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The Lagozza Culture: Discussion on some archaeological data ^{*)}

1. Site and settlement in the Lagozza Culture.

1. a. Site and settlement. The concept of Neolithic implies the idea of a sedentary economy practised by human groups who stay in one place all the year round (HIGGS and VITA-FINZI 1972).

One assumes that sites reflect the technology and behaviour of a group, and the choice of the location of sites for human habitation was an important factor for prehistoric group survival (LEGGE 1972).

A site is the place where there is a deposit or set of deposits which contain evidence of human activity (HIGGS 1975). It is accepted that the total area from which the contents of a site derived is the **catchment** and the **site territory** is the area surrounding the site which is habitually exploited by the inhabitants of the site (one hour's walking from the site in farmer economies; a radius of circa 5 km) (HIGGS 1975).

It is assumed that the study of the characteristics of a site in connection with the surrounding area and the environmental characteristics can explain its location. But many times sites are located in exceptional positions.

Archaeological evidence may be used to distinguish sites which contain habitation debris (settlement sites) from non-occupation sites (butchery sites, ritual sites, burial sites). This evidence contributes also to the explanation of the permanent or transitory nature of the occupation.

Ecological, technological, economic and socio-cultural factors cause variations in the characteristics of the sites.

The settlement site in the **locus** of activity, the residential location, and comprises additional analytical components such as geographical location, total number and density of inhabitants of individual lodgings and space, the activities within and immediately around the settlement and external demarcation. The components of an individual site depend on factors of natural environment, technology and subsistence economy. These factors may restrict but not determine the possible form and function of settlements (TRINGHAM 1972). In the same way, at a higher level of analysis comprising a number of settlement sites in a given zone, spatial, ecological, social and political relationships may be studied.

Settlement and settlement pattern are not fixed situations - determinants and components are in a state of continued change; but this change can be so minute as to be undiscernible in the archaeological data (CHANG 1968, WILLEY 1956, 1968).

It is assumed that in the Lagozza Culture the sites were settlement sites. However, it is not possible to ascertain if some sites were not permanently occupied. Variations in the settle-

^{*)} This paper is a part of the study « The Lagozza Culture in Northern and Central Italy » submitted for Ph.D. degree examination in the Department of Ancient History and Archaeology, Birmingham University, 1977.

ment type may be considered in connection with local groups and local traditions within the Lagozza Culture.

Spacial relationships between sites are very difficult to establish. Archaeological data are insufficient to permit a study of settlement patterns. One can assume, on the basis of site distribution in restricted areas and topographic characteristics of these areas, that contact between sites could be possible in the area of lake Varese, Lake Garda and Ligurian Valleys. The exchanges of commodities by short-range « trade » could be possible: domestic goods were available for social transactions and groups were linked together in a form of simple alliance.

1. b. Analysis of sites. Site characteristics may be arranged within an environmental framework with consideration for the particular advantages of different types of dwellings.

1. b. 1 Caves and rock-shelters are common settlement sites in Liguria and Tuscany. Archaeological evidence indicates that they were inhabited repeatedly in some cases (e.g. Arene Candide), from the Paleolithic to modern times.

The continuity of occupation and the preference for a type of settlement indicate good food resources as well as efficient shelter against the external environment (LEGGI 1972).

The occupation of a cave or rock-shelter is proven by the evidence of human activity (fire, tools, etc.), and many « imported objects » extraneous to the cave natural environment (plants, animal bones etc.).

In the Lagozza Culture caves, the only recognizable and recurring features are hearths. There is no information about the construction of structures inside the caves or shelters, in contrast with the preceding periods (post holes in Middle Neolithic levels in Pollera (TINÈ 1972a, b); daub remains in Early Neolithic levels in Arene Candide (BERNABÒ BREA 1956)). However, at Arene Candide there are pits, one of which is correlated with the Lagozza levels 13-14.

Endogen (karst) and exogen caves have been inhabited during Lagozza period. Their topographic location and orientation towards South and South-West can be considered as an expression of the attempt to minimize the variations of climate due to seasonal changes¹⁾.

¹⁾ When a cave faces South the sun can shine into its mouth for a long time and thereby have a direct effect on the climate of the cave. If it faces West, it catches the sun's rays later in the day after the air inside has been warmed (Schmid 1965).

The occupation of a cave depends on its morphological qualities. The climate in the front part is directly influenced by the weather outside; the inner part of the cave will always have more homogeneous climatic conditions. The width of both areas -external and interior, is significant: a very large mouth means a frontal area less suited for occupation. A very long ground plan with the inner part being very far from the mouth presents conditions such as obscurity, a high level of humidity and so forth, which are unsuitable for habitation.

Caves and shelters where Lagozza materials have been found show good conditions for habitation; these inhabitable areas can cover either the entire surface (Arene Candide (BERNABÒ BREA 1946, 1956), Grotta all'Onda (GRAZIOSI 1944), Pollera (ODETTI 1972)) or a limited sector (Arma del Sanguinetto (FUSCO 1963-64)).

It is not possible to assume that caves and rock-shelters represent the only type of settlement in Liguria and Tuscany during Lagozza Culture. Though archaeological research thus far has concerned this type of site. Future investigations may give evidence of the existence of open-air settlements and demonstrate that caves and rock-shelters were only one type of site within the complex economical system of the Mediterranean valleys as has been recently proposed for western Provence (MILLS 1976).

1. b. 2. « Hut floors » and « villages ». One must consider the « hut floors » (**fondi di capanna**) within the Neolithic framework of Italy and other European countries.

On some sites, the only structural features present are pits of different dimensions dug in the subsoil (Rivoli (BARFIELD and BAGOLINI 1976), Santa Maria in Selva (LOLLINI 1962, (1965)), Pescale (MALAVOLTI 1951-52), Ripoli (CREMONESI 1965), Norcia (CALZONI 1939)).

