

## A NEW APPROACH TO THE MEDITERRANEAN SUBSTRATUM, WITH AN APPENDIX OF PALEO-SARDINIAN MICROTOPYMS

**1. Introduction.** Methods of scientific research operate on principles that are universally agreed upon by an international community of scholars, among them, that the deductive nature of the conclusions must rest firmly on an inductive platform, based on rigorous quantitative and qualitative testing of both the methods applied and the data collected.<sup>1</sup> Research on the linguistic substrata that existed in Europe prior to the arrival of the Indo-Europeans (and on the fragmentation of their languages), especially

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1. The concept is clearly expressed in Carnap (1958:221): “The acceptance or rejection of abstract linguistic forms, like the acceptance or rejection of any other linguistic forms in any branch of science, will finally be decided by their efficiency as instruments, the ratio of the results achieved to the amount and complexity of the efforts required.” See also the fundamental essay by Lakatos (1970), with an abundance of data and arguments, and the contributions from Massimo Piattelli-Palmarini (1991) and Luigi Rosiello (1985), on the theoretical foundations of Piaget’s constructivism and on the deductive-nomological method of the Neogrammarians.

in the Mediterranean basin, has demonstrated—from the very first studies at the beginning of the twentieth century—obvious defects of methodology; as a consequence, the results have been flawed.<sup>2</sup>

This article expands on an extensive study of the paleo-Sardinian substratum which was published recently (Blasco Ferrer 2010). Here I discuss, first, the limits of the traditional historical comparative method, which gives priority to certain features in the reconstruction of forms (the etyma, or *signifiers* of the linguistic sign), and second, the advantages of applying a structural method that searches for strict causal relationships between the quantitative values of the signifier (*significante*) and the qualitative values of the signified (*significato*) and of the referent (*denotato*).<sup>3</sup> Since the greatest amount of evidence of the remains of fragmentary languages (*Trümmersprachen*) is contained in place names, and especially in *microtoponyms* (*Flurnamen*), that is, the local names used for landscape terms and place names, I concentrate here exclusively on the study of these names in the substrata. The appendix of paleo-Sardinian microtoponyms contains approximately 200 place names, in addition to the 1,000 forms which were presented in *Paleosardo: Le radici linguistiche della Sardegna neolitica* (Blasco Ferrer 2010), and which constitute a corpus by which we may test the premisses and the arguments that I presented in *Paleosardo* and that I further elaborate upon in this article.

**2. Questions of method: productivity and predictivity.** The value of the method applied in any scientific study may be judged by two intrinsic criteria: the data obtained must be *productive*, that is, the forms must be recurrent, and even more importantly, the data must be *predictive*, that is, they must allow for the creation of new forms. These two criteria are illustrated below with regard to research on the Mediterranean substratum.

*Productivity* is based entirely on the determination of the signifier; the degree of productivity is determined by carefully studying the frequency of occurrences of the signifier; *types* are extrapolated on the basis of a significant number of examples, or *tokens*.<sup>4</sup> As we shall see (§ 4.1), with re-

2. I do not here consider the *paleo-comparativism* championed by Pier-Francesco Giambullari, which persisted in Italy well into the nineteenth century, prior to Carlo Cattaneo, and even later in Sardinia, prior to Meyer-Lübke (Benincà 1994; Blasco Ferrer 2002:7–9).
3. Regarding the interrelationship of the elements of the semiotic triangle—signifier, signified, and referent—and its effect on structural studies of the lexicon, see the syntheses in Ogden and Richards (1972:11: “*symbol* symbolises *thought* or *reference* which refers to *referent*”) and Ullmann (1977:218–227), and the reformulation by Klaus Heger (1976:51–61) of the term ‘sememe’ (where he distinguishes ‘inherent semes’, that is, semes that do not refer to cultural data); see as well the critical observations made by Baldinger (1984:130–134). Taylor (1999) offers a balanced assessment of the question, with practical applications.
4. Productivity, an inherent characteristic of the world’s languages, refers either to the recurrence of a phenomenon throughout the language by the mechanical application of a phonetic law, or, less commonly, to a recurrence engendered by *lexical diffusion*.

gard to paleo-Sardinian, an exhaustive study of the frequency of tokens necessarily presupposes a distributional analysis of the forms under consideration, yet this type of distributional analysis is missing from every investigation of Mediterranean substrata conducted during the first half of the twentieth century, and it continues to be absent from many of the more recent studies of pre-Indo-European.

The first proof of the advantages to be derived from a study of productive outcomes is to be found in the Iberic language as reconstructed by Jürgen Untermann on the basis of some two hundred inscriptions. After Manuel Gómez Moreno deciphered the semi-syllabic Iberic script in 1922 (now 1949), only modest advances in the study of the elusive paleo-Iberian substratum were made until Untermann, making use of the structural method, deduced one hundred morpheme-types, based on the recurrence of tokens. In his study of paleo-Hispanic inscriptions in the Iberian Peninsula (Untermann 1990, 1:216–217), he was able to reconstruct the morpheme-type *beles*, *beleś*, based on 36 occurrences in the corpus. In *Paleosardo*, the morpheme-type *itz*, which I reconstructed on the basis of distributional analysis, occurs in numerous toponyms, even in such combinations as *lakon-itz-i*, *bid-itz-ai*, *sin-itz-ai*, *s-itz-eo*, *itz-u*, *s-itz-o*, *nur-itz-i* (this analysis was first taken into consideration in my 2010 study). Thus, in both studies, the results obtained offer a positive response to the question of the productivity, based on the structural method.

The concept of *predictability* is associated with the signifier only indirectly, conditioned by the environment, which may be *textual* if the evidence is epigraphic in nature, or *referential* if the study concentrates, rather, on place names. Data are *predictive* when their occurrence in certain environments is precisely that—predictable. As we will see, the establishment of a relationship between the productivity of the signifier and the predictivity of the environment is essential to the correct interpretation of the *meaning* of the reconstructed *type*.

Recent studies by two Spanish scholars (Orduña 2005 and Ferrer 2009, 2010),<sup>5</sup> following this analytical model, and based on numerous recurring examples in analogous contexts, support the theory that an ordered series of Iberic *types* reflects the numeric system from 1 to 10 (as well as designations for ‘one-half’ and ‘twenty’): 1 *ban*, 2 *bi(n)*, 3 *i[r]u[r]*, 4 *lau(r)*, 5 *bors(te)*, 6 *sei*, 7 *tsisbi*, 8 *sorse*, [9 is missing from the corpus] 10 *(a)bař*. Applying the same approach to textual evidence from Etruscan, by determining the contexts within which occurrences of the morpheme *ei* were found, Luciano Agostiniani (1993) was able to identify the value of the particle cor-

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On these two different approaches, and on the term *productivity*, see the analyses by Croft (2000:50–53) and Bybee (2006:10–30).

5. See also Orduña 2006 for an exemplary study of distributional and frequential analysis undertaken on the *corpus* of Iberic forms.

responding to the adverb of negation *non*; the meaning was predictable in the contexts in which the form appeared (formulas of prohibition, or inscriptions having to do with inalienable goods): *ei minipi capi* = ‘non mi prendere!’ Lat. *ne attigas me!* (‘do not seize me!’).

### 3. The comparative historical method applied to the Mediterranean and paleo-European substrata.

**3.1. *Leistungen und Grenzen*.** To fully appreciate the advantages of the proposed method of substratal research, it is useful to review the *Leistungen und Grenzen* (‘achievements and limitations’) of the traditional comparative historical method. As is well known, the method of reconstruction of Indo-European, initiated by Franz Bopp and further refined by the *Junggrammatiker*, consists in the reconstruction of an etymon or head meaning, starting from a comparison of the multiple outcomes provided by the Indo-European languages; these outcomes are subjected to an analysis based on phonetic laws.<sup>6</sup> Of fundamental importance is the realization that the reconstruction of a proto-European root (or base)—necessarily conjectural—requires regular and careful comparisons between the signifier and the signified in the languages that descended from the reconstructed proto-language. Accordingly, the base *\*bhāg-*, which carries the primary meaning ‘beech wood’, was reconstructed by means of a comparison of a series of phytonyms: Lat. *FĀGUS* ‘beech wood’, Old Germanic *buohha*, Old Nordic *būk*, German *Buche*, Greek *φηγός* ‘oak’, Iranic *boz* ‘elm’, Russian *buziná* and (dialect) *boz* ‘elder (tree)’. The differences in meaning are accounted for by the change in environments—from one which favored beech wood trees, to one in which the vegetation was of a different type (*IEW*106).

