From Impresso-Cardial to SMP and Chassey in Provence

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This paper presents the current data and hypotheses concerning the components and cultural dynamics in Provence during the 5th and the beginning of the 4th millennium cal BCE. Questions of a major interest, concerning funeral and symbolic practices, economy and settlement pattern, are unfortunately not explored here due to the lack of data.

The broad dispersion of data in space and time explains the considerable variability observed among the archeological sets.

From a French point of view, the question of the Cardial vs. Chassey “transition” has been considered for a long time as the major phenomenon to be understood during that period of time.

Recent advances in radiocarbon dating have deeply modified the chronological and cultural framework. AMS techniques have driven new practices of sampling; they have provided more precise and accurate dates and, over all, a better reliability between dates and dated events. The consequence is a great change in time scale perception and periodization, as the Cardial disappeared before 4850 cal BCE and the earliest Chassey sensu stricto did not occur before 4300 cal BCE.

Nowadays, the situation appears rather clearly as different between Western Provence where the Cardial tradition persists at the beginning of the 5th millennium, and Eastern Provence where a renewal is due to the emergence of the SMP culture at the end of the 6th millennium.

1. Western Provence and the Cardial Tradition, 5050-4700 cal BCE

In Western Provence the Cardial traditions seem to be still strong after 5200 cal BCE, as previously suggested by Courtin1 (Fig.1). Actually, except for Les Baux-de-Provence – Escanin that provided few typical Gazel 3 shards2, one can observe a very weak contribution of the Epicardial patterns to the late Impresso-ware pottery assemblages. Both the Late Cardial and Early Epicardial are considered merely as contemporary sets, between which obvious interactions are highlighted: reciprocal transfers of techniques (e.g. crushed calcite temper) or decoration patterns if not exchanges of pots3. Their coexistence is attested between 5300 and 4850 cal BCE and, if not due to any artifact of the calibration curve, the Late Cardial using cardium impressed pots continues there even till 4850 cal BCE (e.g. Courthézon-Baratin, ST2 and ST5) at the same time as the Epicardial potters used channeled, plastic or incised decorations (e.g. Remoulins – grotte du Taï, or Nîmes – Mas de Vignoles X4). In addition late LBK pottery types have been recognized in western Provence (i.e. Cheval-Blanc – Grande Grotte5) that could be associated with Epicardial shards with channeled decorations. This underlines the role played by the Rhône corridor for connecting Impresso-cardial and LBK traditions, and reinforces the previous diagnosis of transfers within the material culture patterns6.

Only three sites are helpful for dealing with immediate post-cardial events in Western Provence between 5000-4900 and 4700 cal BCE, while Eastern Languedoc sites are still occupied by Epicardial groups (e.g. Mas de Vignoles X°): Châteauneuf-les-Martigues – abri de la Font-des-Pigeons (Bouches-du-Rhône): levels 7-11, from 5050 to 4850 cal BCE6; Venasque – Céron open-air settlement (Vaucluse): from 4950 to 4700 cal BCE7; Lamotte-du-Rhône – Petites-Bâties open-air settlement: northern sector, from 4800 to 4700 cal BCE8.

Post-cardial pottery shapes are quite similar to the Cardial ones but cardium and, more generally, impressions on the pot bodies are no longer in use, unlike lip impressions and cordon applications. The latter provide various types of dispositions e.g. at Céron. Ribbon handles are very frequent. Crushed calcite or limestone gravel tempers are broadly used.

Among these three sites, only Céron, quite close to the Bedoulian honey flint outcrops and workshops, provides substantial lithic series. The latter fit with Cardial traditions including blades knapped with the punch technique, notched and denticulated flakes, splintered pieces and a few trapezoidal microblades used as transverse arrowheads. However the blade production is diverse compared to the Cardial, with a small set of bladelets for which the pressure use has still to be confirmed9.

