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E. Blasco Ferrer

**SUBSTRATA RESIDUE, LINGUISTIC
RECONSTRUCTION, AND LINKING:
METHODOLOGICAL PREMISES,
AND THE CASE HISTORY OF PALAEO-SARDINIAN**

This paper demonstrates that, within substratal research, prior to undertaking any comparative endeavour, it is necessary to conduct a thorough distributional analysis of the morphological regularities displayed by the language under consideration, so as to determine the phonological rules governing diachronic changes, which leads to establishing the typology of the substratal language. The application of this rigorous methodology to Palaeo-Sardinian toponymic material makes it possible to recognize the primitive agglutinative typology, and thereby to precise its relation to Palaeo-Basque. After having highlighted some flaws and weaknesses of prior reconstructions, the author first describes the benefits stemming from a systematic segmentation of nearly 1000 microtoponyms of Central Sardinia, which display clear morphological regularities, and restores the underlying phonological system, as well as some of the most distinctive evolutionary laws (e.g., it is argued that the structure of most reconstructed roots can be boiled down to a single syllable template CVC, as /d-u-r/, /d-o-n/; this helps to establish some phonetic laws, as /d/ > /l/ in *dur* > *lur*, *don* > *loh*, etc.). Finally, a detailed confrontation of Palaeo-Sardinian with reconstructed morphological and phonological systems of Palaeo-Basque evince a vast array of striking correspondances which are due, most probably, to the prehistoric split of Pre-Proto-Basque into Proto-Basque and Palaeo-Sardinian branches in the late Mesolithic / early Neolithic age. The paper provides a new Stammbaum model to account for this split.

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1. Aims

The linguistic study of pre-Roman substrata has had an immense appeal since the last decade of the 19th century, beginning with the seminal investigation by August Fick on ancient pre-Greek place-names [Fick, 1905]. From the west coast of the Iberian Peninsula and Aquitania in Southern France, across the central Mediterranean basin eastward to the Anatolian “melting-pot”, substratal relics are preserved in scattered and fragmentary written (epigraphic) testimonies (Aquitanian, Iberian, Etruscan, Minoic — so-called *Trümmersprachen*), or toponymic evidence (Ligurian, Palaeo-Sardinian). A third category of stratigraphical residue may be detected in the territories in which a non-Indo-European language has persisted, despite Romanization, and which may, at a later stage, have interfered with Romance languages. Such is the case of Basque, whose *agglutinative typology* confirms its status as a pre-Roman language of the Iberian Peninsula, closely linked to Aquitanian, in southwestern France (present-day Gasconne < *Vasconia*).

The reconstruction of the pre-Indo-European languages to which substrata residue bear witness (regardless of whether the source of the testimony is found in epigraphy, toponymy or modern dialects) has been the goal of three different groups of scholars: specialists whose research is most directly engaged in non-Indo-European languages; comparatists whose inquiries into the earlier phases of Latin and Greek lead them to postulate a lexical residue that defies such classification; dialectologists who, by tradition, are engaged primarily in etymology.

Until the second half of the 20th century, the practice of the interpretation of substrata relics in the Mediterranean basin was to rely almost exclusively upon *homonymic* (*homophonic*) affinities, so that the several languages to which we have already referred were linked merely on the strength of a formal (i.e. structural) contrastive analysis. As a result, links were forged among the most disparate languages, producing quite untenable results, often accompanied by etymological speculations that led nowhere. Two major schools of thought were complicit in this state of affairs: the Italian school of *Glottologia* (best represented by Alfredo Trombetti, Vittorio Bertoldi, Giovanni Alessio, Carlo Battisti, Giacomo Devoto, *inter alii*), and that represented by the Swiss scholar Johannes Hubschmid, who, for a long period, was considered to be the most professional and prolific explorer of archaic pre-Roman language strata. Several critical reviews of both schools, offering detailed critiques of their *Grenzen und Leistungen*, have already been published [Malkiel, 1962; Szemerényi, 1963; Silvestri, 1977–1982; Blasco Ferrer, 2010a, 25–28]. I do not propose here to repeat those arguments, but rather concentrate on discussing the significance of the new structural

methodology and its application to epigraphic, toponymic, or dialectal evidence drawn from the Mediterranean languages. The key principle of this new methodology is that the comparative approach can yield valid results only if, and only after, an exhaustive internal reconstruction has been concluded. This reconstruction must meet with quite severe requirements, if its purpose is to deduce productive morphological roots on the basis of fragmentary evidence and heterogeneous raw materials. The reconstruction of Palaeo-Sardinian currently poses the most tantalizing challenge to previous attempts of deciphering an unattested pre-Indo-European language. I will therefore discuss in some detail the methodological premises that have made possible more reliable conclusions,¹ and in so doing, I will examine the flaws and limitations of the arguments levelled against my reconstruction by two critical reviewers.²

2. Internal Reconstruction and Substrata Research

Linguistic comparison based solely on homophonic affinity has led to untenable results in the reconstruction of substrata, especially when the meanings of the substrata residues are lacking, or when the substratal elements are detected only in place-names. As one example, referred to by Jürgen Untermann [2004, 178], to link *Millán* (Spain: Lat. Aemilianum) with *Milano* (Italy: Lat. *Mediolanum*) leads nowhere; the same may be said of a considerable amount of data collected and interpreted by researchers of the above-mentioned Italian and Swiss schools, as well as of more recent attempts to connect Etruscan, Iberian, Basque or Palaeo-Sardinian with geographically scattered and typologically remote languages solely by means of a contrastive analysis of homonyms.³ There are, of course, some exceptions to this procedure, namely when within exclusive semantic fields (phytonyms, hydronyms) an appellative noun, or a place-name descending from the latter, turns up in two quite distinct linguistic domains, without the possibility of mutual interference, as we shall see with reference to Palaeo-Sardinian and Basque. Here I will focus on the methodological requirements

¹ See [Blasco Ferrer, 2010a] and the articles cited in the bibliography therein. This work has been favorably reviewed in [Orpustan, 2011; Elexpuru, 2011; Silgo Gauche, 2011; Facchetti, 2011; Pfister, 2011; Ballester, 2011].