Two schools of substratal research of the twentieth century based the entire scope of their research on the pre-Latin languages of Neolithic Europe (especially the ancient Mediterranean) on the comparative historical method. Even so, the two approaches yielded results that were completely different, and were even in opposition. One school of thought reconstructed a “Mediterranean” substratum (later re-named “peri-Indo-European”); the second school reconstructed a “paleo-(Indo-) European” substratum. The former was created in the 1920s; its principal exponents included a large number of Italian scholars, among them, Francesco Ribezzo, Alfredo Trombetti, Vittorio Bertoldi, Giovanni Alessio, Benvenuto Terracini, Giandomenico Serra, Berengario Gerola, Carlo Battisti, Giovanni Capovilla, and Giacomo Devoto, as well as others less well known.<sup>7</sup> Their working principal, which grew out of a comparison of

6. Useful summaries are found in Giacalone Ramat and Ramat (1993) and in Baldi (1997).

7. The “scuola sostratista italiana,” headed by Francesco Ribezzo and dominated by the figures of Vittorio Bertoldi, Giovanni Alessio, and Alfredo Trombetti, attempted large-scale linguistic comparisons, though without significant results. Only with Benvenuto Terracini, Carlo Battisti, and Giacomo Devoto were there marked improvements in the

languages that were spatially distant from each other, is that the Mediterranean basin once represented—perhaps already by the ancient Neolithic period—an ethnic, cultural, and linguistic unity, which was later fragmented by the arrival of the Indo-Europeans. Giacomo Devoto refined this first attempt at a proto-historic reconstruction with the introduction of the term “peri-Indo-European,” which better reflected the contacts among non-European (*anindeuropee*) languages lying outside the borders of Europe and the Indo-European languages of the continent and the Mediterranean (Devoto 1967 [1944]:79–91). This “scuola italiana” found favor among many scholars; among the most notable were the Swiss linguist Johannes Hubschmid and the German Romanist Max Leopold Wagner.

In the middle of the twentieth century, the Göttingen scholar Hans Krahe, observing that numerous *hydronyms* of ancient Europe revealed stages of linguistic development that antedated those documented for the Indo-European languages, coined the term *Alteuropäisch* ‘paleo(-Indo)-European’, intending a general Indo-European proto-language.<sup>8</sup> His theories were promulgated by his students and followers: Javier de Hoz (1964), Wolfgang P. Schmid (1994), Jürgen Untermann (2009), and Jürgen Udolph (1990), and in Spain, with a highly individualistic slant, by Francisco Villar (2000). They further refined certain essential points of interpretation, especially, that the concept of *Alteuropäisch* was to be understood as a specialized lexicon of a reconstructed, proto-historic phase that was preserved in many European hydronyms and in a few remaining names in individual Indo-European languages (particularly in the Balto-Slavic area).

**3.2. Comparison and reconstruction of the signifier.** As we have already mentioned, the working principles of the two schools of thought—Indo-European and Mediterranean—presented similarities and differences. As one would expect, both schools were based on the comparison of signifiers; however, the paleo-European school recovered antecedent forms by applying phonetic laws to the evidence of individual forms, whether historical or documented; this antecedent form then lent a certain authority to the comparison of forms and reconstruction of meaning. For proponents of the peri-Indo-European substratum, comparisons were made, in the absence of a reconstructed form, on the basis of homophony, since there was no recourse to an inventory of phonetic laws that could be applied to the non-Indo-European languages. For example, based on the following series: *Isarus* / *Isar* (Bavaria), *Isara* / *Isère* and *Isarnus* / *Isarn* (France), *Isarcus*

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methodological approach and, consequently, in the attendant results. Balanced criticisms are offered by Devoto (1958–1972) and Campanile (1983). A complete catalog of the research on toponymy developed by the Italian school may be found in the *Prontuario bibliografico di toponomastica italiana* (Granucci 1988).

8. For a synthesis of his theory, see Krahe 1968 (first published in 1957), “Indogermanisch und Alteuropäisch.”

/ *Isarco* (Alto Adige), *Isera* (Rovereto), *Iser* (tributary of the Elbe River), *Iserna* (Switzerland), *Isa*, *Isoba* (Spain, Italy), *Isal(l)e*, *Isai* (Sardinia), *Iseretto* (Elba), *Ésaro* (Galicia), *Aesontius* / *Isonzo* (Veneto), *Aisaros* / *Ésaro* (southern Italy), *Istro* (name given to the Danube), Krahe reconstructed a proto-Indo-European base *\*ais/\*eis* ‘(to move) in a hurry, in an agitated manner’, which he recovered in Sanskrit *iṣṇāti* ‘to move quickly’, related to Greek ἰνώω ‘I pour out (liquids)’ or Lat. *IRA* ‘anger’ (*IEW* 300). On this basis, he then traced the European hydronyms to a paleo-European etymon. By contrast, Devoto, taking as his starting point a simple structural comparison, and making use of the very same segment *\*ais/\*eis* in the Mediterranean, rightly pointed out that these same forms could in fact be traced to the ancient Mediterranean substratum. Later Carlo Battisti raised further objections to Krahe’s hypothesis, inasmuch as the name *Isarco*, along with names of other contiguous locales (*Isera* < Ἰσάρας in Lagarina, Rovereto), was present in the area of Tridentine Venice (Trentino-Alto Adige), which lacked entirely any traces of Indo-European.<sup>9</sup>

This one example reveals two significant differences, which are illustrated below with additional examples, but which I discuss here more analytically, with recourse to further instances of homonymy in the series just presented. In the first place—*pace* Krahe and his followers—, it must be stated that the reconstruction of the signifier is derived, without justification, from a meaning attached to all of the hydronyms listed, often without even verifying the meaning against the corresponding referents. The attribution of a fundamental meaning (*Grund-* or *Elementarbedeutung*, according to Coseriu’s terminology [1976:15]) to a signifier that is reconstructed without taking into consideration the physical referent is, as we will see, a risky and often arbitrary procedure (many of the rivers or waterways noted by Krahe are not, in fact, ‘agitated’, but rather, course slowly over flat lands). One wonders, for example, why the characteristic ‘agitated, strong, rapid’, with regard to the semantic range of ‘water ways, rivers, streams’, should count more heavily than the central meaning of the proto-Indo-European base, also reconstructed, *\*sn/snā-* ‘to flow’ (*fließen*) (Sanskrit *snāti* ‘he bathes’, Greek νύχω ‘I swim’, Lat. *NĀRE*), with the addition of the analogical prosthetic *I-* to denote verbs of motion; this is precisely the case in Sanskrit *iṣan-* ‘to hurry, to send out’, *īṣ-* ‘to go for, to hurry’ (and the variant in *eṣ-*) (*IEW* 970–971). To the arbitrary nature of the reconstruction one adds a second criterion, defined by Battisti himself (1959:289), in this case, the *geolinguistic* factor:

Una delimitazione stratografica del problema, cioè una distribuzione secondo i successivi sostrati, non sarebbe sempre possibile, perché una distin-

9. Devoto (1967:62–76, containing the reprint of his 1931 article, “Due temi nominali, *\*ais etrusco and \*ais mediterraneo*”). Among the hydronyms recorded by Devoto we mention here: Αἰσηπος ‘river of black water’, the hydronym Αἰσων (glossed as *Mavroneri*), the *Aisio*, and, obviously, *Aesontius*.

zione fra formanti dei singoli e successivi stadii non offre sempre la possibilità d'un esatto controllo. Ma quando esse esulano dal solito quadro dei suffissi indoeuropei e ritornano per esempio nella toponomastica di zone non indoeuropeizzate prima della romanizzazione (Sardegna, Corsica; Pirenei), o affiorano nella locale dell'Asia Minore, di Creta e della Grecia, in questa distribuzione geografica abbiamo un elemento indicatore che non deve essere trascurato.

