a microburin and a few flakes were the only artefacts collected.

The lithic assemblages of the overlying units, which are included in the phases from 2 to 5, are more abundant. The assemblages exhibit a number of features which fit within the cultural framework of the Mesolithic of the Adige catchment basin, which was defined on a typological basis by means of the study of the sites in the Trento basin (Broglio & Kozlowski, 1984): the cores suggest that the reduction sequences are closely comparable, in case of utilisation of the same raw material; the components of the tool and armature assemblages are the same; even the unfinished armatures and the shatter are very similar. The absence or scarcity of a

given typological group which is found in the sites of the Trento basin may be due to the relatively low number of artefacts found at Frea IV, rather than to other reasons.

The armature assemblages collected from units 3BIV and 3BIII show the typical characteristics of the old phase of the Sauveterrian. The following types have been found: backed points of the types described at Romagnano III, and, moreover, points with deep abrupt retouch opposite to marginal abrupt retouch and some proximal curved backed points. Very short and thick segments are only present in 3BIV. Among the few triangles, the isosceles are slightly predominant; the presence of a short-based short scalene triangle with three retouched edges in 3BIV should be pointed out. Among the double-backed points, there are very elongated types (IL>10), which often have the point located at the proximal extremity of the blank and the unmodified base (which may be called "Romagnano point"), and some Sauveterre points, double-backed and double-pointed. The short wide-based type, which appears later in the Sauveterrian succession, is present in unit 3BIII.

The trends which indicate the middle Sauveterrian phase are recorded in the assemblage of phase 4 (unit 3BII). The isosceles triangles are partly replaced by the elongated scalene types, while the elongated double-backed points are still predominant. The low number of determinable types and the high frequency of fragmentary pieces do not allow to assess a more precise typo-chronological attribution at present.

The assemblage of phase 5 is considered here as a whole, even if its stratigraphic reliability is far from being good. As far as the tools are concerned, a significant trend of variation allowing the assemblage of phase 5 to be differentiated from the earlier ones is observed amongst the endscrapers and the retouched blades. Although the sample is very small, it has been noticed that the endscrapers on bladelets, which are always of the type with convergent scraping edge, are more abundant than the ones on flakes in phase 5, which is not the case

Tab. 1 - Overall structure of the lithic assemblage from Frea IV.
Tab. 1 - Struttura generale delle industrie litiche di Frea IV.

	ph. 2	ph.3	ph.4	ph.5
pre-cores	0	0	1	0
cores	8	3	5	6
tools	8	5	12	29
armatures	57	47	65	81
shatter	38	35	31	44

	ph.2	ph.3	ph.4	ph.5
% tools/ret.	12	10	16	26
% armatures/ret.	88	90	84	74

PRE-CORES	**0**	**0**	**1**	**0**
CORES	**8**	**3**	**5**	**6**
bladelet cores	6	2	2	4
flake cores	2	1	3	2

TOOLS	**8**	**5**	**12**	**29**
A - endscrapers	4	3	4	10
B - ret. flakes	0	1	0	2
C - burins	1	0	1	2
D - trunc. blades	1	0	3	1
E - ret. blades	1	0	4	8
F - becs - borers	0	0	0	2
G - backed knives	1	0	0	3
H - points	0	0	0	0
I - splint. pieces	0	1	0	1
K - composite	0	0	0	0
M - undet. frr.	0	0	0	0

ARMATURES	**57**	**47**	**65**	**81**
N - pts.lam.fl. etc.	5	5	3	4
O - backed points	6	4	3	1
P - segments	8	2	7	9
Q - trunc.b.blts	0	0	2	2
R - triangles	7	7	11	20
S - d-b. points	6	11	11	5
T - trapezes	0	0	1	5
U - marg.b.blts.	10	5	8	22
V - various	1	0	1	0
W - undet.frr.	14	13	18	13

SHATTER	**38**	**35**	**31**	**44**
distal microbur.	14	14	11	19
prox. microbur.	18	15	16	18
undet. microbur.	2	2	0	2
backed microbur.	0	0	1	1
enc. adj. fr.	4	4	3	4

of the previous phases. A blade which was elaborated through direct deep retouch and a notch is also present. These features, which point out the marked laminarity of this assemblage, agree with the occurrence of trapezes which are present, even if in low number. The other armatures of unit 3A are comparable to the recent Sauveterrian: the short-based elongated type, including a typical Montclus triangle, is prevalent among the triangles; elongated segments appear; two points of the unmodified base short type are present among the double-backed points. This may suggest the attribution of phase 5 to a Sauveterrian industry which is evolving towards the Castelnovian, although the assemblage is not homogeneous.