In other European countries (Linear Ceramic Culture; Bylany, Czechoslovakia (SOUDSKY 1969, SOUDSKY and PAVLU 1972), Olszanica, Poland (MILISIAUKAS 1972) Danilo and Liscici Cultures of the Dalmatian coast (KOROSK 1964, BENAC 1958), Southern France Chassey (COURTIN 1974), Western Switzerland (SAUTER, GALLAY and CHAIX 1969)), these pits are always associated with post holes and the variety of their uses can be determined (**hearth-pits, storage-pits, work-pits**).

These particular structural features have usually been interpreted in Italy as « hut floors ». The discovery at Roccolino-Schiave (Brescia)

(Square Mouth Pottery Tradition, Finale-Quinzano phase) (SIMONI and BIAGI 1969) of a circular structure delimited by a low stone wall with an interruption as entrance could support this hypothesis.

At Santa Maria in Selva (Marche), fifteen pits of different shapes and dimensions, dug in the virgin soil have been revealed. They were found distributed over an irregular area of about 18 x 9 m, one next to the other and interconnected. A few meters away from these structures, a large circular pit, about 3 m in diameter has been found (LOLLINI 1962, (1965)); its dimensions allow one to consider it as a single habitation unit.

Often the area covered by one of these «hut floors» is too small to be considered as a habitation. Anything less than 4m² should be defined as a storage pit²⁾.

The pits at Ripoli (Abruzzo) (CREMONESI 1965) vary in shape and dimensions and it is possible that a careful analysis of the data arising from new excavations will lead to the establishing of their different functions. Perhaps pits of larger dimensions were used as habitation. However, this is a tentative hypothesis as once again no evidence - e.g. hearths - exists.

Pescale (Modena) (MALAVOLTI 1951-52b, c) and Norcia (Perugia) (CALZONI 1939) present pits of large dimensions, hearths and post holes which suggest «hut floors». Norcia could be interpreted as a single habitation and its location in relationship to arable lands lead to the suggestion of a settlement pattern of dispersed habitations in cultivable fields.

Frequently the word «village» has been used to define any association of structural unities, even a small number of pits. Nevertheless, until clear evidence concerning the extent of many of these settlements has been obtained the use of the term «village» is not justified.

Italian Neolithic sites generally show characteristics differing greatly from those which allow the definition of **village** in the Near and Middle East, Mexico and Peru (FLANNERY 1972, LANNING 1967, SANDERS 1956)³⁾.

For example, Ripoli can only be called, on the basis of archaeological data, a concentration of structures. Excavations were carried out in a restricted area of the site and it is impossible to determine the limits of the settlement. In the case of lake-side dwellings, the definition of **hamlet** can be accepted only on hypothetical basis, assuming that Isolino di Varese was

densely covered with habitations and consequent nearly one hundred people could have inhabited it at one time.

1. b. 3. Lake-side dwellings. «Palafitta» and «bonifica». The first finds of Lagozza pottery in lake-side settlements led to the identification of this special type of site in Northern Italy and to the concept of a direct connection between a ceramic class and a type of settlement.

The «palafitta» became a typical trait of Italian Late Neolithic, a distinctive settlement, where huts were thought to have been built on wooden platforms which were placed on piles sunk into fairly deep water, at the edge of the lakes.

This idea was supported by comparisons with sites in Western Switzerland, the «villages built on platforms over lakes» described by Ferdinand Keller (KELLER 1866). The suggestion that an increase in the levels of the lakes could explain the hundreds of submerged piles was not accepted until the 1920's when new excavations were undertaken in the pile fields of Southwestern Germany (REINERTH 1926). This fact was later confirmed from systematic research in Switzerland (GUYAN (ed.) 1955, TSCHUMI, RYTZ and FAVRE 1928, VIOLLIER et al. 1926). Today is widely accepted that the «pile dwellers» of the prehistory lived on the shore of the lakes, not on platforms constructed above the water (MÜLLER-BECK 1961, STRAHM 1975).

To make the house floors the technique of putting down layers of rubble, branches and soft earth pounded into a smooth, firm surface was employed. The underpinning of these floors was secured by driving piles through the sediment,

²⁾ In the ethnographic and prehistoric compound there existed habitations of relatively small dimensions, for one or two people, consisting of rooms with an external storage pit. The grouping of the structures forms an oval or circular plan, sometimes with a common large silo (Flannery 1972). However, it is hazardous suppose that the Italian examples of pits here analyzed could suggest a compound settlement pattern.

³⁾ In some studies, **village** has been defined as a differentiation from **hamlet**, proposed on the basis of a demographic approach (hamlet with no more than one hundred inhabitants, village with no less than one hundred and no more than one thousand inhabitants (Flannery 1972, p. 38). On the other side, architectural, economical and sociological criteria have been applied in defining **villages**. «Village... is a nuclear community with a population running into the hundreds and in which at least 75% of the population derive at least 75% of their income from agriculture or other extractive activity» (Sanders 1956, p. 118). Mac Neish (1969) suggests that the difference between **hamlet** and **village** is made on the basis of the absence of any kind of public — civil or religious — architecture. Flannery considers that **hamlets** and **villages** should be seen as the small and the large ends of a size continuum and their differences of architecture being more a matter of degree than kind (Flannery 1972, p. 39).

sometimes down to underlying the bed rock. Only a small fraction of the upright piles had formed part of the house.

The existence of « **palafitte** » with the structural function to support platforms above the lake's water has not been established with any degree of certainty. Vertical piles, sunk deeply in the soil were arranged in a compact but irregular distribution. They served for the consolidation of the soft sub-soil.

With regard to Lagozza di Besnate, Castelfranco reports piles more than one meter rising up to 0.30 m over the archaeological level. Wooden planks up to 0.30 m, placed one next to the other, appeared at several points and possibly had rested on transverse beams (CASTELFRANCO 1880).