[A stratigraphic definition of the problem, that is, according to the successive layers of the substrata, may not always be possible, because we may not always be able to perceive distinctions between individual and successive stages of morphological formulations. Nonetheless, when these formulations do not occur within the normal parameters of Indo-European suffixation, but recur, for example, in the toponymy of non-Indo-Europeanized areas, prior to their Romanization (Sardinia, Corsica, and the Pyrenees), or when they flourish in areas that are located in Asia Minor, Crete, or Greece, such geographic distributions raise signposts that must not be ignored.]

Here it is useful to add some examples of homophonous hydronyms to those listed above. All of the examples are located in territories in which the Indo-European presence was entirely absent or severely limited:<sup>10</sup> *Isòla / Isuela, Izas, Iseria* (lake), *Isonera* (spring), *Ésera, Isón, Isún, Isuerre* (all rivers in Aragon); *Isil, Isàvena, Isavarre, Isante, Isona, Isort* in the Catalonian Pyrenees; *Yse, Izaourt, Isort, Izourt, Izaute, Izotges, Izon, Isonera* in ancient Aquitania; *Isa, Isai, (Golo)Isari, Isarolai, Isarvene, Isera, Iseri, Isiri, Ísili, Isal(le), Ísini, Isoroi, Isiria, (Bar)Isona, (Mel)Isai* in Sardinia, all of them—apart from an occasional mountain spring—referring to rivers or streams; *Izura, Izuro, Iza, Izaga, Izal, Izanoz, Izotzeta, Iztileta (Istileta, Estileta*, which I judge to be from *\*i(t)z+il* 'still or stagnant waters', *istil, istinga* in modern-day Basque), all forms in the Basque territory.

In conclusion: the argument that reconstruction must take into consideration the areal distribution of a term may, as in the case just described, call into question the etymologies that have been attributed to certain toponymic roots.

**3.3. Areal distribution of the signifier.** The second criterion—Battisti's geolinguistic factor—has led some scholars to emphasize the importance of this factor in determining whether a lexical item pertains to the paleo-European substratum or to a substratum more vaguely "Mediterranean." Thus, in a fundamental examination of this question, Romano Lazzeroni (1964) noted how the complete homophony between paleo-European roots and peri-Indo-European roots (examples: *\*alb-, \*karra, \*nava, \*pala, \*sala, \*tala*) argues coherently for a process of loans by which peri-Indo-European structures entered into the Indo-European lexicon (and consequently, into ancient names). The same argument has been repeated several times by Jürgen Untermann with regard to Spanish

10. The data are taken from Pagès 1981, Tovar 1977:17, map 1, Jordán 1997, and Venemann 2003:64 and 861.

and Italian hydronyms whose roots cannot be traced to attested Indo-European languages; he opts for their attribution to a paleo-European substratum whenever these hydronyms occur in areas of Indo-European influence (Celtiberia in Spain and the Italic area, *lato sensu*, in ancient Italy), and vice versa, attributing them to the Mediterranean substratum whenever they appear in areas that are so influenced (Aquitania or paleo-Vasconia, Aragon, the Catalanian and Eastern Pyrenees, Alto Adige, Tuscany).<sup>11</sup>

The most telling effect of this argument on the reconstruction of the paleo-European signifier is that it brings into relief the forced, and even unjustified, nature of the application of unexceptional phonetic laws (*Lautgesetze*) to linguistic systems that do not share at all the same structural or typological features, as is precisely the case, for example, with the substratal languages in Aquitania, Sardinia, and Etruria (each of them of the agglutinative type).<sup>12</sup> It is also true that reliance on geolinguistic distribution renders equally risky and hazardous the attribution of homophonic forms, scattered over distant areas, to one common denominator, whether “Mediterranean” or “peri-Indo-European.”<sup>13</sup> This latter difficulty, inherent in the theory of the Mediterranean substrata (though certainly not limited to such theories), was noted in several critical analyses that appeared in the twentieth century, including those by Jerry Craddock (1969), Yakov Malkiel (1972), Antonio Tovar (1977), and Domenico Silvestri (1977–1982). Nonetheless, it is enough to glance through recent works to realize the persistent lack of a rigorous methodology which would remedy these strained hypotheses. For example, let us compare Giovanni Alessio’s Mediterranean reconstruction to Francisco Villar’s paleo-European reconstruction of the ancient hydronym *Pisaurum*. In the first instance, Alessio derives the term from *\*Pis-auro*, because “[u]n elemento derivato in *-auro*- è ben noto in voci del sostrato” (Alessio 1936b:9, n. 23); in the second instance, Villar has recourse to *\*Pisa-ur* (Villar 2000:205; Villar and Prósper 2005:30–31), seeing the first segment as the—highly unlikely—paleo-Hispanic (cfr. *Pisuerga* < *\*Pisa-ura-ko*) and paleo-Italic outcome of Indo-European *\*kwei* ‘white’, and the second segment as the outcome of

11. Untermann (2004, 2009). Taking our cue from these two articles, we return to the example of *\*is* to note how map no. 1 of Tovar (1977), based on the data gathered by Krahe and Pokorny, becomes completely distorted: the root is shown to have a concentration in the Mediterranean area (Sardinia, the Aquitanian Pyrenees, Alto Adige, and the Dolomites), which gradually weakens as it moves northward (the map is reproduced at the end of this article).

12. This exception was already noted by Antonio Tovar with regard to the first map *\*ais/eis* of the paleo-European hydronyms: “Die indogermanische Etymologie scheint sicher [...], obwohl wir, wie oft bei diesen Flußnamenwurzeln, auf beträchtliche morphologische und phonetische Schwierigkeiten stoßen” (Tovar 1977:17).

13. However, this limitation, contained in the reconstructed proto-lemma, may affect even the Indo-European languages, for example, Germanic *īs*- < *\*ais/eis*, which even Pokorny considers may be realized only with difficulty.

\**war/ur* ‘water way’. This example illustrates the absolute methodological necessity of preferring, over the simple comparison of homophonous forms, the internal reconstruction of the signifier, verified against the occurrences of those forms in an area subject, or not, to the influence of Indo-European substrata. In the series examined by Jürgen Udolph, following Krahe and Schmid, one immediately recognizes the rash comparisons between Balto-Slavic and Italic areas, in the reconstructions of names, for the purpose of justifying a primitive extension of paleo-European. Presupposing homogenous developments, the German linguist relates *Cybina* in Poland to *Tibēris* / *Tevere*, no less, which, in Umbria, contains an internal voiceless labiodental [f] (*Tifernus* and *Tifernum Tiberinum*, ancient name of the Città di Castello), and which would argue for a very ancient loanword, occurring before the process that differentiated Latin -[b]- from Umbrian -[f]- had come to an end.<sup>14</sup> The search for a satisfactory antecedent in discontinuous linguistic areas has given rise to exactly the same problems and arbitrary solutions in numerous other studies, past and present. The result has been comparisons between roots whose remoteness—whether judged on the basis of geography, cultural history, or linguistic typology—has stretched the limits of credibility, and even to reconstructions that are simply unbelievable.<sup>15</sup>