3. FREA II

Frea II is located along the northern vertical wall of the boulder; the 1994 fieldwork consisted of the excavation of a small test trench (*ca.* 3 m²), the aim of which was to survey the soil profile and to collect new artefacts. The site had already been explored in 1978 and the anthropic layer found in the profile was radiometrically dated to 7000 ± 200 BP (R-1497, 6001-5633 cal. BC).

The profile from Frea II is illustrated in Fig. 3. The A horizon of the present soil (unit 1) has developed from a calcareous breccia in a loamy matrix, which forms a pocket next to the wall (unit 2), and from recent slope waste deposits externally (unit 7). Unit 3 is the archaeological deposit: it is composed of a charcoal lens delimited downwards by a line of stones and a discontinuous broken layer of finely fragmented charcoal; the whole layer is strongly deformed and the terrain at its bottom is burnt. The anthropic layer covers a slope waste deposit formed of clayey matrix which is partly affected by hydromorphism and contains common weathered non-calcareous angular gravel (units 4 and 5). At the bottom of the trench a brown silty sediment with calcareous stones, which is somehow similar to the unit 6 of Frea IV, outcrops (unit 6).

Only very few artefacts were collected from the hearth of unit 3: some flaking products, an endscraper and a triangle, clearly not enough to give a cultural attribution to the site; few faunal remains were also found.