² Cf. [Wolf, 2011; Lakarra, 2014, 139–144], both positions being plagued by astonishingly aprioristic attitudes and a disconcerting reluctance to acknowledge the numerous and strikingly close parallels deduced from the morphological reconstruction of Palaeo-Sardinian suggested by me. My objections are set forth in [Blasco Ferrer, 2012a; 2012d; 2013; 2015a; 2015b]. The short, fugitive considerations of Michele Loporcaro [2012; 2014, 167–169] are meaningless and based largely on unconvincing and contradictory arguments and inadvertent misinformation (both objections, that I had reconstructed the Palaeo-Sardinian morphological system via comparison with Basque, and that no phonological system has been restored, are plainly false statements; in addition, the alleged semantic opaqueness of proper names locally attached to peaks, slopes, ravines, streams, in short, of microtoponyms, betrays his total aloofness from the rudimentary readings on toponomastic research).

³ See [Facchetti, 2005; Lakarra, 2010, 620–625; de Hoz, 2010, 485–524; 2011, 162–170; Blasco Ferrer, 2010a, 48–57].

of the morphological analysis of raw material gathered for the purpose of reconstructing a substratal language.⁴

The first requirement is that a sequence of roots, (a) + (b), extracted by *segmentation* from a larger lexical or toponymic unit, may be recognized as valid if and only if we can deduce productive sequences of the type (b) + (c) and (a) + (c). This methodological postulate has been successfully applied to Iberian, Etruscan, and Basque; I will return to it in the subsequent discussion on Palaeo-Sardinian.

By way of illustration, the correct formal interpretation of Iberian, an isolated language of the ancient Hispania (probably not genetically linked to Basque, but presumably having been subject to some areal-typological common drifts), has undergone considerable improvement since Jürgen Untermann and his colleagues began to break down long sequences into single recurrent morphological segments, which allowed them to deduce *productive roots*, as demonstrated below:⁵

biur + *iltir*
 iltir + *bas*
 bas + *tartin*
 tartin + *iskeř*
 iskeř + *atin*
 atin + *bels*
 bels + *sosin*
 sosin + *biur*
 biur-keře
 keře + *iskar*

That is: *biur*, *iltir*, *bas*, *tartin*, *iskeř*, *atin*, *bels*, *sosin*, *keře*, *iskar* are all autonomous productive roots, notwithstanding the fact that all they occur only in compounds.

The interpretation of morphological units in Etruscan (among them, negation and numerals), as carried out by Helmut Rix [see: Rix, Meiser, 1991], Luciano Agostiniani [1993; 2000], and, more recently, by Giulio Facchetti [2002], has also benefited from the rigorous application of structural segmentation.

The most rewarding accomplishment in deciphering the original structural organization of a pre-Roman non-Indo-European language has been attained in the last twenty years with regard to Palaeo-Basque (or Pre-Proto-Basque = PPB, as it has been termed by its discoverers). Since Basque constitutes a surprisingly useful protolanguage in restoring the ancestral framework of Palaeo-Sardinian, I will dwell extensively on the history of its decipherment.

The internal reconstruction of pre-historic Basque reached its peak with the productive research of Luis Michelena (in Basque, Koldo Mitxelena), carried out between 1975

⁴ Fundamental references, among others, are [Haspelmath, 2002; Lieber, Štekauer, 2009].

⁵ See [Untermann, 1990, I]; last two examples added by me.

and 1990 [see: Michelena, 1985; 1988; 1990; 1997; 1987–2005]. Michelena dismissed numerous attempts to link Basque with Caucasian, African and other even more disparate languages, inasmuch as they all were based on the interpretation of homonymic clashes, i.e. the rejected studies were the result of applying contrastive analysis prior to any internal reconstruction. These attempts sometimes even mistakenly compared present-day Basque lexical units with ancient testimonies from other languages. Michelena's reconstruction was based on 1) internal comparison of modern Basque dialects (*euskalkiak*), coupled with comparison to the scanty medieval and modern documentation (most of which dated to no earlier than the 16th century), and 2) a thorough examination of lexical borrowings from Latin. To establish relative chronologies concerning developmental rules, Michelena also had recourse to the fragmentary epigraphic attestations of Aquitanian, actually a very limited set of inscriptions discovered in southern France, dating back to the first centuries of the Roman Empire (ca. 0–300 AD) [Gorrotxategi, 1984]. Following this line of research Michelena ascertained that the process that turned intervocalic /n/ into an aspirate /h/ and led to its eventual disappearance /Ø/, was posterior to Aquitanian (cf. Aquitanian *seni*); that it involved Latin lexical borrowings (Lat. *anatem* > *ahate* 'duck', cf. It. *anitra* 'duck'); and that it was completed before the first written attestations (Old Basque *sehi* > Modern Basque *sei*, *sein*, and *segi* 'young boy'). The agglutinative typology of the protolanguage and its substantial structural arrangement (lexical stock made up of bisyllabic words) remained unexplored. Since 1995 this state of affairs has been completely altered by the structural internal reconstruction carried out by Joseba Lakarra Andrinua. Michelena's disciple persuasively demonstrated in a series of publications,⁶ that the overwhelming majority of bisyllabic units can be reduced to a stock of single productive roots and a few prefixes and suffixes, which together constitute the primary structural organization of Palaeo-Basque. In addition, all PPB roots must exhibit the syllabic template CVC (**bel*, **don*, **dur*, **han*, **hil*, **hotz*, **hur*, etc.). For our present purposes it may suffice to cite a few significant examples to illustrate the reconstructive techniques used by Lakarra. As shown below, they allow us to conclude that **don*, **hur*, **ban*, **bar*, **zen*, and **bel* are autonomous productive roots:

arrain < **e-da-ra-don-i* 'fish';
hidoi < **hur-don-i* 'swamp';
hibai < **hur-ban-i* 'river';
hibar < **hur-bar* 'valley crossed by a river';

in the same way:

ze-zen 'bull';
gi-zen 'thick meat';
gi-bel 'liver';
sa-bel 'stomach'.

⁶ See e.g. [Lakarra, 1995; 2005; 2008; 2009; 2010; 2011; 2012; 2013].