To conclude this lengthy critical excursus on the comparative historical method, and in anticipation of my arguments concerning paleo-Sardinian, I note here two successful models of reconstruction which, though less frequently applied, have produced far more satisfactory results, inasmuch as they take meaning fully into consideration. The construction of a relationship between homophonic signifiers and (quasi-)synonymous meanings is possible only when there is another language that can serve as a *tertium comparationis*. It was precisely by making use of data from Basque that Ramón Menéndez Pidal (1968) was able to offer his remarkable stratigraphic analysis of Spanish names containing the adjective *berri/barri* ‘new’ and the noun *etxe* ‘house’ (*Xavier, Javier, Etxebarria, Xaverri, Jaberrí*). Giulio Paulis (1992:20 and 365), in a study of the form

14. Udolph (1990:335), against Battisti (1959:154–156) and Lazzeroni (1964:12).

15. We cite here only a few paradigmatic examples: Alfredo Trombetti, reviewing the homophones that contain consonants: [k]\_[r] (Κάρ-ις, Κάρι-κος, Κάρ-ισσα, *Caracca*) favors an association with Turkish (!) *korī* ‘to protect’ (Trombetti 1942:34–36; for the series in *sala-* he proposes instead Arabic *salī-* ‘whole, unharmed’, p. 54). Johannes Hubschmid, reviewing the possible associations that might help determine a genetic connection between paleo-Ligurian and paleo-Basque, maintains that there is functional equivalence between the Ligurian suffix *-asko* (*bergamasco* < *Bergamo*) and the Basque diminutive suffix *-ska* (*adaska* ‘branch’ from *adar* ‘dogwood’), without giving due consideration to the origins and functions of the two morphemes (Hubschmid 1978:360). Finally, we should mention also the Slavic scholar N. Lahovárý who, in his 1954 study—with a postscript by Battisti—takes *semantic areas* as a starting point for a comparison of languages occurring over a vast expanse that extends from the Basque territory all the way to India.

*debelis*, which appears in the *Tabula Alimentaria* of Veleia (second century A.D.), and which entered into Latin from Ligurian as a cognate of Lith. *dègti*, Lat. FOVEŌ (It. *debbio*), was able to demonstrate that Central- and Eastern-Sardinian microtoponyms formed with *tevele*, *tele* 'land which is burned (for the purpose of fertilization)', were related to an early Indo-European practice that originated in Liguria.

In what follows, using data gathered in my research into paleo-Sardinian, I demonstrate how a more refined analysis, both structural and typological, one which takes into account each component of the linguistic sign (signifier, signified, and referent), is capable of rendering far more satisfactory results in investigations into the peri-Indo-European or paleo-European substratum.

#### **4. The structural and typological method, applied to the paleo-Sardinian substratum**

**4.1. Distributional analysis and segmentation.** A first and indispensable requirement to obtaining more reliable results in the comparative study of substratal signifiers consists in a rigorous distributional analysis, examining the frequency of the *tokens* and the classification of *types*. Furthermore, any distributional analysis that extends over several linguistic areas must necessarily consider the rules of word formation that are operative in each of the languages under consideration, rather than presuming that these rules may be identical over an expanse of territory comprised of many different linguistic systems (it is in fact the lack of this method that constitutes the strongest criticism that may be leveled at the analyses proposed by Villar and by Krahe). The distributional analysis undertaken by Menéndez Pidal on *berri* / *barri* produced valid results precisely because the study was carried out within the confines of a determined linguistic area. As a result, the noted Spanish philologist was able to identify the smallest phonetic changes that were due to specific dialect traits of the neo-Latin vernaculars under consideration.

Similarly, the structural and typological analysis of approximately 1000 microtoponyms in Sardinian has allowed me to deduce a large number of *types*, having morphological variants that were often *productive*. The allomorphy of the signifiers and the phonetic laws of the languages of both the substratum and the successive superstrata are the most direct and evident consequences of distributional and frequential segmentation; this is the only methodology that makes it possible to avoid the dangers inherent in potentially misleading homophonies. What follow are some elaborations on examples that were first presented in my earlier study (Blasco Ferrer 2010); they are here further elucidated, with additional data provided in the appendix to this article.

In Sardinia one of the most productive and predictive forms is *mele* (< *\*bel-e* 'black'). The base morpheme is found in the name of a *comune* and in a few surviving microtoponyms that occur throughout the island:

*Kili-melis*, *Maku-mele*, *Mara-mele*, (*M*)*ortu-mele* (from *Monte* + *Ortumele*), *Baru-mele*, as well as *monte Mele*, *riu*, *arriu Mele*, and *Meli*, among others. Some of the roots in these toponyms are transparent: *riu* < RĪVUS, -UM; *monte* < MONS, MONTEM; *mara* ‘swamp’; other roots, though opaque, are productive: *kili-* (*Kili-vani*, *Kili-ori*); *ortu-* (*Ortu-eri*); *bar-* (*Bar-is-one*). A first allomorph, extremely productive, has been created by false etymology with neo-Latin forms, for example, *mela* < MĒLA ‘apple’ and Sard. pl. *melas*: *ba(d)u* ‘ford’, *baku* and *gút(t)uru* ‘gorge’, and all of the nouns already seen, along with *Melas*. A second allomorph, of interest because it also allows us to trace the origin of a characteristically Sardinian family name, has been created, in this instance, by straightforward vocalic dissimilation between formative segments, as in *Keré-mule* < \**keré-mele*: *Telé-mula* (with *tele* ‘craggy terrain, land burned for purposes of fertilization’) and also *baku* and *péntuma* ‘precipice, ravine’ combined with *Mula(s)*, and finally, *Kara-mul-oe* (Ollolai ‘black stone’, with \**kar(r)a*). *Mula*, *Mulas*, which are also typical Sardinian family names, share the same distribution as *Mela*, *Melas*, and finally, *Mele*, *Melis*, all of them family names. In addition to *mele*, *mela*, *melas*, *mula*, and *mulas*, we find also paretimological *melone*, -i (linked to *pedra* ‘stone, rock’ and *vrunku* ‘peak’), a formation that we find elsewhere in Catalan *Mont-meló* (discussed in the conclusion).<sup>16</sup> A third allomorph, also highly productive, is created by dissimilation of bilabials, starting with the types *Maramele* and *Bidumele* (which coexists with *Bidunele*): *Risu-nele* (from *riu* in the area which also has *Pramma vera* > *Prammaera* and *Prammasera*, with epenthesis of [-s]-), *Gutturu-nele*, with *gút-turu* ‘precipice, gorge’, *Thiku-nele* and *Muthiku-nele* (from FĪCUS, -UM, where [f]- > Ø, followed by prosthetic /θ/; the second form includes the prefixed MONS), *Arau-nele* and *G-arau-nele* (with Basque *aran* ‘valley’), *Morturu-nele* (from *monte Ortunele* > \**montortunele* > *Morturunele*; cfr. MONTEM ALBUM > \**Montarbu* > *Mortarbu*), and the hitherto opaque *Mastru-nele*, again showing the contamination of *monte* with *ástrau*.<sup>17</sup> Similar to *mel-* > *mul-* is the development *nel-* > *nul-*: *Nule*, *Nulé*, *Nulo*, *Notao*, *Nulú*, *Ortunule*, and numerous other allomorphs.