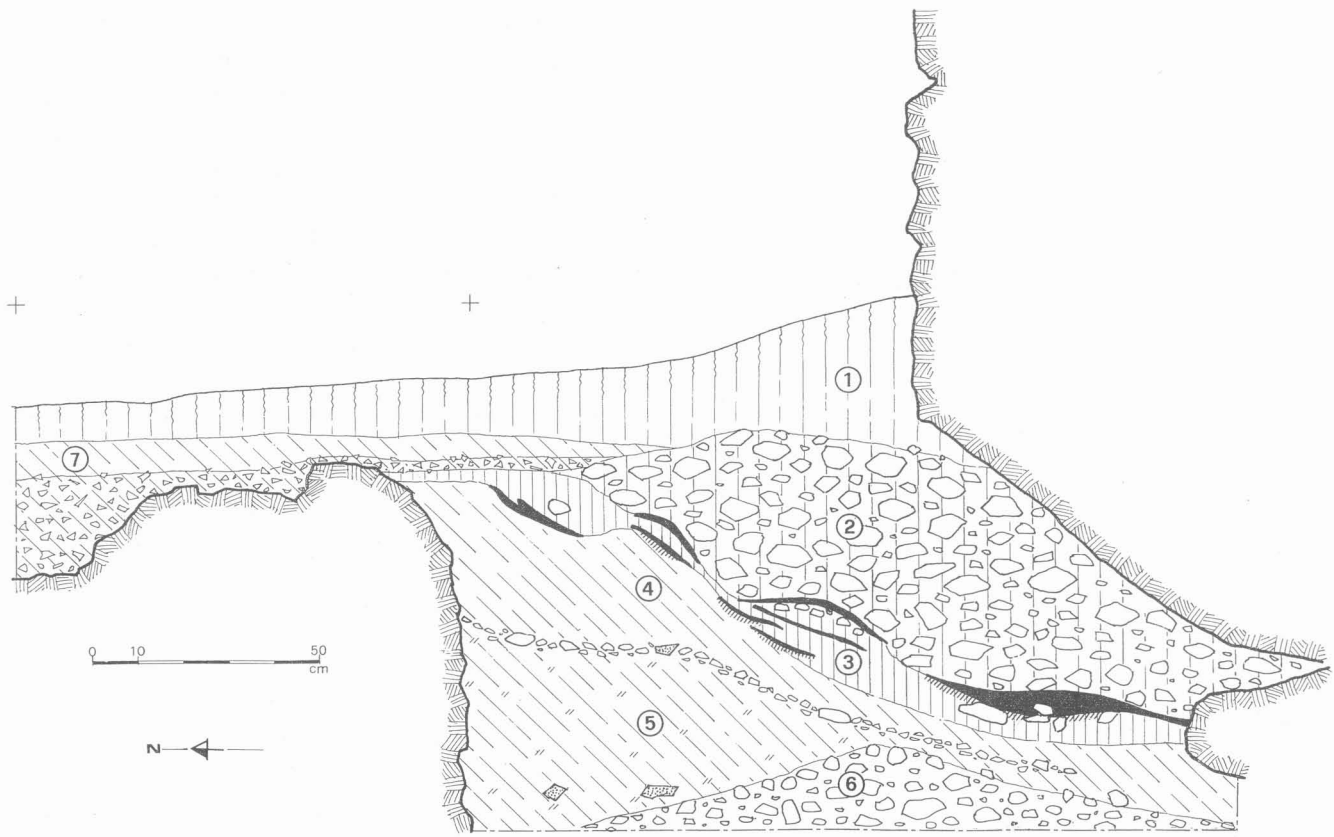

Fig. 3 - Cross section of Frea II, for key see Fig. 2 (Drawing D.E. Angelucci, elaboration F. Nalin).
Fig. 3 - Frea II: sezione, simboli come in Fig. 2(Rilievo D.E. Angelucci, elaborazione F. Nalin).

4. THE RADIOCARBON DATING

Charred wood fragments were collected during the excavation from all the units and subsequently air-dried. Unfortunately, some of the samples (units 3BI and 3AII at Frea IV) were too small for conventional radiocarbon dating.

The charcoal was usually scattered in a sandy matrix and most of it was a fine powder, so only HCl 3N pre-treatment was possible. On the other hand, preliminary analyses on a very small quantity of the samples excluded the presence of humic acid traces.

Combustion of carbon, CO_2 production and purification were carried out following the routine procedure. Purity of CO_2, which is the chemical form used for the activity measurements, was indirectly controlled by means of an electronic test based on the high sensitivity of proportional counters to electronegative impurities. Any traces of radon present were removed by natural decay by storing the CO_2 for more than 7 half-lives.

Two proportional CO_2 counters 1000 and 1500 cm³ in volume were used for β-activity measurements; the working voltage was 8564 volt and the gas pressure 3.04×10^5 Pascal. Massive and electronic shield are usually employed against cosmic rays and environmental radioactivity influence on background.

Due to the insufficient quantity of the samples R-2565, R-2714 and R-2715, it was necessary to add inactive CO_2 derived from a stock of Carrara Marble that we routinely use for background determination for the measurements of the -activity. Conventional ^{14}C ages were obtained by comparison with the ANU (Australian National University) Sucrose Standard which was checked together with the Carrara Marble in an International Calibration promoted by IAEA in 1991.

Conventional ages were converted by means of the calibration program "revised Calib 3.0" (Stuiver & Reimer, 1993). The statistical uncertainty of the conventional ages is 1σ; the calibrated ages refer to a confidence interval of 68% (Tab. 2, Fig. 4).

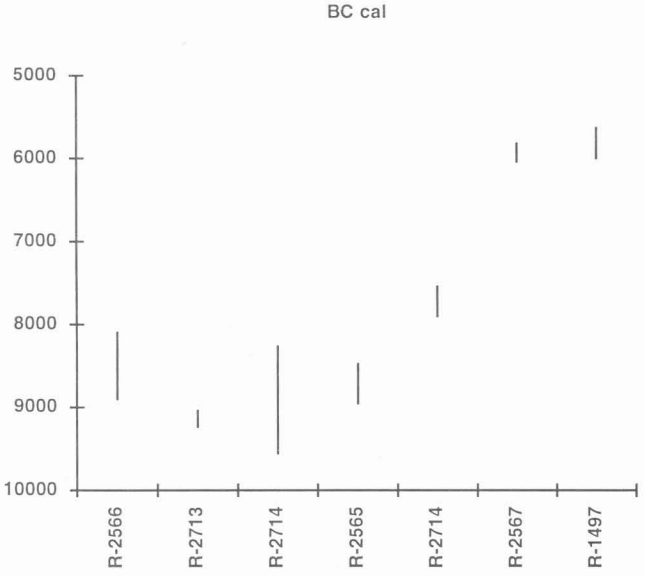

Fig. 4 - Calibrated ages from Frea IV and Frea II.
Fig. 4 - Età calibrate da Frea IV e Frea II.

5. DISCUSSION

The new available dating, associated with the preliminary results of the study of the lithic assemblages and compared with the information previously known on the site, allow to establish a framework for the prehistoric occupation at Plan de Frea.