« **Bonifica** » traditionally means a floor or structure supporting the huts, formed by tree trunks, planks and poles, lying in a horizontal position in several layers, with vertical piles holding them in position.

It is very difficult to make an exact distinction between « **palafitta** » and « **bonifica** » as the same technique of construction is used for both. The notion of two separate types of habitats was assumed on the basis of an erroneous interpretation in which the platforms were thought to be constructed above the water of the lakes while others considered to be terrestrial.

The Italian definition of « **palafitta** » derived from the 19th century conception of Swiss lake-side dwellings. In Northern Italy, no conclusive research has been carried out concerning the variations of lake levels in prehistoric times. Future analysis on the arrangement of structures and sedimentological conditions in these sites should aid in ascertaining the exact characteristics of lake-side dwellings. The only research done to date is at the site of Fimon-Molino Casarotto (Vicenza), where wooden platforms and piles sunken in the mud functioned as support for hearths and hut floors (BAGOLINI, BARFIELD and BROGLIO 1973) and can be compared with wooden structures of Isolino di Varese (BERTOLONE 1957): both involve the Square Mouth Pottery tradition. These examples could be considered as the fore-runner of a building technique and style subsequently used during the Late Neolithic times.

1. b. 4. Hill-top sites. The strategic position of these sites can be defined by considering its location in relationship to the topography

of the surrounding area. The surface suitable for inhabitation is variable in size and many times coincide with a relatively small zone (Rocca di Rivoli⁴).

Some of these sites are not advantageously situated with respect to agriculture: the extent of arable lands within the limits of the **site territory** is small. These characteristics suggest that the main factor determining the selection of the site location may have been that of defence. Studies of botanical and zoological remains from Rivoli confirm this hypothesis (JARMAN 1976). Pescale and Rocca di Manerba have better access to arable lands, nevertheless their locations indicate strategic positioning.

Special construction for defence purposes have never been found. It is not impossible that hill-top sites located in naturally defended places were used during periods of danger, whereas the normal place of habitation could be found in areas more favorable to subsistence activities, i.e. near arable lands or lands suitable for pasture.

1. b. 5. Open-air settlements. Monte Còvolo (Brescia) (BARFIELD 1972, 1973-74; BARFIELD, BIAGI and BORRELLO 1978) is the only example of an open-air settlement in Northern Italy where a clear Lagozza occupation has been recorded. Its position in relationship with arable land, wooded and piedmont areas may be seen as very favorable for farming activities and permanent settlement (BARKER 1973-74).

2. Economic basis of Lagozza groups.

2. a. Interpretation of fauna and botanical remains. It is difficult to make a valid interpretation concerning the economic basis during the Late Neolithic in Northern and Central Italy⁵). Available data come mainly from old excavations that do not provide relative quantities of the different botanical or zoological species -but simply list the flora and fauna remains.

Domestic animals and hunting supplied the meat diet and also certain raw materials (e.g. bones, antler). Unfortunately, the existing classifications of wild-domestic animals are generally too rough to be helpful in analyzing the economy.

⁴) The site of Rivoli is not considered here as a « Lagozza » site. In fact, there is not a clear Lagozza occupation -the few sherds of pottery found there can be seen as imported from the outside.

⁵) Economic studies of prehistoric groups in Central Italy have been recently carried out by G. Barker (Barker 1975).

Though certain plants and animals are known to have been available, the variety of the economic basis, which developed presumably in response to local environmental conditions and population structure cannot be precisely determined.

The Lagozza groups as farmers had access to some domesticated animals and a number of cultivable plants, but one can assume that a certain degree of hunting, fishing and collecting of wild plants supplemented the diet (PHILLIPS 1972). In some cases the reliance on wild sources could be important.

Domestic animals are often in the majority of the Lagozza sites and no evidence exists in which wild fauna is predominant (tables 1-2).

The analysis of zoological and botanical remains permits us to consider the Lagozza Culture in terms of a schema established by Jarman for the economy of Northern Italy Late Neolithic

(JARMAN 1970). This author notes the importance of domestic pig throughout the Neolithic as well as the decrease of red deer in the Late Neolithic. Though sheep and goat are considered together because of the difficulty of separating them osteologically, it is possible that **Ovis** were more predominant than **Capra**. Jarman's proposal of the predominance of domestic **Bos** is not, however, acceptable for some Neolithic sites in Northern Italy which have furnished faunal statistics (plate 1).

During the Late Neolithic of Northern and Central Italy the economy based on red deer and pig was superseded by one based on ovicaprids, cattle and pig. As sheep and cattle are not well suited to a heavily wooded environment, their introduction and subsequent development should coincide with a regression of the forest cover which implies a less suitable environment for deer (JARMAN 1970).

Fauna from some Neolithic sites in Northern and Central Italy

TABLE 1

Sites	Domestic					Wild						Other	Sources	
	cattle	sheep	goat	pig	dog	cattle	red deer	roe deer	boar	beaver	wolf			rabbit
ARENE CANDIDE	x	x	x	x										Bernabò-Brea 1946, 1956 Emiliani et al. 1964
A. DEL SANGUINETTO	x	x	x	x	x	x	x							Fusco 1964
G. ALL'ONDA		x	x	x		x	x	x	x					Graziosi 1944 Mochi and S. Giorgini 1915
B. DEL LEONE		x	x											Phillips 1971
ISOLINO	x	x	x	x		x	x	x					cat	Fusco pers. com.
M. CÒVOLO	x	x	(1)	x	x	x	x			x			bear, birds, fish, fox.	Barker 1973-74
R. DI RIVOLI	x	x	(1)	x	x	x	x		x		x(2)		equids	Jarman 1976
PESCALE	x	x	x	x	x	x	x	x			x			Malavolti 1972
S.M. IN SELVA	x	x	(1)	x		x								Barker 1975
NORCIA	x	x		x	x	x	x						cat, otter	Calzoni 1939
RIPOLI	x	x	(1)	x		x	x							Barker 1975
GR. PICCIONI	x	x	(1)	x		x								

(1) sheep/goat.