Other series from the Bouches-du-Rhône district (i.e. Jouques – grotte de l’Adaouste10; Simiane-Collongues – Col Sainte-Anne, burial11) could be linked to these aspects.

Late Cardial or Post-Cardial pottery facies, with cordon applications, had been already characterized by

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Beeching in the middle Rhône valley and northwards in Auvergne or in the Saône valley. The hypothesis that the cultural development at that time could have combined Mediterranean and post-LBK components at the origin of some aspects of the Cerny culture (i.e. Augy type) is still a very open issue that needs further investigation and, overall, new field data.

2. EASTERN PROVENCE AND THE SMP FORMATION, 5200-4850 cal BCE

In Eastern Provence, the end of the Cardial cycle and the “Middle Neolithic transition” are documented thanks to Castellar – abri Pendimoun, Salernes – baume Fontbregoua contexts and, in addition, thanks to the reassessment of several old archaeological series (Fig. 1).

At the Pendimoun rock-shelter, the Late Cardial deposits situated above the Impressa and Early Cardial features (respectively ca. 5800-5500 and ca. 5500-5300 cal BCE) have still not been dated. Many structures, such as pits and fire places, are then linked to short occupations dedicated to pastoral and hunting activities as well as pottery production. A poor lithic set is made of local resources (Grimaldi-Mortolà superiore conglomerates) and few items imported from the Vaucluse workshops. Pottery provides diverse instrumental impressions in addition to cardium rocker or dragged impressions. In the aim of this paper, it is of some interest to notice the presence of cups with lobed rims interpreted as SMP shape prototypes.

The subsequent deposits are considered today as referring to the initial stage of the SMP complex. Unlike the previous cardial stage, the structures seem to be more stable with deep pits and large post pits associated with different types of hearths. The latest Cardial deposits are cut, in the southern sector of the shelter, by a small hearth (US 21696) dated around 5050-4850 cal BCE and in the northern sector by two hearths (US 14549 and 16657) dated around 5210 -5050 cal BCE. Those dates are closely similar to the Finale – Pollera cave, in initial SMP levels (OxCal combined dates for levels XV to XVIII is between 5050 and 4850 cal BCE) as well as to the Finale – Arene Candide Initial SMP (OxCal combined dates for the Tinè’s layer 13 is around 5200-5000 cal BCE). The related pottery assemblages are rather
small and the open question of their partition in successive sets has to be investigated at Pendimoun thanks to the analysis of 3D data. Decorated pottery is very scarce and includes rocker impressions probably realized with a *Mytilus* shell (classical flames or original “diabolo” designs), scratched designs (hatched triangles and ladders), the latter especially on a single small pedestal, and impressed stab-and-drag or *impronte trascinate* shards. The other characteristics are lobed rims, impressed lips, large ribbon handles and few carinated highly burnished pots; in addition the use of crushed calcite temper is specific of this horizon compared to the whole Neolithic sequence. The very scarce lithic assemblage includes few products of honey-flint from the Vaucluse, green radiolarite and light-grey white-dotted flint that refer to the Eastern Liguria, the Northern Tuscany, the Piedmont or the Lombardia resources. Some fragments of jadeites and omphacites are attributed by Pétrequin and Errera to the Viso quarries and workshops, which is consistent with the starting of craft activities at that place dating to 5200-5000 cal BCE, with the starting of craft activities at that place dating to 5200-5000 cal BCE.

The Fombregoua cave is a great key site too for understanding the 5th millennium transition in Provence. In the central sector of the cave, above the classical Cardial deposits (layers 47-45, dated between 5400 and 5150 cal BCE, considering ST:H2 and layer 46f), a set of strata (layers 44-41) is attributed to the Late Cardial. Bowls decorated with *Mytilus* rocker impressions, scratched designs as well as rims with coupled lobs are the characteristic shapes and decorations, generally tempered with crushed calcite within this horizon; cardium impressions are still in use. A *terminus ad quem* for this phase is given by the dates of butchered individuals deposed in a pit (H3) dug at the top of the layer 41: ca. 5050-4950 cal BCE. This result indicates that Fombregoua Late Cardial phase is, in a whole, contemporaneous to Initial SMP at the Arenes Candide as well as Pendimoun-northern sector, and gives consistency to the presence of scratched wares associated with late impressed wares, as observed for instance within the initial SMP layers of the Pollera cave. In Fombregoua Late Cardial levels, the lithic industry is rather similar to the classical Cardial one but includes larger transverse arrowheads and small “tranchets” that will persist during the following phases.