The lower part of the archaeological deposit of Frea IV represents the earliest human presence recorded at Plan de Frea. The four dates obtained from phases 1, 2 and 3 (R-2715: 9560-8265 cal. BC; R-2713: 9241-9042 cal. BC; R-2565: 8958-8478 cal. BC; R-2566: 8903-8097 cal. BC) are consistent among them and agree with the typological attribution to the old phase of the Sauveterrian. The incomplete overlapping and the wide confidence interval of the values can be explained considering the pedo-stratigraphic context; the archaeological units have been submitted to some

Table 2 - Results of the radiocarbon dating.
Tabella 2 - Risultati della datazioni radiocarboniche.

site	field unit	exc. sector	lab. code	conventional age	calibrated age
Frea IV	3BII	41g, 31, 32	R-2714	8688 ± 99 a BP	7903-7547 BC
Frea IV	3BIII	11, 21f	R-2565	9558 ± 90 a BP	8958-8478 BC
Frea IV	3BIV	42b 41g	R-2715	9663 ± 392 a BP	9560-8265 BC
Frea IV	3BIV	21d-g, 31g-h-i	R-2713	9883 ± 68 a BP	9241-9042 BC
Frea IV	5	Str. III	R-2566	9377 ± 198 a BP	8903-8097 BC
Frea II	3	50	R-2567	7112 ± 121 a BP	6041-5818 BC

post-depositional modification and they did not behave as a completely isolated system. This is especially the case of unit 5 which is under the groundwatertable level, a fact that could explain the relative inversion of the ages from units 3BIV and 5.

A new phase of Mesolithic occupation at Frea IV is radiometrically dated to the early Boreal from phase 4 (R-2714: 7903-7547 cal. BC), which corresponds to the typological attribution to the middle Sauveterrian; the lithic assemblage of phase 4 need further examinations in order to ascertain its precise typochronological attribution within the middle Sauveterrian. The site Frea I also gave a lithic assemblage which is attributed to this stage (Broglio *et al.*, 1983).

A relatively long hiatus probably existed between phases 4 and 5 at Frea IV. As regards the typology, phase 5 contains artefacts which are attributable both to the recent Sauveterrian and to the Castelnovian. The problem arises if the stratigraphic context is taken into account, because phase 5 was defined by grouping the three uppermost units of the profile (3AI, 3AII and 3BI), which are pedoturbated and partly homogenised. Furthermore, the pedogenesis has determined a loss of the archaeological content and the charcoal collected from these units was not enough to carry out conventional radiocarbon dating. Two hypotheses can be made: a) the assemblage of phase 5 represents a transitional moment between the Sauveterrian and the Castelnovian; b) the assemblage of phase 5 derives from the mixing of two (or more) different layers related to the recent Sauveterrian and to the Castelnovian respectively. The stability which originated the shallow soil profile at the top of the Mesolithic succession was probably fairly long, at least up to the protohistoric occupation, the finds of which are found in units 3AI and 3AII, mingled with the Mesolithic artefacts; this attests that the assemblage of phase 5 is not homogenous, as far as the present information suggests.

An occupation attributed to the recent Sauveterrian is recorded at Frea III (Broglio *et al.*, 1983).

Frea II was settled more recently than the other three sites, probably for a very short time span. The new dating (R-2567: 6041-5818 cal. BC) overlaps with the former one obtained (R-1497, 6001-5633 cal. BC); given the agreement between the two dates, the formation of the hearth found at the site can be dated to the early Atlantic, *i.e.* within a Castelnovian cultural context which is not recognisable from the poor assemblage collected.

A further occupation is attested during the late Bronze Age; potsherds were recovered at all of the sites except Frea II, and site features were found at Frea I.

As far as the Mesolithic occupation at Plan de Frea is concerned, all of the four sites were occupied by groups of hunter-gatherers, and Frea IV was repeatedly settled.

The results from Frea IV suggest that the earliest occupation of the mountain sites of the Dolomites is contemporaneous to the valley bottom sites of the Trento basin. The dates from the most ancient phases at Frea IV are fully comparable with the age obtained for the earliest phases of Romagnano III (R-1147: 9830±90 BP and others, see Alessio *et al.*, 1984; Broglio & Kozlowski, 1984); a slightly younger date was achieved at the mountain site of Colbricon 1 (R-895: 9370±130 BP corresponding to 8822-8211 cal. BC; Bagolini *et al.*, 1984). Although the data available are few, they seem to indicate that the Mesolithic settlement system of the Adige basin was already developed in the Preboreal, at least at *ca.* 9000 cal. BC.