This leads us to conclude, that a naïve contrastive analysis of modern Basque *hibar* ‘valley’ or *toki / lohi* ‘place / muddy place’ and its variants with any alleged cognates in more distant languages, based merely on formal homonymy, does not offer consistent proof. The only forms that allow a plausible comparison are the reconstructed etyma **hur-bar*, and **don-i* (or **don-gi*).

To conclude this outline of new approaches to the reconstruction of substratal languages in the Mediterranean basin, and before turning our attention to the special case of Palaeo-Sardinian, it may be useful to summarize the major methodological premises we can draw from the examples discussed so far:

1. There can be no reliable **l i n k i n g** of substrata residues to a second language, regardless of whether they are more or less closely related, until the internal reconstruction of the first language has been established.

2. The **i n t e r n a l r e c o n s t r u c t i o n** of a substratal language attested only in fragmentary epigraphic or toponymic evidence, or solely in modern dialectal data, requires a rigorous **d i s t r i b u t i o n a l a n a l y s i s** leading to the discovery of **p r o d u c t i v e r o o t s** and **d e v e l o p m e n t a l r u l e s**.

We proceed now to an exposition of the advances that have been made in deciphering Palaeo-Sardinian by means of a rigorous structural analysis.

3. The Reconstruction of Palaeo-Sardinian: Productive Roots and Typology

Traditional research on the pre-Roman substrata of Sardinia was based on simple homophony between words or toponyms and structures of very different languages.⁷ Even the most expert researchers (Max Leopold Wagner [1951/2002], Johannes Hubschmid [1953; 1960; 1978]), lacking for a well-defined structural method, failed in their attempts to suggest a convincing reconstruction. Consequently, the fascinating mystery of the language spoken by those untamed warriors (*Sardi Pelliti*) who, according to Titus Livius, stubbornly resisted the Roman conquest, fleeing to the inaccessible rocky peaks of the Montes Insani, remained unsolved till the last decade of the 20th century. It was only then that a systematic inspection of the microtoponyms (names of hills, high grounds, ridges, chasms, precipices, ravines, streams, torrents, gorges, different kinds of wooded or open tracks of land, i.e. generally, names of geomorphological objects) of Central and Eastern Barbagia (Lat. *Barbaria*), a Sardinian subregion that contains the highest concentration of pre-Roman place-names in the whole of the Romania (between 50 % and 60 % of all recorded place-names), enabled a closer look at the primeval framework of the enigmatic language introduced by the first settlers of the island (Pomponius Mela (II, 7, 123): *in ea insula populorum antiquissimi sunt Ilienses*).

⁷ Probably the most notorious misleading work is [Pittau, 1995].

In a study published in 1993, I suggested that some toponymic units could be divided into two clear components, adducing the telling example of *org + osa* (which readily leads to the well-known town of *Orgósolo*, the famous ‘bandits’ refuge’), a compound term built with the roots *orga* (also an autonomous lexical unit in modern Central Sardinian, meaning ‘spring; wet terrain’) and *osa*, both roots extremely productive in forming derivatives (*org-ai, org-ei, org-oe, org-oi; osa, os-u, os-eli, os-ini, os-oe*) [Blasco Ferrer, 1993]. Taking into consideration the approximately 1000 microtoponyms of Barbagia and surrounding inner subregions (Baronia, Alta Ogliastra), both Heinz Jürgen Wolf [1998] and I [Blasco Ferrer, 2010a], working independently, carried out an intensive stratigraphical inquiry into Palaeo-Sardinian. However, a careful comparison of our methodological premises reveals glaring discrepancies between Wolf’s approach and my own, which allow me to expose certain flaws and shortcomings in my colleague’s approach.

Wolf bases his research on an *a priori* postulate, namely, that the pre-Roman language concealed in the opaque microtoponyms belonged to the Indo-European framework. According to this premise, the only plausible structural constitution of the data must necessarily exhibit the sequence *root + suffix*. This aprioristic postulate, as we shall see, has prevented him from recognizing that the typology of Palaeo-Sardinian is *agglutinative*, and not *fusional*. A second weakness lies in the failure to isolate nuclear roots and to separate them from their numerous allomorphs. As a result, Wolf accumulated an impressive number of “pseudo-roots”, which obscure both the formation rules and the linguistic type of the pre-Roman system. A discussion of both approaches, making use of a few selected examples, will allow us to see more clearly the actual arrangement of Palaeo-Sardinian.

The first step in deducing productive roots, i.e. the morphological units which, when combined with suffixes or with other roots, generate further secondary units, consists in separating recursive suffixes in order to establish the *distributional rules of word formation*. Given the following set of derivatives: *ili-ai, istil-ai, masi-ai, ol-ai, org-ai, orri-ai, tal-ai, turr-ai*, and given also the set *ili-é, org-é, tal-ana*, and *turr-ia*, we may deduce that the following are productive roots: *ili, org, tal, turr*. A closer inspection of Central Sardinian microtoponyms allows us to unearth a number of place-names with these roots:

-ili- ai/ake/ana/é
-org- a/e/ai/ei/oi/eri/ori
-tal- e/é/ei/ake/ana/eri
-turr- i/elia/ai/ele/ike/ui.

This principle makes it possible to illustrate the first weakness in Wolf’s approach. Any morphological analysis based on distributional examination of segmental units must necessarily recover *one and only one* archi-morpheme for each type. Thus, applying the previously stated rule to the form *masi-ai*, our segmentation yields the root *masi*. This unquestionable prerequisite is not applied consistently by Wolf:

having correctly segmented *masi-ai*, in presence of *masilogi*, he divides the toponym as **masil-ogi*, when it should be, more correctly, *masi + logi*, *logi* being a second productive root (*log-eri*, *log + ós-ono*, *log + org-ai*, with *osa*, and *orga*, in all cases with dropping the final *-V* in the derivative or in the compounds).