The most striking result of the discovery of productive allomorphs, obtained through distributional analysis, is the drastic reduction in the number of presumed paleo-Sardinian roots. In the past, various scholars have tried to interpret these forms in somewhat more superficial ways, having recourse to homophony. But if the first allomorph is “internal” to the system, inasmuch as it is the result of straightforward dissimilation (whether vocalic or consonantal), the second allomorph, discovered

16. The related forms *mulu*, *muló*, and *males* are outcomes of the process of analogous dissimilation.

17. The form *ástrau* (< ASTRUM, ASTRĀTUM) has the literal meaning of ‘nocturnal ice’, hence, ‘obscurity’ in the compound *m[onte]ástr[a]u* + *mele* > *Mastrunele*. At Bolótana we have documented *Mastru-mulas*, with *mele* > *mula(s)*.

through distributional analysis, clearly reveals a phenomenon of leveling, following the rules of neo-Latin Sardinian: prosthetic consonants, evidently rather a late phenomenon, occur systematically in a large number of toponyms, among them, *Ur-ui*, *G-ur-ui*, and *M-ur-ui*; *Ortu-mele* and *M-ortu-mele*; *Ort-ol-ai* and *M-ort-ol-ai*; *Orga* and *S-orga*, as well as *Órg-ono* and *S-órg-ono*, *Org-ali* and *D-org-ali*, and many others (discussed in Blasco Ferrer 2010), forms which have misled so many scholars in the past. In this instance the influence is clearly the result of late Latin outcomes, as realized in Sardinian: EXĪRE > *bessire*, *-iri* ‘to go out’, ADĪTUM > *báidu* ‘crossing’, ĪĒNUĀRIUM > *ghennarzu* ([g]-) and *bennarzu* ‘January’, ĪĒNUAM for ĪĀNUAM > *ghenna* ([g]-) ‘mountain crossing’. In toponymy, prosthetic consonants appear frequently as a result of contamination with MONS, MONTEM (MONTEM ALBUM > *monte Marvus*) and with *baku* (from OPĀCUS + VACUUS), or more often with *ba(d)u*, *vadu* (VADUM), especially with reference to ‘deep, dark places’ (*Urei* and *Murei*, *Iriai* and *Biriai*, *Ortu* and *Bortu*; similarly, *gùtturu* > \**ùtturu* > *Bùtturu* and the opposite process *badu* > \**adu* > *Gadu*); there are also numerous examples of merging with the definite article (*sa Orga*, *su Órgono* > *Sorga*, *Sórgono*).

Knowing the rules for the development in Sardinian of both medieval and modern diatopic variation, beginning with Latin, allows us, finally, to reduce the apparent toponomastic polymorphism to just a few *types* having a series of allomorphs. One example is sufficient to illustrate this significant advantage. Several places in the center of Sardinia bear the name *Otz-iddai*, formed on the base, already identified, \**otz* < Basque *hotz* ‘cold’ with the addition of the compound suffix, in which the sequence *-dd-* (*-[d̥d̥]-*) is derived from Lat. *-LL-* (otherwise, the outcome would be *-[l(l)]-* < Lat. *-L-*). Thus, in effect, we have *Ott-iddai*, and also, with the prosthetic consonant, *G-ott-iddai*. In these last two allomorphs, the root contains *-[tt]* instead of *-[ts]*; however, this variation responds, in effect, to the development of the dental affricate in areas outside the center of the island: FACĪO > [‘fatsɔ] (then [‘fatθɔ]) > [‘fattɔ] ‘faccio’ (‘I do, I make’), PŪTEUM > [‘putsu] and [‘putθu] > [‘puttu] ‘pozzo (‘pit’). Thus it is clear how three different forms may be traced to one paleo-Sardinian root. Other allomorphs, revealed through frequency and distributional analysis, may be produced by late and spontaneous vowel alternation (of the type *Talavó* and *Tolovó*) or by a systemic vowel alternation that is already present in the proto-language of the substratum ([o]/[u]: *org-/urg-*, *osp-/usp-*, *Ósana* / *Úsana*, and, with the prosthetic consonant, also *G-úsana*; *Oleri/Uleri*, and *G-oleri*). This approach drastically simplifies the toponomastic picture of the island.

**4.2. Reconstruction of the signifier.** As illustrated in § 3.2, the ultimate purpose of substratal research is the reconstruction of the *signifier*. If this occurs as a result of a structural analysis, as in the case of paleo-Sardinian, without previous homophonic comparisons to other linguistic

systems, then the possibility of recovering a typology of reliable signifiers is extremely likely. My research confirms that paleo-Sardinian has a clearly agglutinative typology, that is to say, a system based on the sequence of roots (root 1 + root 2 + root 3), rather than roots and suffixes (root 1 + suffix, root 2 + suffix, root 3 + suffix), as common belief would have it. Thus, by comparing *Ola* + *-ai* > *Ol-ai*; *Orga* + *-ai* > *Org-ai* and *Orga* + *Ola* + *-ai* > *Org-ol-ai*; *Orri* + *Ola* + *Otzi* > *Orr-ol-otzi*; *Obi* + *Osto* + *Ola* > *Ov-ost-ol-ai*; *Orga* + *Osto* + *Orri* > *Org-ost-orro*, we may obtain a clear *facies typologica* of the primitive form of the substratal language. Following this purely internal process, it is also possible to suggest certain agglutinative roots, which previous scholars have mistakenly analyzed as suffixes: *nele* in *Gutturu-nele*; *kor*, *korr* in *Orgose-kor-o* (with *orga* ‘spring, source’ and \*ōSA ‘mouth [of a river], damp place, steeped in underground streams’) and in *Lo-korr-i* (with *loi* ‘swampy terrain’). At this point it should be stated with absolute clarity that a distributional analysis which allows us to recover frequently occurring *signifiers* obviously does not allow us to recover the *meaning* of the roots. Any serious study must recognize that the reconstructed roots (*nele*, *kor[r]*) must be subjected to the successive comparison of signifiers and meanings. This is true even for what are clearly recognized as roots (and no longer considered suffixes), as revealed by segmental analysis: they are not clearly determined until both the primary and secondary (i.e., metaphoric) meanings are compared, for example, *turri* in *Turru-nele* (Basque *iturri* ‘spring’) and *dol* in *N-orti-duli* (Basque *odol* [‘color of] blood’).

Previous scholars have offered no more than a formal inventory of terms and have proceeded, on the basis of simple homophony, to offer rather strained etymologies, inasmuch as the assigned meaning is not supported by the actual referent. Thus, the many instances of *turre*, *turri* have been mistakenly associated with Sard. *turre*, *-i* < TŪRRIS, -EM (‘tower’), and forms in *mele* to MĚL ‘miele’ (‘honey’) and *mela* to MĚLA (‘apple’); similarly, morphemes of the type *dola(d)u* have been analyzed as ‘chipped’ (past participles of the Latin verb DOLĀRE ‘to hew, to chip with an axe’), and the sequence *-kor* has been associated with the Latin suffix -ŌRE.

It is obvious that the reconstruction of a reliable signifier can occur only when the language of comparison, whose roots have been determined through structural analysis, produces a coherent system of correspondences. This second method, quintessentially “external” or comparative, requires above all that the systems being compared share typological traits. Paleo-Sardinian, which we have determined to be an agglutinative type, clearly cannot be satisfactorily compared to a language with an inflectional system, which is characteristic of Indo-European languages. The solution to the problem has been found in the paleo-Iberian languages, in particular, and in paleo-Basque, as reconstructed by Koldo Mitxelena (1985) and especially, more recently, by Joseba Lakarra (2004,