The data collected so far on the lithic assemblages of Frea IV indicate that the Mesolithic human groups may be ascribed to the same cultural context, which falls within the overall framework of the Adige basin; the raw material provenance suggests that the Mesolithic hunter-gatherers of Plan de Frea moved over a wide area which goes from the Adige valley bottom to the Alpine watershed. The preliminary analysis of the faunal remains (P.F. Cassoli and A. Tagliacozzo in: Angelucci *et al.*, 1995), which show the prevalence of deer and ibex and an age of death of the animals between the summer and the autumn, also attests that the appearance of the hunter-gatherers at Frea IV was focused on the seasonal exploitation of the mountain environment, especially through hunting.

Considering the four sites as a whole, the several occupation phases recorded, the presence of habitation structures, it can be said that Plan de Frea represents a Mesolithic residential site which was seasonally occupied for the aim of the exploitation of the mountain resources.

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RIASSUNTO - Il quadro sul Mesolitico del bacino dell'Adige suggerisce che il sistema insediativo si organizzasse, nel Preboreale e Boreale, su due fasce altitudinali -siti nei fondivalle e siti montani. La cronostratigrafia regionale si basa sulle serie dei ripari di fondovalle, mentre le informazioni sono frammentarie per i siti in quota di cui pochi sono datati e non esiste alcuna sequenza continua. L'individuazione e lo studio di serie stratigrafiche nell'area montana può dunque fornire elementi alla comprensione dell'insediamento nel suo complesso. I quattro siti mesolitici del Plan de Frea si trovano in alta Val Gardena, a 1,930 m. Scoperti e in parte indagati negli anni '70-'80, sono stati oggetto di una nuova campagna di scavo nel 1994 che ha completato l'esplorazione del riparo Frea IV. Ivi il deposito si articola in più unità in parte modificate dalla pedoturbazione nella parte alta e contenente due suoli d'abitato (unità 3BII e 3BIV), di cui il secondo ha evidenziato alcune strutture antropiche. Strutture isolate dal corpo principale della stratificazione mesolitica si trovano nella parte inferiore della serie (unità 5), sigillate da depositi di versante. Le industrie litiche raccolte si collocano tipologicamente in vari momenti della successione mesolitica del bacino dell'Adige; vanno dalla fase antica del Sauveterriano fino alla comparsa di elementi castelnoviani. Le datazioni sono state effettuate con il metodo convenzionale del radiocarbonio su carboni raccolti dalle unità 5 (9377±198 BP), 3BIV (9883±68 BP e 9663±392), 3BIII (9558±90 BP) e 3BII (8688±99 BP). Una nuova datazione conferma l'attribuzione del Frea II all'Atlantico.
Questi dati mostrano come la comparsa dei cacciatori mesolitici in quota risalga allo stesso momento delle più antiche evidenze note nel fondovalle dell'Adige, sottolineano che la frequentazione mesolitica al Plan de Frea si articolò in più fasi e consentono la comparazione di una serie di un sito montano con quelle note in contesti di fondovalle.

SUMMARY - Excavations at the Plan de Frea Mesolithic sites (Dolomites) in 1994 permitted the collection of charcoal samples from Frea II and IV which were submitted to conventional radiocarbon dating. The sites are located at the head of the Gardena Valley at 1930 m and are part of the Mesolithic mountain settlement sub-system, which is considered to be strictly connected to the valley bottom subsystem by means of a seasonal occupation pattern during the Preboreal and the Boreal. Although the Mesolithic chronostratigraphic framework is well established at valley bottom sites due to the study of continuous series, the dating of mountain sites is still rare. The fieldwork at Frea IV rockshelter revealed a pedo-stratigraphic succession which yielded abundant lithic artefacts, faunal and plant remains; living-floors and anthropic features were also recorded. The lithic assemblages fall within different phases of the Mesolithic succession, from the old phase of the Sauveterrian to the appearance of the Castelnovian. The dates were obtained on samples from unit 5 (9377±198 BP), 3BIV (9883±68 BP e 9663±392), 3BIII (9558±90 BP) and 3BII (8688±99 BP) and are consistent with the cultural attributions. The new available dates agree with the present chronology of the Adige river basin, indicating an early appearance of Mesolithic hunter-gatherers on the Alpine upland, and allow some consideration to be made on the Mesolithic settlement system.

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