(2) mediaeval?

Relationship domesticated: wild fauna from some Neolithic sites in Northern and Central Italy.

TABLE 2

Sites	Relationship domesticated: wild fauna	Majority domesticated animals			Sources
		Ovis/Capra	Sus	Bos	
ARENE CANDIDE (levels 9-13)	nearly all domesticated	x			Emiliani et al. 1964
MONTE COVOLO	nearly all domesticated	x			Barker 1973-74
R. DI RIVOLI	majority domesticated		x(1)		Jarman 1976
S.M. IN SELVA	majority domesticated	x			Barker 1975
RIPOLI	majority domesticated	x	x		Barker 1975
G. DEI PICCIONI	majority domesticated	x			Barker 1975
PESCALE	majority domesticated?			x?	Malavolti 1952-53b

(1) Rivoli Castelnuovo I-II.

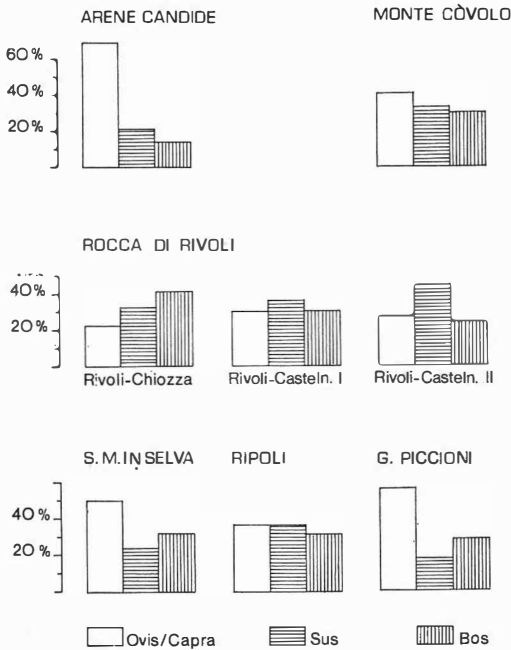


Fig. 1 - Domestic fauna from some Neolithic sites of Northern and Central Italy.

It has been assumed that agriculture does not seem to be extensively developed during the Late Neolithic in Northern Italy (JARMAN 1970). Nevertheless, the location of sites suggest that they are generally related to potentially arable lands. Deciduous and coniferous forests are important within the lake-side sites territories, where clearings were probably made by prehistoric people to obtain areas capable of supporting agriculture and pastures.

On the evidence of the very scarce botanical remains available, agriculture and collection of wild plants may be inferred for some sites (table 3).

To date, no comparative studies have been carried out to establish the relative importance of agricultural and livestock components in the Late Neolithic economies of Northern Italy. Studies concerning the botanical and zoological remains throughout the whole Neolithic period are very incomplete -only on hypothetical basis can one assume that subsistence economy could be slightly more developed than in the Middle and Early Neolithic.

2.b. The concept of trade in Late Neolithic groups of Northern and Central Italy.

The idea of trade has been frequently proposed for Neolithic communities. Vestiges of exotic materials on a site have usually been interpreted as marketable commodities or as indicative of the trading of perishable goods (e.g. salt and obsidian, wine and flasks).

Flora remains from some Neolithic sites in Northern and Central Italy

TABLE 3

Site	Domestic	Wild	Sources
ARENE CANDIDE (level 22)	<i>Hordeum</i> sp. <i>Triticum dicoccum</i>		Evet and Renfrew 1971
B. LEONE	<i>Triticum compactum/</i> <i>sphaerococcum</i>		D'Amato - Avanzi 1953
ISOLINO DI VARESE	<i>Hordeum</i> sp. <i>Triticum dicoccum</i> <i>Triticum</i> sp.	<i>Vitis silvestris</i> <i>Corylus</i> sp.	Evet and Renfrew 1973 Renfrew 1973
LAGOZZA DI BESNATE	<i>Linum bienne</i> <i>Vicia lens</i> <i>Hordeum vulgare</i> <i>Triticum aestivum</i> <i>Triticum vulgare antiq.</i>	<i>Cornus mas</i> L. <i>Pirus malus</i> <i>Vitis silvestris</i>	Guerreschi 1967 Renfrew 1973 Sordelli 1880
R. DI RIVOLI		<i>Corylus</i> sp.	Barfield pers. com.
S.M. IN SELVA	<i>Hordeum</i> sp. <i>Triticum aestivum</i>		Evet and Renfrew 1971
RIPOLI (hut n. 17)	<i>Hordeum</i> sp. <i>Triticum dicoccum</i> <i>Triticum aestivum</i>		Evet and Renfrew 1971 Barker 1975
PESCALE	?	<i>Corylus</i> sp.	Malavolti 1952-53b

The scarcity of such finds does not permit us to treat them as evidence of **trade** in the restricted sense of the word for prehistoric societies. To accept for the Late Neolithic of Northern and Central Italy the assumption of groups with a tribal social organization, implies the acceptance of a limited activity in the exchange of goods.

We are dealing with subsistence production societies in which the mobilisation of local resources - foodstuffs and specialities as pottery or baskets - occur mainly within restricted social segments such as lineages or clans. On the other hand, long distance **trade** may reflect links between separate chiefdoms or other socio-political entities.

Finds of exotic materials are better seen within a schema of gift exchange on a reciprocal basis, perhaps primarily as a mean of reinforcing friendship and hence largely a social transaction. This has the effect of allowing the circulation of spacial goods from hand to hand (RENFREW 1973). This is a more realistic explanation for the appearance of marine shells, honey coloured flint, obsidian, some stone axes and also perhaps the sporadic finds of copper objects within a Neolithic self-sufficient economy.