The same flaw can be readily detected in hundreds of Wolf's segmentations yielding inconclusive plurisyllabic roots, which undermines the whole purpose and process of restoration. A few examples suffice here (discussed below in greater detail): **maram-eli*, in place of the more correct *mara + mele*, and similarly, **sorun-eli*, for *soro + nele*, the latter with the dissimilated root *nele* (< *mele*); **tale-rthe*, for *tala + erthe*; **lokort-ei*, for *loki + ortu-ei*; *bidist-ili*, for *bide + istil-i*. All of these are place-names built on an amalgamation of productive autonomous roots (*mele/nele*, *tala*, *erthe*, *loki*, *ortu*, *bide*, *istil*), suffixed in some cases.

The most surprising and unexpected discovery that emerges from the rigorous application of the distributional analysis, one which sheds light on the structural formation and arrangement of Palaeo-Sardinian, is that the typology of Palaeo-Sardinian corresponds perfectly that of an *agglutinative* language, e.g., Basque or Turkish; conversely, it finds no correspondence in the fusional typology of an Indo-European language, e.g., Latin or Greek. This unescapable conclusion is directly borne out by an extensive set of compounds, each showing two or three amalgamated roots:

masi + logi (*masi-ai*, *log-eri*) = 1 + 1 (± suffixes)
log + ós-ono (*log-eri*, *ós-ono*)
bide + nio + nele (*bide*, *nió-i*, *bidu-nele*) = 1 + 1 + 1 (± suffixes)
orga + osto + orri-o (*org-ai*, *ost-ele*, *orri-ai*).

The following table presents a list of morphemes frequently used in the composition of Palaeo-Sardinian toponyms:

<i>Compounds</i>	<i>Derivatives</i>
<i>otz + is-ai</i>	<i>is-ai</i>
<i>lok + otz-ai</i>	<i>otz-ei</i>
<i>is + or-oi</i>	<i>or-ene</i>
<i>lok + ol-ai</i>	<i>lok-ele</i>
<i>or + os-ei</i>	<i>os-ala</i>
<i>ov + ol-ai</i>	<i>ovi-ai</i>
<i>org + ós-olo</i>	<i>org-ai</i>
<i>ov + ost + ol-ai</i>	<i>ost-ele</i>
<i>org + ór + isti</i>	<i>isti-ai</i> , <i>istil-ai</i>
<i>org + ost + orr-o</i> , <i>orr + ol + otz-o</i>	<i>orri-ai</i>
<i>bid + istil-e</i>	<i>bid-ui</i>

The second step in the formal reconstruction of the morphological structure of Palaeo-Sardinian, which also needs a careful attention, concerns necessary simplifications of a *l l o m o r p h y*, i.e. of variants of roots conditioned by specific distributional constraints.

Allomorphy is a fairly well-known phenomenon in toponymy: cf. Spanish *Fuente* (< Lat. *fontem*), which may appear in compounds as *Fuen(-caliente)* or even *Fem(-benosa)*; in Asturian we recognize Lat. *pětram* in *Piedres(-blanques)*, *Pedre(-hita)*, *Pere(-llonga)*, *Per(-lá* < Lat. *latam*); in French, from Lat. *vallis* we have *(La) Val*, *(Clair)vaux*, *Vau(-brun)*, *Va(-noise)*, etc. When dealing with a substratum, however, it is essential to ascertain that the allomorphic stems come from a pre-Roman language and are not the consequence of the influence of the Latin or neo-Latin substratum. It is quite clear to me that the regular alteration of /o/ — /u/ in many Palaeo-Sardinian toponyms (*oleri/uleri*, *ortei/urtei*) on the one hand, and the distinctive assimilations and dissimilations (*baso/maso/naso*, *mele/nele*, *mele/mule*, *nele/nule/nulo/nilo*) on the other, must be ascribed to the inherited governing rules of the substratal language. Conversely, the rather frequent prothesis of /b/ and /g/ (*osa/bosa*, *iriai/biriai/giriai*, *oleri/uleri/guleri*, *úsana/gúsana*) can hardly be considered autochthonous, if we take into account its proliferation in lexical items clearly belonging to the Latin stock (Lat. *aditum* > *áidu/báidu*; Lat. *vadum* > *badu* > *adu* > *gadu*). The same applies to the paragoges (*istil* > *istil-i/-e*, *dur/lur* > *dur-e*, *lur-e*, *otz* > *otz-o*, just as Lat. *guttur* > *gúttur-u*, Lat. *sex* > *ses-e/-i* etc.). Of course, assimilatory processes may also provoke changes in morphological segments; thus, *dur-*, *duru-* (+ bilabial C), *du-* (+ velar C): *dur-e*, *dur-u-nele* (< *mele*), *du-kori* etc. This deduction allows us to reduce significantly the occurrences of an apparent polymorphy in recorded names: *keré* + *mule* and *keru* + *mele*, both with *kere* and *mele*; *maso* + *n(i)eli*, *naso* + *neli*, and *baso* + *nilo*, all with *baso* and *mele* > *nele*; *us-ake* and *b-us-ake* from **os-ak* (as *ur-ake* < **ur-ak*).

4. Semantic Reconstruction: Productivity and Predictivity

The correct reconstruction of *signifiers*, i.e. the formal arrangement of the pre-Latin language, is the ultimate goal of substratal research. Without the support of a justified *tertium comparationis*, and having access solely to toponyms, the careful inspection of the *denotata* may, in addition, turn out to be a precious source of supplementary information about the meanings attached to the reconstructed forms. Essentially, the *semantic fields*, which are likely to be expressed indirectly by the referents, are all well known thanks to the pioneering research on hydronymy (see the excellent resumptive sketch in [Tischler, 1977, 156]): colours, peculiar flora and fauna, geomorphological characteristics. The case of *mele* will help us better appreciate the intrinsic correlation between *referent* and *meaning*. In the most archaic subregions of the island, the two allomorphic sets discussed previously (*mele* and variants / *nele* and variants) are extremely productive, they all occur in regard to the semantic groups ‘gorge, ravine, cave’, ‘mountains, slopes, peaks’, ‘waters, swamps’, and they all have meanings of ‘dark, opaque, shady, facing north / east, cloudy, deep’: *badu Mele* ‘deep ford’, *gútturu Mele* ‘dark gorge’, *risu Mele* ‘dark, stream with dark waters’; *monte Mela* ‘shady mountain’, *pedra Mela* ‘dark rock’, *baku Mela* ‘deep and murky ravine’;

péntuma Melas ‘deep, dark precipice’; *desu + nele* ‘shady chasm’, *duru + nele* ‘dark terrain’, and so on. Interestingly, the same places display often a wide variety of hybrid place-names, i.e. of toponyms which have the root *mele* and allomorphs attached to a Latin appellative noun, thus fully confirming the role of *mele* as an adjective, a deduction furthermore supported by the collocation of the root, invariably in second position (Nomen + Adjective = determinatum-determiner): *gútturu Mele*, *gútturu Nele* (< Lat. *gúttur* ‘gorge’); *punta[na] Nele* ‘fountain’; *eliga Nele* (*élighe* < Lat. *elícem* ‘holly oak’); *risu Nele* (< Lat. *rīvum* ‘stream’); *thiku Nele* (< Lat. *ficum* ‘fig tree’), the last example is even confirmed in the heterosynonymic calque *figu niedda* ‘dark fig tree’.