New dates obtained for Saint-Benoît – grotte Lombard could highlight the chronology of the deposits: a date made from Cervus confirms a Cardial hunting occupation between 5310 and 5150 cal BCE, while a date made from an Ovis bone indicates a 5210-5040 cal BCE range. Considering the dichotomy of the pottery production with, on one hand, Cardium impressed imported pots and, on the other hand, calcite tempered pots with *Mytilus* rocker and incised designs, it is still today difficult to assume that the occupation could have corresponded to a single event. If not, the latest episode could be contemporary to the Late Cardial phase at Fombregoua and the Initial SMP horizon as well.

The 3D database has to be checked again in the perspective of identifying a solution of continuity within the deposit.

3. SMP and Pre-Chassey in Provence

The Pre-Chassey horizon has been defined in the late seventies by Courtin at the Fombregoua cave thanks to the study of layers 40 to 31 at that site. The pottery assemblage has been described by Luzi and Courtin (fig. 2). Most of the shapes are simple and continuous: large cups and bowls with an S profile, hemispheric or ellipsoid bowls, tulip or ellipsoid pots and necked jars. Handles are commonly perforated buttons, oves or bobbins on small or medium pots, while ribbon handles are often associated with jars with a plastic decoration. Few examples of segmented pots and multi-perforated cordons are the main arguments advanced for a linkage to the Chassey complex. The decoration is rare and the more typical are small distinct or sequential curved impressions organized as geometric designs or metopes.

Within the lithic industries, two successive sets were identified. The earliest stage (layers 36-40) still shows similarities with the Late Cardial industries due to some prismatic blades and large geometric arrowheads or small “tranchets”. The following layers (35-31) are quite distinctive with a homogeneous set provided on cores imported as flakes from the western Bedoulian sources: blanks are all produced using direct percussion; tools are twisted backed blades, end-scrapers and mostly irregular bifacial arrowheads. The latter are shaped by percussion and hafted in such a rough way, without much more regularization.

The origin of these bifacial productions is still unknown, but we have to consider that arrowheads of this type were associated in layer 41 with the human butchered remains from pit H3. In consequence, the dates obtained for this pit H3 could also be considered as *a terminus a quo* for the Pre-Chassey phase at Fombregoua.

In addition, the end of the Pre-Chassey sequence at Fombregoua is roughly dated, due to the large standard deviations of the radiocarbon measures; however, combined dates could situate the levels 33 to 31 at ca. 4550-4350 cal BCE, contemporary to the second stage of SMP. In a whole, the Pre-Chassey evolution at Fombregoua could be parallel to the Initial (*pro parte*) and to the Finale-Quinzano and Rivoli-Chiozza stages of the SMP culture.

Several sites from central and eastern Provence are intended to be situated within this chronological range. The Saint-Benoît cave, situated quite far from the littoral, had been excavated at the beginning of the 20th
Century by Rivière and in the sixties by Barral. The materials have been revisited within the ETICALP project, while the site conservation was checked by Lepère.

At Barral excavations “point 8”, in addition to some Chassey shards, the pottery provides diverse components. Some of them are probably related to the Cardial-SMP transition and others to the classical SMP or Pre-Chassey. A bottle neck already compared to Fiorano could be associated with the earliest occupation. Two figulina shards found there also need further investigation.