3. The use of archaeological data to suggest social structures.

From the evidence of Cultural Anthropology, it has been suggested that Neolithic farming communities can be identified as a **tribe** (PHILLIPS 1973, SAHLINS 1968).

On the basis of ethnographical data it has been proposed that residential units forming a tribe are predominately economically self-sufficient although not in complete isolation one from the other, but joined in kinship or non-kinship solidarities. Relations become weaker with a higher degree of organization. The tribe has common language, culture and territory. It is an association of few hundred people without any kind of centralized government or social stratification and the family is « nuclear » or « extended ». In these circumstances **trade** is not very active (SAHLINS 1968).

If one accepts that rules of descent and residence can potentially be discovered in the archaeological record then one can suppose that great within-site homogeneity of male-produced artifacts should suggest descent man-line. In this case, women would marry into the unit from the outside and then there would be potentially greater within site variation of women-produced

artifacts (DEETZ 1967). On the other hand, women of one family living together will result in a great within-site homogeneity of women produced artifacts -traditional style in female manufactured articles would develop in each village resulting in differences between sites.

The assumption of tribes living in a permanent state of warfare (SAHLINS 1968) is unacceptable for the Lagozza Culture. We also have no evidence of warfare in Southern France and Western Switzerland -the sites, excepting the examples at Saint-Michel-de-Touch and Camp-de-Chasse, lack defences. Among the stone artifacts there does not seem to be a prevalence of those used for warfare. The presence of hill-top sites (Pescale, Manerba) could suggest either the persistence of a particular type of settlement from a previous period or a special case where a strategic position was necessary. This situation must in no way be interpreted as being typical of the Lagozza Culture.

One can accept the correlation of the Lagozza Culture with a pottery assemblage. One can recognise that artifacts can provide more than morphological information, as they allow also interpretations concerning a society's norms and structure. Information derived from artifacts may in some ways suggest social structures in pre-historic groups. They are patterned in accordance with prevailing norms and reflect learned behaviour in a systematic manner: Manufacturing techniques and the final appearance of pots being normalized within the society, the groups or the family.

Individual combine different **attributes** to form an artifact and the patterning of such attributes reflects a patterning in the behaviour of individuals⁶). Artifacts are combined into groups which reflect by their patterning the behaviour of an interacting minimal group⁷).

In the case of pottery, changes in the attributes might reflect changes in the patterned behaviour of the potters. Attribute patterning could also reflect behavioural patterning as a results of changes in social organization.

Ethnographical evidence suggest that pottery-making is a women's task (MURDOK 1939). If one accepts the hypothesis that women made the pottery and men chipped stone tools in the Chassey-Cortailod-Lagozza **complex**, homogeneity

in attribute clusters in pottery would therefore suggest a single female template (PHILLIPS 1971).

Repetition of attribute clusters in different stratigraphic levels in a site may indicate continuity of certain templates Therefore, the uniformity of traditions is represented by a certain degree of homogeneity in pottery assemblages.

Neither the stratigraphical information, which is insufficiently detailed, nor the artifact count, which is too low allow to demonstrate the matriloc residence on Lagozza sites (Arene Candide, Romita di Asciano, Isolino di Varese, Monte Còvolo). Though, a certain degree of within-site homogeneity of pottery assemblages can be recognized, matriloc residence could be accepted only on the basis of comparison with similar situations studied in Southern France where pottery attributes seems to persist over time and

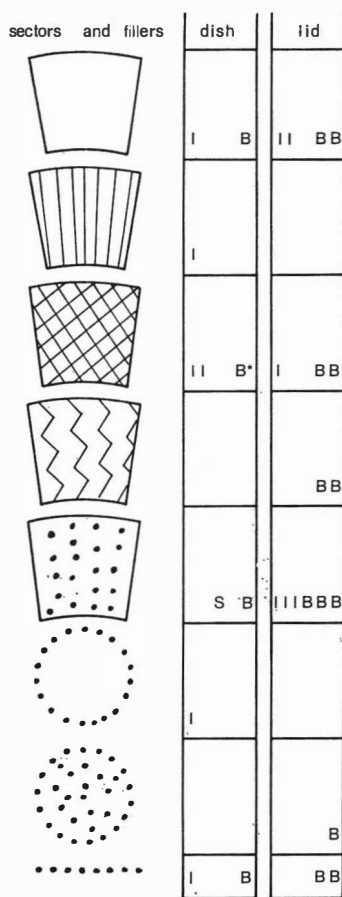


Fig. 2 - Decoration in sites of the area of Lake Varese. I = Isolino di Varese; B = Lagozza di Besnate; S = Bosisio; * = « graffito ».

⁶) **Attributes** are the elements of possible description of an artifact (form, decoration etc.).

⁷) Deetz analyses the different levels of behaviour -individual level, interacting level, community level and society level (Deetz 1967).

Site size and population size

1. - Based on Naroll (NAROLL 1962).

TABLE 4

Site	Covered floor space (m ²)	Number of Inhabitants	Type of settlement
ARENE CANDIDE	600	60	cave
POLLERA	430	43	cave
A. DEL SANGUINETTO	160	16	cave
GROTTA ALL'ONDA	400	40	cave
B. DEL LEONE	100	10	cave
ISOLINO DI VARESE	12.000 (1/10 = 1.200)	120	lake-side settlement
LAGOZZA DI BESNATE	2.400 (1/10 = 240)	24	lake-side settlement
MONTE COVOLO	500? (1/10 = 50)	5?	open-air settlement
ROCCA DI MANERBA	600? (1/10 = 60)	6?	hill-top site
PESCALE	2.600 (1/10 = 260)	26	hill-top site
S.M. IN SELVA	400? (1/10 = 40)	4?	open-air settlement

2. - Based on Cook and Heizer (COOK and HEIZER 1968).