2008, 2009, 2010). Thanks to the clear and incontrovertible correspondences between documented or reconstructed meanings in both paleo-Iberic and paleo-Sardinian, it is possible to discover in full the linguistic sign of several paleo-Sardinian roots which, up to now, were completely opaque—among them precisely the previously cited *mele* / *nele* < \**bel-tz* ‘black’ (*bele* ‘crow’), *kor(r)* < \**korr-* > *gorri* ‘red’, *turri* < (*i*) *turri* ‘spring’ (in Sardinia there is even evidence of *kúkkurIturri*, with *kúkkuru* ‘peak, summit’), and \**dol* > *odol* ‘blood; dark-red color’, as well as many other forms. A truly significant fact, and one which validates the interpretation that I have formulated through the comparison of Sardinian to Basque, is that a great many roots, determined through segmental analysis, which do not occur in modern-day Basque, are in fact to be found in the proto-roots reconstructed by Lakarra, using the internal method. For example, the series of roots having an initial voiced dental, of the type *dur-* (*Duru-nele*, *Durrí-sola*), *dog-* (*Dogú-sola*, *Dog-ol-ai*), and *des-* (*Desu-nele*), clearly reflect the stage of paleo-Basque that preceded the development of \*[d]- > [l]- (cfr. \**da-gun* > *lagun* ‘friend’, \**den-en* > *lehen* ‘before’); thus today we find *lur*, *lurra* ‘earth’, *logi* ‘muddy terrain’, *leze* ‘chasm, precipice’. This is further confirmed by modern compounds that have preserved these roots internally: *e-dur* ‘snow’, for example, at Bergara, along with *e-lur*, *han-dur* ‘cruel’, from ‘land animal’, and in the toponym *Durr-ondo*, with *ondo* < *FUNDUS* ‘bottom’. At this point it is important to stress the clear progress that has been made in attempts to decipher paleo-Sardinian, and at the same time the advantages of a break with the appeal to simple homophony, substituting it rather with more precise rules of the development of the language. Thus, certain opaque forms, of the type *maso*, *masa* (*Maso-nassi*, *Masi-loi* and *Masi-logi*, *Doti-mas-io*, *Thorko-masi*), now find their satisfactory resolution in Basque *baso* ‘woods, wooded tract, mountain’, an etymology, moreover, that is fully supported by *Bas-kuri* (with *kor-* ‘red’) and by *Bas-e-nuxi* = *baso de nuxi* (< *NÜCEM* ‘nut’). The same is true of the paleo-Sardinian series in *dog-* (*Dogones*, *Dogolai*), which may now be understood—following exactly the same rules for reconstructing paleo-Basque—as the antecedents of the series in modern Basque: *lok-*, *log-*, *loi* (Bergara: *lók-atz-a* and, in general, *logi*, *loi* ‘alluvial plain’), an association that is fully confirmed by their natural referents: *Dogolai* (with *Ol-ai*, a very frequent form derived from *ola* ‘primitive hut’), referring to ‘land steeped in water that rises from the spring’, is found near a spring (*Untana de Coda*) located along the slope of a plateau that connects Orune to Bitti, where in the past, the rains have given rise to landslides; *sos Dogones* at Olfena are vast ‘wooded tracts, often subject to landslides’ during floods that have carried earth and vegetation to a valley in the river *Neósula*; finally, *Dogulana* is a ‘vast swamp’ in the area of Dorgali.

With regard to the reconstruction of the signifier by means of interlinguistic comparison, one of the most notable advances concerns

the possible determination of the typological characteristics of paleo-Sardinian. I concentrate here on three points of particular relevance (explored more fully in Blasco Ferrer 2010).

In the matter of typology, there are two opposing views regarding the reconstruction of the original accent in paleo-Basque. Mitxelena believed that the accent fell on the first syllable of compound forms, whereas Larkarra postulated that the base accent was on the second component, noting that various modern-day lexemes—mono- and bi-syllabic—resulted in a form where the accent fell on the second root (the only surviving element in present-day monosyllabic forms): *\*do-dol* > *odól* ‘blood’; *\*ni-nin* > *intz* ‘frost’. In certain compound bases in paleo-Sardinian, which were unquestionably inherited from paleo-Basque, the accent has been maintained on the first root, even when both elements of the compound have been distinctly maintained; however, the accent has shifted to the second component whenever agglutination has obscured the morpheme boundaries: (*badde* ‘vallis’) *Úr-bara* (Santu Lussurgiu) and *Úr-bera* (Scano Montiferru), from paleo-Basque *\*húr-bar* ‘valley’, literally, ‘water within’ > *\*hubár* > *hibár* (one notes *Úbera* at Bergara, exactly like *ghenna Úbera* at Sòrgono); *Lúr-kuri*, from *lur* ‘earth’ + *\*kor-* ‘red’, in contrast with *Du-kóri* (*\*dur-kor*) and *Du-dúrri*, from *\*du-dúr* > *\*udúr* > *edur* (variants: *elur*, *erur*). Finally, there are the valuable examples of *Durrí-solla* (Basque *lur sólla* ‘dry, deforested land’), *Basá-ura* (*baso* + *ur*), and *Solá-bani* (*soil*, *sol(l)a* + *\*bani*, as in *\*húr-bani* > *hibai* ‘river’), which, like Basque *Mendí-solla* (from *méndi* ‘mountain’: ‘mountain without trees’), allow us to observe the gradual shift of the accent from the first to the second syllable of the first component, before the successive shift to the second component, which signals the final phase of the merging of two autonomous forms and the blurring of morpheme boundaries. Since, in modern-day Basque toponymy, we find the alternation between *Lur-beltz(a)* and *Lubeltz(a)* ‘black earth’, equivalent to paleo-Sardinian *Duru-nele*, as well as the widespread forms *Lurgorri* ‘red earth’ (paleo-Sardinian *Lúrkuri*) and *Lurzuri* ‘white earth’ (paleo-Sardinian *Lutzurró*), we must conclude that even in paleo-Basque there were three phases of development, which are maintained in paleo-Sardinian, namely:

(1) primary supersegmental accent (Hualde 2003: *pitch-accent*) on the etymological syllable of the first root, when the nature of the compound is still obvious (of the type *Úrbara* from *\*(h)úr-bar*, or Basque *ságu zar* ‘old mouse’);

(2) shift of the accent to the second syllable of the first root, intermediate phase of agglutination and the initial phase of the blurring of the morpheme boundary (of the type *Durrísolla* < *\*dur(r)-sol(l)a*, or even *Urá-sala* [Sorradile] from *\*(h)ur-sala*; in Basque *sagúzar* ‘bat’);

(3) shift of the accent to the second root, once the compound is no longer recognized as such, and after certain phonetic phenomena (as-

similation, dissimilation, anaptyctic vowels, etc.) have rendered the etymon opaque, that is, the form is no longer morphologically transparent (example: *Ubéra* < \*(h)úr-be(he)ra o *Ura-sála*, Scano Montiferru).

A second organizing principle, which clearly emerges from the systematic comparison of the two proto-languages, concerns the morphological typology of certain reconstructed bases in Basque, which are confirmed by the evidence of paleo-Sardinian toponyms. This concerns the pattern of redoubling, which makes use of an iterative root (already illustrated in part, in the discussion of accent in compound forms), which is then simplified in Basque: \*do-dól > *odól* 'blood', \*no-nol > *ohol*, *ol* 'table'.<sup>18</sup> Often there are reduplicated forms found in paleo-Sardinian that still reflect the original pattern, and often they occur alongside forms that reveal the later stages of development: *Do-dol-iai*, *Do-do-kkoro* (with \*kor 'red': 'red blood'); *Dol-ai*; *Su-sune*, and *Sune* (Basque \**susun*, present-day *zezun* 'poplar'); *Bâr-bara* (Basque *hi-bar* 'valley crossed by a water way'), *Du-durri*. The same system seems to have been absorbed even by roots that are not paleo-Basque: *Sa-sal-ai* and, with dissimilation, *Su-sal-ai*, alongside *Sal-ai* (from the peri-Indo-European base \**sala* 'running water, lake'); *Pa-pal-ai*, *Pa-pal-ó*, *Pa-pal-ope* along with *Pal-ai* (\**pal-* 'stagnant water, swamp; tributary').

Finally, a most revealing example of syntactic typology concerns word order N[oun] + A[jective] in compound forms. Lakarra and others maintain that the order NA already existed in paleo-Basque, just as it does in Basque today: *lur gorri* / *beltz* / *zuri* 'terra rossa / nera / bianca' ('red / black / white earth'); *etxe berri* 'casa nuova' ('new house'), and the toponym *Ola-berri* literally, 'capanna nuova' ('new hut'). In fact, numerous Basque toponyms reveal even now the order AN, in keeping with the SOV typology of Basque: *Gurri-aran* 'red valley', *Beltz-iturri* 'black [i.e., murky or muddy] spring'. The paleo-Sardinian toponyms provide further confirmation of this syntactic type: *Mela-kuka* (Olzai) = \**bel-* + *kuku* 'peak', Sard. *kúku(ru) nieddu* 'black, shady peak'; *Mela-Us-one* (Orune) = \**bel* + \**ōsa* (cfr. *badde Usone*) 'flow of dark or muddy water', which finds a perfect calque in the hybrid form *Niedd-osa* (*Sédilo*), with *nieddu* < NĪĜĒLLUM + \**ōsa*; *Birri-ola* (Nurri), a form that exactly reverses the order *Ola-berri*.