In the Var district, scarce documentation is known: isolated shards refer either to SMP analogs (Roquebrune-sur-Argens – abri de la Roquette; Evenos – grotte de la Stalagmite) or to Fontbregoua specimens (Evenos – grotte Cimay); at Cavalaire – Centre-Ville, a built hearth with a single shard is dated around 4900-4750 cal BCE.

In the Alpes-Maritimes, the earliest structure at Nice – Giribaldi (northern sector, hearth ST.1, phase VG-A) provided a small ceramic set that refers to Fontbregoua Pre-Chassey; it is dated around 4700-4450 cal BCE. At Peillon – abri du Rastel, a burial previously considered Mesolithic has recently appeared to be a cist burial, comparable to the Arene Candide ones; the date of human bones (ca. 4700-4550 cal BCE) and the few lithics and shards of the context are consistent with a SMP1 age.

SMP culture influences to the West seem to be stronger than previously suggested and its relation to Fontbregoua Latest Cardial and Pre-Chassey horizons is a tremendous question yet to be solved.

4. Nice – Villa Giribaldi and the Southern Chassey Formation

Rescue excavations at the open air settlement of Nice – Villa Giribaldi (fig. 2) provided a set of pits and waste spreading to the southern sector of the operation, dated to the second half of the 5th millennium. Two phases, B and C, have been considered; both correspond to couples of pit fillings and each could be divided into sub-phases.

The Giribaldi phase B corresponds to pits 6A (ca. 4340-4160 cal BCE) and 6B (ca. 4550-4360 cal BCE).
Pit 6B that provided a large set of material had been cut by the digging of 6A that could then contain inherited elements from 6B. In fact, pit 6B is the more secure context to be taken in account here. Some pottery from this structure have typical SMP2 decoration: a piece of small bowl decorated a filo spinato shows exact parallels with La Vela specimens; stab and drag or trascinate decoration is also attested; meanders and excised triangles lines are disposed on plates that we consider to be Chassey prototypes. On the other hand some cups, bowls or pots are quite similar to Pre-Chassey shapes and some segmented shapes are also present; however no typical square mouths have been found there. The associated Beodoulian flint industry is identical to Fontbregoua 35-31 Pre-Chassey series, but in addition 6B filling provided a set of obsidian flakes and pressure bladelets originating from Lipari19.

Giribaldi-phase B is interpreted as a Proto-Chassey horizon illustrating that the formation of the Southern Chassey complex could be due to a syncretism between Pre-Chassey and SMP2.

The Giribaldi phase C corresponds to deep pits 3 (ca.4330-4040 cal BCE) and 7 (ca.4230-3990 cal BCE). Considering the pottery assemblage, this phase shows the development of the typical Chassey package: pots with multi-perforated cordon or “flutes de Pan”, spoons with a flat handle, plates with a complex scratched decoration and “vases supports” decorated or rough. Lithics include Pre-Chassey bifacial elements and obsidian pressure bladelets similar to the previous phase. However rock-cristal pressure bladelets and cores appear as well as craft punch or pressure productions from the Haute-Provence workshops imported as central blades. In addition, the role of pressure for shaping piercing arrowheads increases.

Considering the radiocarbon dates and the continuity with Giribaldi phase B, phase C is interpreted as one of the first expressions of Early Southern Chassey (Chassey period A).

Few precise data are available to be compared. Westwards, Berriac – Les Plots40 provided similar decorated plates with one date close to Giribaldi pit 7 at ca. 4200-
3960 cal BCE. Northwards, level 9 from the early phase of Chassey-le-Camp – La Redoute shows many parallels with Giribaldi-phase C and a radiocarbon date similar to that of pit 3 (ca.4330-4050 cal BCE). Eastwards, some Chassey elements found in Fossacesia could refer to Early Chassey or to the very beginning of Late Chassey; combined radiocarbon dates for the middle phase of Ripoli are similar to the whole Giribaldi-phase C. In Liguria, the pottery set from Alpicella cave could illustrate the coexistence of Early Chassey and recent or “Lombardian” SMP vessels, a question to be reinvestigated.