Productivity in morphology (e.g. dozens of place-names occurring as compounds with *mele* and allomorphs), supported with the properties of the denotata referred to by the restored roots, may lead — if the reconstruction has been carried out correctly — to predictivity, i.e. to the formal and semantic reconstruction of further analogous structures. The illuminating example of Palaeo-Sardinian *keré + mule* underscores the advance represented by my reconstruction of hitherto etymologically opaque toponyms. According to the premises and examples discussed in the preceding sections, the interpretation of *kerémule* as [*kere + mele*] is plausible, since it is neatly confirmed by derivatives (*ker-á*), compounds (*ker + il-ai*), and allomorphs (*keru + mele*). If, as has been argued, *mele* serves to name referents marked by the primary semantic value ‘dark’, we can reasonably expect that *kere* indicates a specific type of physiographic objects. The point of particular interest — also for the external correlations that it entails — is that *kere* (actually *ke’é*) is well represented in the Iberian corpus, and that some Pyrenean toponyms also share the same productive root: *Quer* [ker], *Quer-ós* (< Basque *hotz* ‘cold’), *Quer-alt* (< Lat. *altus* ‘high’), *Quer-roig* (< Lat. *ruber, rubeus* ‘red’), *Quer-many* (< Lat. *magnus* ‘big’), *Quer-alb* (< Lat. *albus* ‘white’) [NOTMC, 1358]. In this illuminating case numerous examples serve to elucidate the meaning of the term, since it was largely used in medieval North-Catalonian: *quer* = ‘rock’ [Coromines, 1990, 926–935]. It cannot be simply by chance that all Pyrenean *quer*-place-names are concentrated in the very region in which classical sources locate the original settlement of the *Ceretani* (< *Cērē-ētānī* ‘inhabitants of the high mountain rocks’). The reconstruction of Sardinian *Kerémule* is also confirmed *per tabulas* by examining the referent: a huge rocky height, formed of volcanic, dark earth.

5. Comparison and Linking

Having determined the agglutinative typology of Palaeo-Sardinian, we may proceed to an accurate comparison with Basque, the only ancient language of the Mediterranean basin, that a) contains a handful of exclusive appellative nouns relating to plants and specific geomorphological terms that perfectly match the same lexical units attested

in some Central Sardinian dialects, and b) shows strikingly exact correspondences with the reconstructed Palaeo-Sardinian roots.

One striking parallel between Central Sardinian and Basque is offered by the lexical unit denoting the typical Mediterranean plant recognizable by its red berries — the holly (*ilex aquifolium*, It. *agrifoglio*): Sardinian *golosti* and Basque *gorosti* (with regular *-l/- > -r/-*, a later shift, the Sardinian form reflects the earlier stage). Similarly, Sardinian *ospil-e* ‘cold place’ offers a perfect equivalent to Basque *hozpil* < *hotz* ‘cold’ + *bil* (cf. *Mendi-bil*, and many other Basque toponyms formed with this second base; the Basque adjective, when used as a toponymic unit, presupposes a *bahuvrihi* construction with ‘mountain’). A final example is provided by *ilun-e*, cognate of Basque *ilhun* (< **hil-hun*) ‘shady, deprived of sun’, the Sardinian place-name designating the shadow cast by surrounding peaks on the long gorge that leads to the homonymic *cala*, *Cala Ilune*.

These connections are strengthened by numerous sets of reconstructed Palaeo-Sardinian roots that find a satisfactory explanation in present-day Basque or in reconstructed proto-roots: *bar*, *baso/maso*, *mele* (and allomorphs), *berri/birri*, *bide*, *des/les*, *dodol/dol*, *doni/dok/tok/lok/log/loi*, *dur/lur*, *goni*, *kor/gorr*, *iri*, *isti(-ll-n)*, *lats*, *ninin*, *ola*, *orri*, *osto*, *otz*, *soro*, *sune/susune*, *turri*, and *ur*. One further argument that lends full support to this relationship concerns the evident total overlapping that exists between the Sardinian *d e n o t a t a* (peaks, slopes, ravines, caves, waterfalls, streams, dark or shady gorges and fields, and red, clayish or sulphurous waters, etc. named by corresponding toponyms) and the semantic values of their Basque correlates, sometimes with the same models of composition and with the indirect confirmation of semantic reconstruction based on synonymic Latin compounds. Thus, *istil* (and its allomorphs), *lats*, *lo(g)i*, *turri* and *ur* are always hydronyms; *otz* unmistakably refers to cold, shady, deep localities; *baso/maso* regularly denotes tracts of land with vegetation. Most interesting, as I have just suggested, is the fact that some of these elements serve to build similar or even identical compounds to those found in present-day Basque toponymy:⁸

Palaeo-Sardinian	Basque	(Latin calques)
<i>istin(i) + gor(-ia)</i>	<i>istin + gorri(a)</i>	(<i>ludu ruju</i> ‘red clayish swamp’)
<i>turr(u) + nele(-e)</i>	(<i>i</i>) <i>turri + bel(tz-a)</i>	(<i>funtana niedda</i> ‘black spring’)
<i>maso + n(i)el(-i)</i>	<i>baso + bel(tz-a)</i>	(<i>padenti nieddu</i> ‘shady wooded tract’)
<i>dur(u) + nel(-e)</i>	<i>lur-bel(tz-a)</i>	(<i>terra niedda</i> ‘dark terrain’)
<i>dur + kor(-i)</i> and <i>lúr + kur(-i)</i>	<i>lur + gorri(-a)</i>	(<i>terra ruja</i> ‘red terrain’)
<i>lo[i] + gorr(-o)</i>	<i>lohi + gorri</i> ⁸	(<i>padule arrubia</i> ‘reddish swamp’)

⁸Lohigorri 1435: ‘terre fluviale rouge’ [Orpustan, 2000, 182].