Site	Inhabitable area (m ²)	Number of inhabitants	Type of settlement
ARENE CANDIDE	600	64	cave
POLLERA	430	47	cave
A. DEL SANGUINETTO	160	20	cave
GROTTA ALL'ONDA	400	44	cave
B. DEL LEONE	100	14	cave

3. - Based on Clark (CLARK 1970).

Sites under 2.000 m ²	Inhabitable area (m ²)	Number of Inhabitants
MONTE COVOLO	500?	50?
ROCCA DI MANERBA	600?	60?
S.M. IN SELVA	400?	40?
Sites over 2.000 m ²	Inhabitable area (m ²)	Number of Inhabitants
ISOLINO DI VARESE	12.000	300?
LAGOZZA DI BESNATE	2.400	60
PESCALE	2.600	65

4. - Lake-side settlements. Based on Naroll (NAROLL 1952) (i.e. 10 m²/inhabitant).

Site	Inhabitable area (m ²)	Possible roofed area (m ²) *)		Number of Inhabitants	
		max. (27%)	min. (18%)	max.	min.
ISOLINO DI VARESE	12.000	3.240	2.160	324	216
LAGOZZA DI BESNATE	2.400	648	423	64	43

*) The possible roofed area is obtained from a comparison with some Swiss sites, from which a relationship of total area/inhabitation area can be deduced (e.s. Brise-Lames, Auvernier; Theyngen-Weier, Schaffhouse).

space. In a few Chassey sites an attempt has been made to check the hypothesis of matrilineal residence after marriage -in the Verdon Valley a study of chipped stone and pottery industries reveals that there is no specialized distribution of shape-plus-retouch attribute clusters but there exists a certain degree of within-site homogeneity in pottery attribute clusters (PHILLIPS 1972b).

Change of residence after marriage can be theoretically proposed for two neighbouring sites -Isolino di Varese and Lagozza de Besnate. In both settlements lids and dishes show almost identical patterns, motifs and technique of decoration. However, it is possible that these lids and dishes could have been simply conveyed from one place to another because of the originality in shape or function (fig. 2).

Unfortunately we are dealing with severe data limitations and on the basis of pottery assemblages we could only suggest that Lagozza pottery artifact groups represent the minimal interacting group as defined by Deetz (DEETZ 1967).

4. The site size to suggest population size.

It has been assumed that the size of a dwelling can suggest the size of the population inhabiting the site (PHILLIPS 1972a). However, at present, no method applied in archaeological contexts can be considered as reliable.

On the basis of ethnographical observations, Naroll has assumed that one tenth of the floor area in square meters is occupied by dwellings. He estimated that each individual occupies 10 m² of covered floor space (NAROLL 1962).

Cook and Heizer suggested that a family of six people occupies about 12 m² of floor space and each additional individual involved an increase of 10 m² floor space (COOK and HEIZER 1968).

A third approach has been proposed by Clark (CLARK 1970). He has taken the population as a tenth of the site area in square meters for sites under 2000 m² and as a fortieth of the site area in square meters for sites over 2000 m².

From these approaches, different figures can be proposed to estimate population in Lagozza sites, assuming that site size suggests maximum number of inhabitants. However, these are very inaccurate calculations based on minimal amount of evidence, giving only a general impression of small communities.

Italian Lagozza sites are not very large in size, especially in comparison with some of their cultural equivalents of Southern France and Western Switzerland. However, in the case of Lagozza is difficult to calculate population figures - there is no agreement as to what parameters should be used to calculate the number of inhabitants from the surface area of a site or from other excavated evidence⁸⁾.

Cook and Heizer's method may be used only for caves but not for open-air, lake-side and hill-top sites, where the surface of each house or room is unknown. Naroll's estimation on covered floor space can be considered useful for Lagozza sites when giving figures concerning caves and lake-side settlements; nevertheless, the number of inhabitants for hill-top and open-air settlements seem to be under estimated. On the other hand, Clark's approach gives unrealistically high population densities for Lagozza sites.

The three approaches are not completely empirical in that ethnographical and ethnohistorical evidences have been used to define the methods. Nevertheless, they may be considered only in their relative frameworks -their application to Neolithic sites risk to furnish too rough approximations of population figures.

BIBLIOGRAPHY

- BAGOLINI B., BARFIELD L.H. and BROGLIO A., 1973 - *Notizie preliminari delle ricerche sull'insediamento di Fimon-Molino Casarotto (Vicenza)*. Rivista di Scienze Preistoriche, XXVII-1.
- BARFIELD L.H., 1972 - *Scavo in un insediamento neolitico e della prima età del Bronzo sul Monte Còvolo (Villanova sui Clisi, Brescia)*. Annali del Museo di Gavardo, 10.
- 1973-74 - *Scavi nella stazione di Monte Còvolo*. Seconda nota preliminare. Annali del Museo di Gavardo, 11.
- BARFIELD L.H. and BAGOLINI B., 1976 - *Excavations on the Rocca di Rivoli, Verona, 1963-68*. Memorie del Museo Civico di Storia Naturale di Verona, II serie, n. 1.
- BARFIELD L.H., BIAGI P. and BORRELLO M.A., 1975-76 - *Scavi nella stazione di Monte Còvolo (1972-73) Parte I*. Annali del Museo di Gavardo, 12.
- BARKER G.W.W., 1973-74 - *Prehistoric economy at Monte Còvolo: The preliminary report on animal bones*. Annali del Museo di Gavardo, 11.
- 1975 - *Prehistoric territories and economies in Central Italy*. In Higgs E.S. (ed.) - *Palaeoeconomy*. (Cambridge University Press) Cambridge.
- BENAC A., 1958 - *Neolitisko naselje u Lisičičima kod Konjica*. Od Istorisko-filosofskih Nauka Kujica, 9.