In Provence, few sites could refer with a variable confidence to the Early Chassey stage: L’Isle-sur-la-Sorgues – Les Bagnoles with amazing painted wares compared to Lengyel culture specimens; some aspects of Baudinard – grotte de l’Eglise supérieure, with recto-verso scratched plates, many piercing arrowheads including Pre-Chassey types as well as Lipari obsidian; Baudinard – grotte C, inferior levels; Montpezat – grotte Murée, layer 10; Fontbrégoua, levels 25-29; Pendimoun northern sector, us.9981 dated ca.4230-3990 cal BCE; Grasse – Chiris settlement where four radiocarbon dates between 4250 and 3960 cal BCE could be a concern for Early Chassey deposits illustrated by a few decorated plates.

5. THE “CLASSICAL” AND LATE CHASSEY IN PROVENCE IN THE 4TH MILLENNIUM CAL BCE

Most of the data concerning the Southern Chassey complex in Provence refer to the “classical” and late aspects, to be dated between 4100 cal BCE at the earliest and 3600 cal BCE at the latest, and even 3350 cal BCE if one decides to include the aspects of Late Neolithic in which Chassey traditions are still present (Fig. 3).

For many years the periodization of their pottery assemblages was considered a chimera and the research was focused on evolutionary trends of tool kits and blade productions. The situation has rather changed today after the reassessment of the pottery question. Considering lithic assemblages, major changes in techniques and resource management have occurred just before 4000 cal BCE. One of them is the huge development of bladelet productions in bedoulian honey flint, due to the introduction of heat treatment of cores at that time. The heat treatment is a specialized and risky practice led by craftsmen at the Vaucluse workshops and which appears, in the state of our knowledge, quite suddenly. For instance, it is highly demonstrative that none of the bladelets had been knapped from heated precores at the end of the Nice-Giribaldi occupation (4200-3960 cal BCE) while the all of the bladelets had been so knapped at the nearby site of Nice-Caucade (4040-3970 cal BCE). Similar data from the Villeneuve-Tolosane well (around 4220-3960 cal BCE, with the higher density of probability between 4050 and 3960) confirm this chronological range.

After 4000 cal BCE, changes progressively appeared within the blade knapping methods, a trend which is currently discussed and detailed thanks to the studies conducted at the workshop places. Bedoulian craft production networks reached Tuscany (e.g. Grotta all’Onda) highlighting the connections between Chassey and some aspects of Diana and Ozieri cultures. The latter are also underlined by the fact that, during this late stage, Lipari obsidian importations disappeared for the benefit of Sardinia sources diffused in Provence from central places such as Trets – Terres Longues.

Considering the Classical / Late Chassey pottery assemblages of Provence, novelties are due to the study of a large corpus including 12600 diagnostic elements and more than 2500 complete profiles. These data have been described using a multi-parameter grid, including technological and morphological aspects. Among the 63 studied sites, 13 key sites including 30 stratigraphical units constitute the reference base from which a multivariate analysis has been run while the data from the 50 other sites have been included as supplementary variables. The consistency of most important cave deposits and assemblages has been taken into account considering the question of pit digging and waste spreading.

Following the Early Chassey period (period A cf. Giribaldi C), four major periods have been highlighted among the Classical and Late Chassey assemblages.

Period B is illustrated by Nice-Caucaze between 4050 and 3950 cal BCE.

Period C regroups Fontbregoua 19-24, Trets – Terres-Longues, Claparouse and probably Verneuges – Héritière II, between 3950 and 3800 cal BCE.

Period D is dated between 3800 and 3650 cal BCE; the precision of the radiocarbon dates is still one of the critical problems to be solved as D has to be divided into 2 sub-groups: D1, cf. Rocalibert and Baudinard – grotte C, pit 2 and D2, cf. Pertus 2 and Fontbregoua 8-16.