Of special relevance are attestations of reconstructed roots that have generated productive toponymic units in Palaeo-Sardinian, sometimes reproducing exactly the same developmental changes and rules that have been postulated for Palaeo-Basque:

— PPB **hur + bar* ‘water within’ > Basque *hibar* ‘valley’ and Northwestern Sardinian *Badde urbana* (a deep valley crossed by the Meni River, between Santu Lussurgiu and Scano Montiferru): *badde* (< Lat. *vallem* ‘valley’!) and *úr + bar-a*;

— PPB **don-i* > Basque *lo(h)i, toki* ‘accumulated mass of earth with infiltrations of water; swamp’ and Eastern Sardinian (Ogliastra) *doni, toni, tón-eri* (all lexematic units) ‘stratificated, schistous or calcareous heights’, and *loki, lo(g)i, toki* ‘swamps’ in toponymic attestations;

— PPB **dur-* > Basque *lur* ‘earth, terrain’, both roots attested in Sardinian toponymic designations: *duru + nele, dur-e, lur-e*;

— PPB **ninin* > Basque *ihin-tz, intz* ‘dew, frost, ice formed on high mountains’ and Sardinian *nini-eri, inin-eri* ‘terrain completely frozen over from autumn to spring on high mountains’;

— PPB **e-dur-hur-i* ‘water that springs from the earth’ > Basque (*i*)*turri* and Sardinian *turri* meaning ‘springs’ in compounds.

These correspondences lead to a better understanding of the stratigraphy of Palaeo-Sardinian, since they illustrate the developmental rules that are specific to the linguistic reconstruction of Basque:

— **/d/ > /l/*, as in **dur > lur, *des > leze* ‘chasm’ (Sardinian *desu + nele* ‘dark chasm’), **don-i > lohi, loi* ‘swamp’;

— **/n/ > /h/ > Ø*, as in **don-i, *ninin > ihin, in-tz, *bini > mihi* ‘tongue’;

— **/b/ > /m/*, as in **bini + gaitz > mikatz* ‘bitter’, **sa-bin > samin* ‘sour’.

The last rule recalls the more widespread change **/b/ > /m/* in Palaeo-Sardinian, best represented by **bel > mel-e* ‘dark’, which semantically coincides with the Basque root *bel-tz* ‘dark’, *bel-e* ‘raven’.⁹

Before drawing conclusions that these ideas have for the external reconstruction of the protohistory of Palaeo-Sardinian, it is worth summarizing the necessary conditions of the internal reconstruction:

a) the lexical correspondences, too numerous to be attributed merely to chance (that is, to a fortuitous homonymic concordance), thoroughly match in their morphological formation;

⁹ And it is worth recalling the exactly same distributional constraint (second position in compounds) in both languages, peculiarity that unquestionably confirms their common function as “determiner”. Cf. Basque *-bel*: *harbel, ubel, gorbel, orbel, gibel, sabel* [Lakarra, 2011, 57]. Palaeo-Sardinian place-names with *-mele* and allomorphs: *maramele, kerumele; durunele, turrunele, bidunele, araunele, makumele* (with the first element corresponding to Semitic *maqōm* ‘settlement’, today *Macomer*, town located on a volcanic, dark terrain).

b) the semantic value of the terms have been checked against the actual referents to ascertain that they are fully in keeping with the literal meanings of the corresponding Basque or Proto-Basque terms.

From a) and b) we may safely infer that there exists a remarkable equivalence in the reconstructed phonological shifts that characterize both proto-languages, and in the developmental laws, which have yielded a considerable amount of productive outcomes.

In some critical appraisals of former attempts to link Basque with unrelated languages, Joseba Lakarra [2010, 625; 2011, 81; 2012, 680; 2013, 313] has correctly stated that reconstructions of protolanguages would be valid only if they met the following two conditions:

1) the proposed reconstruction yields evolutionary rules that concur with those postulated for Pre-Proto-Basque;

2) the proposed reconstruction elucidates the inner evolution of Basque.

As already shown, the reconstruction of Palaeo-Sardinian that I propose fully meets these two conditions. In what follows, I discuss my external reconstruction, and then briefly refute certain criticisms of my proposal that have been levelled by Lakarra.