⁸⁾ Open-air sites, hill-top sites and lake-side settlements: settlement size can only be known when a complete excavation has been made. Surface remains and probings could only give and approximate idea of the real extension of the site. Caves and rock-shelters: Only the area which could be used for inhabitation must be considered; generally the habitable area is located near the mouth where the conditions are more favourable for occupation. The size of the habitable area affects the number of inhabitants.

- BENDER B. and PHILLIPS P., 1972 - The early farmers of France. *Antiquity*, XLVI.
- BERNABO BREA L., 1946, 1956 - Gli scavi nella caverna delle Arene Candide. vol. I (1946), vol. II (1956). Istituto di Studî Liguri, Bordighera.
- BERTOLONE M., 1957 - Ricerche all'Isola Virginia. Rivista di Scienze Preistoriche, notiziario, III.
- BORRELLO M.A., 1973 - Hallazgos de materiales de tradición Lagozza en la Rocca di Manerba, prov. de Brescia. Benacus, I.
- BORRELLO M.A. and BROGLIO G.P., 1978 - Nuovo saggio sulla Rocca di Manerba (BS), (1976). Benacus, Museo Civico di Salò.
- CALZONI U., 1939 - Un fondo di capanna scoperto presso Norcia. *Bullettino di Paleontologia Italiana*, III.
- CASTELFRANCO P., 1880 - Notizie intorno alla stazione lacustre della Lagozza nel comune di Besnate. *Atti della Società di Scienze Naturali*, Milano, V.
- CHANG K.C. (ed.) 1968 - *Settlement archaeology*. Palo Alto, California.
- CLARK J.G.D., 1970 - Mobility and settlement patterns in sub-Saharan Africa: a comparison of late prehistoric hunter-gatherers and early agriculture occupation units. In Ucko P., Tringham R. and Dimbleby G.W. (eds.) - *Man, settlement and urbanism*. (Duckworth), London.
- COOK S.F. and HELZER R.F., 1968 - Relationships among houses, settlement areas and population in aboriginal California. In Chang K.C. (ed.) - *Settlement Archaeology*. Palo Alto, California.
- COURTIN J., 1974 - Le Néolithique de la Provence. *Mémoires de la Société Préhistorique Française*, 11.
- CREMONESI G., 1965 - Il villaggio di Ripoll alla luce dei più recenti scavi. *Rivista di Scienze Preistoriche*, XVIII.
- D'AMATO AVANZI M.G., 1953 - Il grano della popolazione con civiltà tipo Lagozza nella Grotta di Agnano (Pisa). *Agricoltura Italiana*, LIII.
- DEETZ J., 1967 - *Invitation to Archaeology*. Garden City, New York.
- EMILIANI C., CARDINI L., MEYEDA T., MACBURNAY C.B.M. and TONGIORGI E., 1964 - Palaeotemperatures analysis of fossil shells of marine molluscs (food refuse) from Arene Candide Cave, Italy and Hana Fteah Cave, Cyrenaica. In Craig (ed.) - *Isotopic and cosmic chemistry*. (North Holland Publ. Co.).
- EVETT D. and RENFREW J., 1971 - L'agricoltura neolitica italiana: una nota sui cereali. *Rivista di Scienze Preistoriche*, XXVI-2.
- FLANNERY K.U., 1972 - The origin of the village as a settlement type in Mesoamerica and Near East. In Ucko P., Tringham R. and Dimbleby G.W. (eds.) - *Man, settlement and urbanism*. (Duckworth), London.
- FUSCO V., 1963, 1964 - Umanità preistorica in una grotta del Finalese: L'Arma del Sanguinetto (I-II). *Rendiconti dell'Istituto Lombardo di Scienze e Lettere*, (I) 97, (II) 98.
- GRAZIOSI P., 1944 - La Grotta ai'Onda secondo gli scavi dell'Istituto Italiano di Paleontologia Umana. *Archivio per l'Antropologia e l'Etnologia*, 74.
- GUERRESCHI G., 1967 - La Lagozza di Besnate e il Neolitico Superiore Padano. *Rivista dell'Antica Diocesi di Como, Società Archeologica Comense*, 149.
- GUYAN W.V. (ed.) 1955 - *Das Pfahlbauproblem*. Monographien zur Ur- und Frühgeschichte der Schweiz. Schweizerische Gesellschaft für Urgeschichte, 11.
- HIGGS E.S. (ed.) 1975 - *Palaeoeconomy*. (Cambridge University Press), Cambridge.
- HIGGS E.S. and VITA-FINZI C., 1972 - Prehistoric economies: a territorial approach. In Higgs E.S. (ed.) - *Papers in Economic Prehistory*. (Cambridge University Press), Cambridge.
- JARMAN M.R., 1971 - Culture and economy in the North Italian Neolithic. *World Archaeology*, 2-4.
- 1976 - Rivoli: the fauna. Appendix, in Barfield L.H. and Bagolini B. - The excavations on the Rocca di Rivoli, Verona, 1963-68. *Memorie del Museo Civico di Storia Naturale di Verona*, II serie, n. 1.
- KELLER F., 1866 - *The lake dwellings of Switzerland and other parts of Europe*. London.
- KOROSEC J., 1964 - *Danilo in Danilska Kultura*. Ljubljana.
- LANNING E., 1967 - *Peru before the Incas*. (Prentice Hall), Engelwood Cliff.
- LEGG E.A.J., 1972 - Cave climates. In Higgs E.S. (ed.) - *Papers in Economic Prehistory*. (Cambridge University Press), Cambridge.
- LOLLINI D., 1962, (1965) - Il Neolitico delle Marche alla luce delle recenti scoperte. *Atti VI Congresso Internazionale Scienze Preistoriche e Protostoriche*, sez. I-IV.
- MAC NEISH R.S., 1969 - The origins of the village. *Symposium. Society of American Archaeology*.
- MALAVOLTI F., 1951-52a - Ricerche di Preistoria Emiliana: Scavi nella stazione Neo-eneolitica del Pescale (Modena). *Bullettino di Paleontologia Italiana*, VIII.
- 1951-52b, 1953-54 - Appunti per una cronologia del Neo-eneolitico emiliano. *Emilia Preromana*, III (1951-52), IV (1953-54).
- MILISAUSKAS S., 1972 - An Analysis of Linear Culture longhouses at Olszanica B1, Poland. *World Archaeology*, 4 (1).
- MILLS W., 1976 - *Exploitation and Settlement Patterns in Western Provence, 7500-200 bc*. Thesis submitted for M.A. degree examination, Dept. of Prehistory and Archaeology, Sheffield University.
- MOCHI A. and SCHIFF GIORGINI R., 1915 - Esplorazione sistematica della Grotta ai'Onda. *Archivio per l'Antropologia e l'Etnologia*, XLV.
- MULLER-BECK H., 1961 - Prehistoric Swiss lake-dwellers. *Scientific American*, 205, 6.
- MURDOCK G., 1939 - *Social structure*. (Collier Mac Millan), London.
- MURRAY J., 1970 - *The first european agriculture*. (University Press, Edinburgh).
- NAROLL R., 1972 - Floor area and settlement population. *American Antiquity*, 27.
- ODETTI G., 1972 - Cento anni di scavo nella Grotta Pollera. Società Savonese di Storia Patria. *Atti e Memorie*, N.S. VI.
- PHILLIPS P., 1971 - Attribute analysis and social structure of Chassey-Cortailod-Lagozza populations. *Man*, 6 (3).
- 1972a - Population, economy and society in the Chassey-Cortailod-Lagozza Cultures. *World Archaeology*, 4 (1).
- 1972b - Les caractères régionaux du Chasséen du Midi. *Bulletin de la Société Préhistorique Française*, 69, *Etudes et Travaux*, fasc. 2.
- 1973 - The evolutionary model of human society and its applications to certain farming populations of Western Europe. In Renfrew C. (ed.) - *The explanation of the culture change: Models in Prehistory*. (Duckworth), London.
- REINERTH H., 1925 - Waren die vorgeschichtlichen Pfahlbauten Wasser- oder Landsiedlungen? *Die Erde*, 3.
- RENFREW C. (ed.) 1973 - The explanation of the culture change. *Models in Prehistory*. (Duckworth), London.
- SAHLINS M.A., 1968 - *Tribesmen*. (Foundations of Modern Anthropology), New Jersey.
- 1972 - *Stone Age Economics*. (Aldine), New York.
- SANDERS W.Y., 1956 - *The Central Mexico Symbiotic Region: A study in Settlement Pattern*. In Willey G. (ed.) - *Prehistoric Settlement Patterns in the New World*. Viking Foundation Series, 23.
- SAUTER M.R., GALLAY A. and CHAIX L., 1971 - Le Néolithique du niveau Inférieur du Petit-Chasseur de Sion, Valais. *Jahrbuch der Schweizerischen Gesellschaft für Ur- und Frühgeschichte*, 56.
- SCHMID E. - Cave sediments and Prehistory. In Brothwell D. and Higgs E.S. (eds.) - *Science in Archaeology*. (Thames and Hudson), London.
- SERVICE E., 1962 - *Primitive Social Organization*. (Random House), New York.
- SIMONI P. and BIAGI P., 1969 - Fondo di capanna neolitica con vasi a bocca quadrata (Gavardo, zona Roccolino Schiave). *Annali del Museo di Gavardo*, 7.