Period E corresponds to the previously defined “Néolithique récent” albeit it keeps deep links with the Chassey tradition; it could be dated between 3650 and 3350 cal BCE.

The trend of pottery assemblage structures shows gradual changes at different levels: pottery shapes, handles and appendixes types, building and surface finishing techniques. Pottery from period B are still rather similar to some of the Early Chassey series. For the following periods C and D1, the trend observed in Provence is extremely close to that observed in the Languedoc, i.e. Auriac and Cavanac periods respective-
ly. Unlikely, D2 period reveals impressive reciprocal influences with the Middle Rhône valley and, northwards, with the “Néolithique Moyen bourguignon” assemblages. Influences from the “Lagozza and Cortaillo” are less obvious.

This trend is consistent with that proposed for the lithic production techniques and specially the blade pressure methods: conical core shapes with faceted platforms during periods B (e.g. Caucade) and maybe still C (e.g. Fontbrégoua 19-24), appearing in mixed style during period C (e.g. Terres-Longues), development of flat cores with oblique platform during period D1 (e.g. Rocalibert); development, during period D2 (e.g. Pertus 2) of lever pressure for knapping large blades, which is quite rare during the previous stages.

In addition, due to the large number of available sites for the central period, the question of the variability of settlement statutes and functions at that time becomes clearer. For instance, the pottery technical data (raw material sourcing, variability of chaînes opératoires) as well as the functional ones (distribution of volumetric classes) are of great help for differentiating durable settlements and central places from secondary places used for crafts or as steps along herding routes.

6. Conclusion.

The recent studies have been quite helpful for discussing the Neolithic chronology and periodization which is of course not to be considered as a goal in itself but as a prerequisite for solving social and historical questions. If the trends of cultural evolution seem to be now better articulated in Provence, Languedoc, Middle Rhone valley and Liguria, they reveal major differences in the rhythms and modalities of cultural change, visible within the Provence region itself. In consequence the use of concepts such as Early, Middle, Late Neolithic or Enolithic is not so much relevant.

A terminology using “cultural” concepts would probably be better despite the fact that the archaeological “cultures” generally appear as conglomerates, aggregating diverse components distributed at different scales and within different perspectives, and despite the fact that their periodical deconstruction is still necessary. It still requires the development of micro-regional holistic approaches as well as broad interregional thematic investigations. In this framework, techno-economical approaches of the material cultures are keys that enable renewed anthropological and environmental studies.

Notes
1 Courtois 1976.
2 Montardini 1966; 1970.
3 Manen et al. 2010.
4 Manen et al. 2010, fig. 2.
5 Jeunesse, Van Willigen 2006.
6 Constantin, Vachard 2004; Lichardus-Itten 1986.
7 Manen et al. 2010.
11 Binder, Sénépart 2010.
13 Binder, Sénépart 2010.
16 Thevenot 2005, pp. 229-246.
17 Binder, Sénépart 2010.
18 Binder, Sénépart 2010.
19 Binder, Sénépart 2010.
21 PETREQUIN et al. 2006.
22 Binder, Courtin 1986; Courtin 1976.
23 Binder, Courtin et al. 2010.
24 Tine 1999.
31 “Évolutions, transferts et inter-culturalités dans l’arc liguro-provençal: matières premières, productions, usages, du Paléolithique supérieur à l’âge du Bronze ancien”, is a Collective re-search project (PCR) supported by the French Ministry of Culture and Communication and the Service of Cultural Heritage at the General Council of the Alpes-Maritimes district (2008-2011).
33 Binder, Sénépart 2010.
34 Binder 2004.
35 Le Bras-Goude et al. 2006.
38 Binder, Courtin 1994.
39 Vaquer 1990.
40 Thevenot 2005.
41 Pessina, Radi 2002.
43 Sargiani et al. 2010.
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47 Le Pére 2009.
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