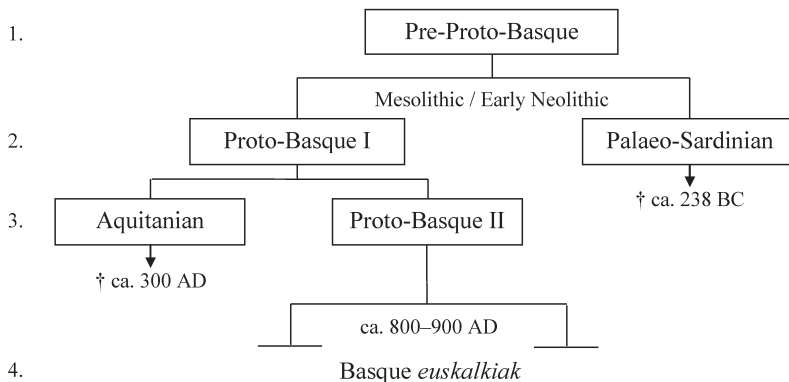
6. Conclusions. A New Stammbaum Model

One lively topic of debate stemming from my reconstruction of Palaeo-Sardinian concerns the apparently controversial fact that such a reconstruction yields not only the postulated proto-roots of Palaeo-Basque, but also some present-day, active Basque forms. However, it has been argued, quite convincingly, that even if a language has split off from a protobranch and its speakers relocated to a more remote site, it may nonetheless be true not only that the language may return to earlier stages of its linguistic framework, but also that it may have generated fairly similar outcomes with its now more distant branches. Antoine Meillet [1925, 38] has persuasively reminded us that Russian *pádu* ‘for the sake / purpose of’ (*сделай это páду меня!* ‘do it for me!’), and Neopersian *rā* (definite accusative determiner, cf.: *īn doxtar-rā didam* ‘I have seen that girl’), despite their attestation in two distant territories, must both be traced back to Indo-European **radiy* ‘target, goal’, which accounts for the flawless formal and functional retention in both languages. It should come as a no surprise, then — given the hundreds of examples I have elaborated upon in the Palaeo-Sardinian corpus — that modern Basque and Sardinian have both produced the same form, *turri* ‘spring’, generated from the common proto-root **e-dur-hur-i*. We may also seriously entertain the hypothesis that formal and functional innovations arising out of a common pattern characteristic of the protolanguage can be detected in the resulting outcomes. Thus, we may posit the peculiar evolution of the Palaeo-Basque voiced bilabial /b/, which becomes /m/, and then by dissimilation /n/ in Palaeo-Sardinian, as a parallel phenomenon, leading to a regular innovation in the latter.

In previous publications, I have advanced the hypothesis that the first inhabitants of the island of Sardinia, who arrived during the terminal stages of the Mesolithic and early stages of the Neolithic (ca. 9000–7500 BC), came from the Northwestern regions of the Iberian Peninsula, that is, from Cantabria and the present-day Basque country. Some recent conclusions from other disciplines lend support to this hypothesis and also provide a reasonable explanation of that ancient demic migration and diffusion, which resulted in the colonization of prehistoric Sardinia. As one example, archaeologists steeped in the research of *obsidian*, the precious volcanic stone used for manufacturing tools and weapons, have repeatedly stressed the tight connections that existed between early Neolithic Iberia and Sardinia, so amenable to the enduring obsidian trade [Tykot, 1992; Lugliè, 2009]. Additionally, geneticists working on specific Y-chromosome and mitochondrial ADN gene markers have recently claimed that Central and East Sardinia (Barbagia, Baronia, Alta Ogliastra) share some exclusive mutations with the Proto-Basque population (M26, M170; U5b3), traced to the postglacial period [Francalacci et al., 2013; García et al., 2010; Elhaik et al., 2014]. A further conclusive piece of evidence resulting from research on the sub-haplogroups H1 and H3 [López Parra, 2009], with clear matches preserved in the Basque and Eastern Sardinian genetic pool, suggests that the primitive colonizers underwent a widespread diffusion all along the Pyrenees. This diffusion duplicates, to a remarkable degree, the expansion and lexical distribution of some distinctive units of Palaeo-Basque, for example, *haran* ‘valley between high mountains’, a notable form that has left traces of its ubiquitous presence all along the Pyrenees, the eastern coast of Catalonia, the Balearic islands and Sardinia [Blasco Ferrer, 2010a, 233].

Taking into account these data and the corresponding arguments, we feel justified in advancing the theory that Palaeo-Sardinian represents, in one ideal Stammbaum projection, a sub-branch of the Pre-Proto-Basque ancestor that originated from the late Mesolithic / early Neolithic split. This protosystem must necessarily be antecedent to the Aquitanian attestations (100–300 AD), which I consider a later output (PB II = Proto-Basque II) of an intermediate stage (PB I). Palaeo-Sardinian preserves strikingly conservative CVC reconstructed roots (*hotz*, *hur*, *dur*, *don*, *des*); it does not offer evidence of completed changes that occurred in Aquitanian (among them: */d/ > /l/: *lur* ‘earth’); and it does not participate in the late phenomena carved out by Michelena for the period occurring between the end of the Roman Empire and the medieval disintegration of the Basque unity (ca. 800–900 AD: Basque *euskalkiak*, “modern dialects”).

The following figure, with examples illustrating each stage of linguistic development, presents these conclusions:



1. PPB: **e-dur + hur-i* ‘water that flows from the earth’.
2. PB I = PSd: **hur + bar* ‘water-within’, **dur* ‘land’, **don-i* ‘mass accumulated’, **ni + nin* ‘ice, hoar-frost, dew’, **do + dol* ‘bloody colour’.
3. Aquitanian = PSd: *lur* ‘land’, *kor/gor* ‘red’, *bai* ‘river’, *ilhun* ‘shady’.
4. Basque = PSd: *(h)ibar* ‘valley crossed by a stream’, *lur, loi* ‘swamp, swampy terrain’, *(i)turri* ‘spring’, *baso* ‘wooded tract’, *gorri* ‘red’, *(h)otz* ‘cold’.

Before concluding, I return to the fundamental objection raised by Lakarra at the Congress on Iberia and Sardinia [Lakarra, 2014, 138–144], namely that he finds untenable the claim that a protolanguage related to the PPB, which split off from its ancestral antecedent, might have preserved unchanged for millennia some of the reconstructed roots (**hotz* ‘cold’, **hur* ‘water’), and also produced quite similar results (*turri* ‘spring’, *loi/tokillogi* ‘swamp’). Lakarra’s objections, however, would reflect also upon his own reconstruction: *hotz* and *hur*¹⁰ do in fact represent at the same time pre-proto-roots, actively implicated in generating a vast array of compounds (**hur-don-i*, **e-dur-hur-i*), and present-day basic units of the Basque lexical stock. Any claim of such co-occurrences is, as we have seen, quite justified, a point which the Basque researcher acknowledges unconditionally for PPB, but seems inclined to disallow for Palaeo-Sardinian.