**4.3. Reconstruction of the meaning.** We have already noted the importance of determining a precise meaning for a reconstructed signifier, and we have shown the difficulties that arise, by contrast, from deducing meanings on the basis of insufficient comparisons. The first method is

18. See Blasco Ferrer (2010:95), Inkelas and Zoll (2005:4–14), and Spencer (2000) for a discussion of the phonological and morphological aspects of reduplication; see Bauer 2001 for examples of morphological weakening in the various phases of the blending of roots.

clearly preferable, and fully confirms the reconstruction, whenever the language of comparison is typologically and genetically related, as is exactly the case with the proto-historic connection between paleo-Sardinian and paleo-Basque. Thanks to the invaluable information provided by proto-Basque roots, which have been preserved in the modern Basque outcomes, we have full confirmation of many paleo-Sardinian toponyms which hitherto had been obscure; among them are the forms that are analyzed in Blasco Ferrer 2010 as well as those given in the appendix to this article.

The reconstruction of meaning may—and should always—be effected by studying the referent or thing signified, given the “causal” relation between *meaning* and *referent*.<sup>19</sup> In essence, when viewing the referent (even in a painting or photograph), we immediately call forth an associated meaning, and we then produce the signifier, which we know to be “arbitrary,” that is, independent of the relationship that exists between the two other elements of the linguistic sign. This is precisely the technique adopted in many psycholinguistic or neurolinguistic tests, which require the informant to associate an image (*significante*) with various figures or designs, which represent the meaning (*significato*). Nonetheless, it must be said that, in the absence of a *tertium comparationis*, any attempt to deduce the primary meaning (Coseriu’s *Elementarbedeutung* or *Grundwert*) by a simple comparison to the thing signified may turn out to be less than satisfactory: in many cases, what occurs is a two-fold phenomenon, carefully studied by semanticists,<sup>20</sup> of *semantic contiguity* or *referential contiguity*. In the case of semantic contiguity, we find that the referent (*denotato*) reflects only in part the meaning of the toponym, usually with reference to a specific semantic trait which, in the lexicon of the languages under study, is expressed by a signifier that is not usually associated with the referents (*metaphor*). This is the case, for example, with referents of earth or water having a ‘dark red’, or rather, ‘blood red’ color, which has produced designations of the type *Bloody Beck* for *\*Red Beck* or, in the neo-Latin of Sardinia, *sa Bena de Sâmbene* < VĒNA + SANGUEN ‘underground stream of blood-red color’ (and the twin

19. Ogden and Richards (1972:11): “Between Thought and Referent there is also a relation more or less direct (as when we think about or attend to a coloured surface we see), or indirect (as when we ‘think of’ or ‘refer to’ Napoleon).”

20. Ullmann (1977:211–227). Examples of European toponyms that have been analyzed in the light of referential contiguity may be found in Piel 1947. Recently, there has been considerable interest in the mental processes of *cognitive categorization* of observable data regarding scale taxonomy and natural taxonomy (colors and physical characteristics). Some have taken the position that the componential analysis of referents does not take place within a lexical hierarchy (apart from hyperonyms), but rather at a more abstract level, by the repeated application of metonymy. Regarding these theoretical questions, which are abundantly illustrated in the paleo-Sardinian toponymy, one may profitably consult Aikhenvald 2000, Croft 2003, Cruise 2000, Langacker 1991, and Taylor 1995; of particular interest is the study by Mihatsch (2006), in which she applies the method to a taxonomy of French and Spanish.

forms, Logudorese *piskina rúggia* and Campidanese *piskina ságuni* ‘natural basin [of water] or red pool’), or Italian *sanguineto* < SANGUĪNEUM + -ĒTUM ‘orchard of dogwood trees’ (from the color of ‘blood’). The shift of meaning is already present in Lat. SANGUĪNEUS, Sard. *sambíngiu*, and Hungarian *vérpiros* ‘red blood’.

In the case of referential contiguity, on the other hand, we find that the referent is physically near to the thing bearing the meaning under investigation (*metonymy*), as is the case with the association ‘river’ and ‘valley’, given that, in general, rivers flow through valleys, or with ‘stone’ and ‘mountain stream’, since mountain streams are often full of stones. Thus, it happens that in many languages such instances of metonymy are well represented in the toponomastic lexicon, as in Basque (*h*)*aran*, which often refers to both ‘valley’ and ‘river’, or in Celtic *\*nantu,-o*, which may mean both ‘stream’ and ‘valley’, or in the type (*Rio*) *Pedroso*, *Sassoso*, in Ligurian *Vindupale* (*\*pala* ‘rock’), and in Sardinian *riu Kart-au* and *riu Kar-au* (from *\*kar(r)a* ‘rock’).

Thus, the comparison of the meanings of numerous paleo-Sardinian toponyms identified by appeal to paleo-Basque has verified both the primary meanings associated with the Basque *signifiers*, and the secondary meanings which are the result of either semantic or referential contiguity. Here I present only a few examples of the two cases, reserving any further examples to the appendix.

A complete concordance with Basque is found in the toponyms denoting ‘earth’ having a coloration that is either ‘black’ (Sard. *terra niedda*), ‘white’ (Sard. *terra arba* or *bianca*), or ‘red’ (*terra ruja*, *rúggia*, *orrúbia*, *ar-rúbia*). Thus, corresponding to the Basque triad *Lur-beltz*—*Lur-zuri*—*Lur-gorri* we have the Sardinian forms *Duru-nele* (*\*dur* > *lur*)—*Lu-tzur-ó*—*Lúr-kuri* (and *Lor-kor-io* with regressive assimilation). The first of the Sardinian terms, *Duru-nele*, refers to a ‘field of oak trees’ at Orgósolo, with an abundance of dark earth (the shepherd who described the area said, in effect, that it was ‘brown, dark earth’ because it was *terra de kerku* [’?el?u]). The third, *Lúr-kuri*, refers to an archaeological site in Barí (or Barisardo, on the Ogliastra coast) which has yielded, from the Neolithic era, remains of porphyrian rock, that is, rock having the color of ‘purple or of dark blood’.<sup>21</sup> The second, *Lutzurró*, refers to a ‘stream or small river’ in Austis, on the *limes* with Barbagia, known for its ‘clear and limpid waters’. For [lo’porri] (Olzai, *Lo-korri* > *Lo-gorro*), the complete correspondence with the Lower-Navarrese form *Lohi-gorri* ‘marsh or swamp of reddish waters’ is also translated in neo-Latin Sardinian *Ludu ruju* (Olíena) and *Ludu ar-rúbiu* (Seulo) ‘reddish swamp’. An incontrovertible example of the perfect correspondence between Basque etyma and paleo-Sardinian roots oc-

21. Pitzalis (2004:122) includes an accurate description of the site.

curs in the hybrid toponyms *Fili-kore* (Núoro, Olíena) and *Fili-gorri* (Sédilo), which reflect, in their first segment, Lat. FĪLIX, FĪLĪCEM ‘fern’, Sard. *filighe* (-[g]-), and in the second segment, paleo-Basque *\*kor-* and Basque *gorri* ‘red’. These forms are furthermore fully confirmed in the numerous neo-Latin Sardinian toponomastic terms of the type *Filighe ruju*, *Filixi ar-rúbiu* ‘red fern or bracken’ (the final syllable of the phytonym has been lost through haplology). This example is particularly revealing, inasmuch as it easily allows us to reconstruct two successive stages of the Basque base form: the postulated etymon *\*kor* and the subsequent outcome *gorri*. A final example, similar to this, is found in the microtoponym of Ilbono / Loceri *Go-ene* ‘small hill’ (Basque *Goain* and additional examples with *-ain* and *-ein* are found in the thorough study by Salaberri Zaratiegi 2000). The suffix is the widespread form *-ene*, for example, *Oddo-ene* and *Sól-ene*; the first segment represents the shortened outcome *goi*, in modern-day Basque precisely ‘height, hill’. The form is made more interesting in that the majority of toponyms sharing this base have retained the earlier stage, prior to the loss of the nasal, *\*goni* (examples: *Goni*, *Gonone*), which, in effect, is the root, as it has been reconstructed by scholars of Basque, for modern-day *goi*.