- SORDELLI F., 1980 - **Sulle piante della torbiera della stazione preistorica della Lagozza.** Atti della Società Italiana di Scienze Naturali, Milano, XXIII.
- SOUDESKY B., 1969 - **Etude de la maison néolithique.** Slovenska Archeologia, XVII.
- SOUDESKY B. and PAVLU I., 1972 - **The Linear Pottery Culture Settlement patterns of Central Europe.** In Ucko P., Tringham R. and Dimbleby G.W. (eds.) - **Man, Settlement and Urbanism.** (Duckworth). London.
- STRAHM C., 1975 - **Nouvelles réflexions sur un vieux problème.** Eburodum, Institut d'Archéologie Yverdonnoise, I.
- TINÈ S., 1972a - **Gli scavi nelle Caverne delle Arene Candide e Pollera.** Società Savonese di Storia Patria. Atti e Memorie, n.s. VI.
- 1972b - **La campagna di scavi 1972 nella caverna Pollera (Finale).** Rivista ingauna e Intemelia, XXVII, 1-4.
- TRINGHAM R., 1972 - **Territorial demarcation of prehistoric settlements.** In Ucko P., Tringham R. and Dimbleby G.W. (eds.) - **Man, Settlement and Urbanism.** (Duckworth), London.
- TSCHUMI O., RYTZ W. and FAURE J., 1928 - **Sind die Pfahlbauten Trocken oder Wassersiedlungen gewesen?** Ur- und Naturgeschichtliche Untersuchung, Bericht der Römisch-Germanischen Kommission, 18.
- VIOLLIER D., VOUGA P., TSCHUMI O and RYTZ W. 1930 - **Die Moor- und Seesiedlungen in der Ost- und Zentralschweiz.** Die Moor- und Seesiedlungen in der Westschweiz. Bericht Mitteilungen der Antiquarischen Gesellschaft im Zürich. Pfahlbauten, 11.
- WILLEY G.R. (ed.) 1956 - **Prehistoric settlement pattern in the New World.** Viking Foundation Series, 23.
- 1968 - **Settlement Archaeology: an appraisal.** in Chang K.C. (ed.) - **Settlement Archaeology.** Palo Alto, California.