A second objection has already been dismissed above, referring to Meillet’s magistral restoration of Indo-European proto-roots, so neatly preserved in two distant descendents. Lakarra’s model itself contains valid pieces of evidence that argue for a parallel evolution maintained throughout millennia: witness, Aquitanian, which shares

¹⁰Among a vast array of mosyllabic CVC-roots of modern Basque “ondokoak gelditzen oraindik [following <roots> have persisted till present time]: *har-1, har-2, has-1, hats, hatz, haz, her, bil, hiz, hutz, hel, hez, gal, gar, gaz, gel, gen, gor, gur, hil, hitz, lan, lar, lats, latz, ler, lits, lur, men, min, mun, hon, hor, hots, hotz, sal, sar, sen, sor-1, sor-2, hun, hur, hurr, zeR, zin, zor, zotz, zur*” [Lakarra, 2011, 32]. Palaeo-Sardinian has inherited and also preserved till present in Sardinian place-names the following roots: *her, bil, gor, hil, lats, lur, hotz, sor, hur, zur*. However, further investigations might add new roots to this list.

with present-day Sardinian the change of */d/ to /l/: *lur, logi* — together with *dur-, don-*. All this bears out the claim that, if two languages share the same original framework (formal and functional patterns), it is likely that, even in the absence of a continued mutual influence, they will develop similar outputs.¹¹

My final remarks on the reconstruction of Palaeo-Sardinian round out my previous arguments concerning the heuristic and the interpretative requisites.

Regarding the methodology of reconstructing a substratal language, I have repeatedly stressed that such a task must follow a rigorous set of criteria. Thus, the shortcomings in Wolf's unsuccessful reconstruction of Palaeo-Sardinian are all attributable to the inconsistent application of imprecisely defined morphological segmentations. As a result, a solid and organic set of patterns could not be determined, and consequently, a convincing conclusion on the origin of the protolanguage or of its plausible cognates in the Mediterranean could not be formulated.

By contrast, a correct interpretation of the reconstructed protolanguage must take into careful consideration the internal and external constraints, which are unraveled in the course of determining a correct formal restoration. In this regard, one sorely deplores Lakarra's prejudicial apriorism and total disregard of the Palaeo-Sardinian achievements, which has prevented him from positively assessing the tight, unquestionable interconnections existing between identical developmental rules and close semantic-referential regularities neatly exhibited by Palaeo-Sardinian and (Pre-Proto-)Basque, offering indisputable evidence of a common pre-historic origin.

Any new sound hypothesis must be based on clear and reliable methodological premises. My own thesis on the origins of Sardinia may be envisaged naively as bold, but boldness in conjectures is part of that intellectual honesty consisting not in becoming entrenched in one's position and unrelentingly trying to render it credible, but rather in specifying the conditions necessary to render that position flawed, or even untenable. I remain convinced that my thesis could be successfully overturned only if a new comprehensive theory were to be advanced, one which gives an equally satisfactory account of the numerous correspondences that have been produced and discussed in detail here.

¹¹And the illuminating case of **don-i* in PPB and Palaeo-Sardinian, described in full in [Blasco Ferrer, 2012b], leads firmly to the conclusions that not only has Sardinian preserved the reconstructed proto-Basque root as a lexeme indicating 'schistous or calcareous heights' (*doni, toni*), but displays all subsequent outcomes and semantic shifts attested in old and modern Basque (*loi, toki, logi*), even the formally opaque suffix *-doi/di/ti*, which in both distant territories occurs in numerous microtoponyms with striking parallel outputs: *Loi-di* (in the Basque country) = *Lói-ti* (a swamp in the commune of Oliena, Sardinia); *Aran-tu* (in the Basque country; with *haran* 'valley' and 'rocky stream', the loss of *-[n]* being also attested in other Basque similar constructions, as in *Ara-oz, Ara-zuri*, and in the Pyrenees *Ara-te*) = *Ara-tu* ('rocky stream' in Désulo and Fonni).

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ABBREVIATIONS

It.	Italian
Lat.	Latin
PB	Proto-Basque
PPB	Pre-Proto-Basque
PSd	Palaeo-Sardinian

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Blasco Ferrer, Eduardo
PhD, Professor, Department
of Pedagogy, Psychology and Philosophy,
University of Cagliari
1, Is Mirrionis Str., 09123, Cagliari, Italy
tel. +39 070 675-7334
E-mail: eblasco@libero.it

Бласко Феррер Эдуардо
PhD, профессор факультета
педагогике, психологии и философии,
Университет Кальяри
1, Via Is Mirrionis, 09123, Cagliari, Italy
тел. +39 070 675-7334
E-mail: eblasco@libero.it

СУБСТРАТНЫЙ ЯЗЫК, ЛИНГВИСТИЧЕСКАЯ РЕКОНСТРУКЦИЯ И УСТАНОВЛЕНИЕ ЯЗЫКОВОГО РОДСТВА: МЕТОДОЛОГИЧЕСКИЕ РАЗМЫШЛЕНИЯ НА ПРИМЕРЕ ПАЛЕОСАРДСКОГО ЯЗЫКА

В статье показано, что при изучении субстратного языка предварительно необходимо провести дистрибутивный анализ его морфологических закономерностей, что позволит уточнить историко-фонетические явления, а также установить исходную морфологическую характеристику языка. В данном случае последовательное применение этих принципов к палеосардскому языку позволяет сделать вывод о его агглютинативном характере и, как следствие, уточнить его отношение к палеобаскскому языку. Указывая на некоторые недостатки и слабости предшествующих реконструкций, автор демонстрирует преимущества, которые дает системная морфологическая сегментация более тысячи микропонимов центральной Сардинии, обнаруживающих явную морфемную членимость, а также делает вывод о фонетической системе исходного языка и о некоторых наиболее четко проявляющих себя фонетических закономерностях (в частности, автор проводит мысль о том, что структура большинства реконструируемых палеосардских корней может быть сведена к односложной схеме CVC, как, например, /d-u-r/, /d-o-n/; в свою очередь, это позволяет установить некоторые фонетические переходы, например, /d/ > /l/ типа *dur* > *lur*, *don* > *loh* и т. д.). Наконец, детальное сопоставление палеосардских данных с реконструируемыми данными морфологии и фонетики палеобаскского языка обнаруживает целый ряд поразительных сходств, объясняемых, по всей видимости, их родством: автор предполагает, что на рубеже мезолита и неолита общий палеобаскский язык распался на протобаскскую и палеосардскую ветви. В статье предлагается генеалогическая модель расхождения двух языков.

К л ю ч е в ы е с л о в а: палеобаскский язык, палеосардский язык, субстратная топонимия, морфологический анализ, дистрибутивный анализ, типологическая реконструкция, установление языкового родства, генеалогия языков.

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