Among the most illustrative examples of semantic contiguity revealed in paleo-Sardinian toponyms I mention the numerous forms with the paleo-Basque base *\*dol-* ‘blood’, applied to ‘waters of a river’ (*ri(v)u Dol-au* or *su Dol-au* and *Dul-iai* at Sarule, Mamoiada, Orune), and to ‘springs, pools’ (*funtana Sciri-dol-ai*, *N-orti-duli* in Talana), and even (with the equivalence between paleo-Basque roots for ‘blood’ and ‘red’) in the pair *janna* (IĀNUA ‘mountain pass’) *Doli* (Torpé) and *janna (de) Kori* (Urzulei), and with the merging of the two etyma in *funtana Do-do-kkoro* (Baunei), in all cases with meanings distinguished by the coloration of the waters (clay, sulphur) or of the earth (lime).

Among the examples of referential contiguity I cite the numerous descendants of paleo-Basque *\*(h)úr-bar* (present-day *ibar* ‘valley’), with the meaning ‘rivers, torrents, or streams’: *rivu B-ur-bar-isi*, *riu Bar-is-one* (with *is-*), and *Bara*, among others. Of course there are also many other modern terms for mountains, ridges, or peaks which, through referential contiguity with ‘places having springs or waterways’ or ‘valleys’ could, in the absence of certain etymologies, lead the researcher astray. One specific instance, in which the comparison with Basque allows us, finally, to recover a certain etymon, is the term *karropu*, *korropu*, *garropu*, *gorropu* ‘split rock or crevasse below which water runs’. The base is clearly pre-Indo-European *\*karra*, but *-pu* is none other than Basque *-pe* (< *behe*) ‘beneath, at the bottom of’, as in *Pa-pal-(o)pe* ‘water that runs below two hills’. The meaning is, precisely, ‘water that runs beneath a cleft rock’ and, moreover, is fully confirmed by Basque *(h)arri-pe* < *\*karra* +

*pe* ‘under the rock’, modern-day family name and place names in Suleitino *k(h)arpe* ‘hollow below which runs a stream’, a literal translation of the Suni toponym *Kar-bai* < \**kar(ra)* + (*hi*)*bai* ‘river’ (we note the Sardinian variants *Gorro-pis* at Siniscola and above all *Karra-pia*, with *-pe* > *-pia*, as in VŪLPEM > *gurpe*, and the toponym *Gurp-ia*; Taramelli 1993, I:245; Bonu 1974).<sup>22</sup>

A further device by which to validate the meaning of a toponym consists in the comparison with later calques, or translated forms. It is well known that primitive names, when brought into contact with a second language (Latin, in the case of Sardinia), though often preserved, may also in many instances be translated, making use of the new linguistic materials. The question of translated forms has not yet been studied systematically. In the absence of any valid, tested cross-linguistic comparisons, it is necessary to take precautions, because the calque may in reality translate the complete *sememe* (citing Heger) of the primitive term as it is expressed in the mother language (i.e., it may express total heterosynonymy), but it may also be limited to a translation of the semantic field pertaining to the pre-Latin word. Based on our reconstruction of paleo-Sardinian, using paleo-Basque as point of comparison, there is no doubt that there is a perfect *synonymy* between paleo-Sardinian toponymy and Sardinian calques, at least in the following cases:

*haritz* ‘pedunculate oak or English oak’ (QUERCUS RŌBŪR) = ĒLEX or ĪLEX in: *riu Īlix* = *Arriu Aritzu*

\**bel* = NĪĜĒLLUS: *Badde niedda* = *badde Mela*; *Funtana niedda* = *funtana (sa) Mela* (and the remarkable hybrid from Sédilo *Puntanele* < *puntana* + *nele*, with haplogy, where [p]- is the regular result of Lat. F-); *Ri(v)u ni(gh)eddu* and *Arreneli* (Seulo, from *arriu* + *neli*); *Baku nieddu* = *Baku Melas*; *gúturu nieddu* = *Guturunele*; *Ludu nieddu* = *Istiunele (istil* ‘puddle, channel of water’); *Monte nieddu* = *monte Mele, Mela*; *Padenti nieddu* = *litu (de) Mela (litu* < \*ĒLĪCTUM ‘forest of holly oaks’); *Perda, Pedra niedda* = *Perda Meloni* (with *-one*); *Pira niedda* = *pira Meli*

\**kor* or \**koR* (> *gorri*) = RŪBĒUS: *Badu ruju (vadum)* = *Ikoré (hibi* ‘ford’, *Dorgali*, and further south, *Igorí*); *Foresta arrúbia* = *Littokoro* (with *litu*); *Ludu ruju* = *Lokorri* (with *loi* ‘bog, marsh’); *s’Ena ruja* (VĒNA FONTIS) = *Turrikore (iturri* ‘spring’); *Terra orrúbia, ruja* = *Lúrkuri, Lorkorio*; *Nodu ruju* = *nodu Gurrai* (Lat.

22. For *Lohigorri* (1435) in Bassa Navarra, see the description in Orpustan (2000:182). For *Baskuri*, a river in the town of Sant’Andrea Frius, see the fundamental geological description provided by Relli (2006:15): “sono numerosi i filoni di porfido riolitico di colore rossastro che tagliano i graniti” (my italics). The correspondence between referent and etymon is complete in the terms for *red bracken*, which grows in abundance in the island and gives a reddish color to many hills and mountains: Sard. *Filighe ruju, Filixi arrúbiu*, which corresponds to *Fili-gorri* in Sédilo (Basque *gorri* ‘red’) and to *Fili-kore* in Nuorese and Barbaricino (paleo-Basque \**kor* ‘red’). At S. Nughedu Nicolò we find the hybrid *Filistorro*, with Basque *ostorri* ‘(fern) fronds’, recalling *Orgostorro* (with *orga* ‘spring’).

NŌDUM ‘knoll, little hill’); *Benale ruju* (from *VĒNA* ‘underground stream’) = *riu Koriu*

\**dol* (> *odol* ‘[color of] blood’) = SANGUEN: *Pranu sánguni* = *brunku Dolau* (*brunku*: ‘crest’ or ‘peak’ that encloses a high plateau or *pranu*); *Bena de sám-bene* = *funtana Sciri-dolai*

*istil* = CANĀLIS: *Canali s’Otti* = *Istelotto* (*hotz* ‘cold’, ‘channel of cold running water’, ridge of Dorgali)

\**dur* (> *lur*) = TĒRRA: *Terra arba*, *Terrarba*, *Terralba (alba)* = *Lutzurró (zuri)*

(i) *turri* = FŌNTĀNA: *Kúkkuru funtana* = *kukkur’ Iturri* (*kuk*-Sard. ‘peak’)

(h) *on* = BŌNUS, -A: *Funtana bona* = *Turr(i)one* (*iturri* ‘spring’) and *funtana Onele*

(h) *otz* = FRĪGĪDUS, -A: *Abba fritta* (AQUA ‘water way’) = *riu Otzi*; *Funtana frida* = *funtana Otsizdai*

The approximative value of certain toponymic compounds (*hyperonymy* / *hyponymy*) is transparent in cases of *complementarity*, which occurs when a specific determinant defines a second root that does not completely share all the semantic traits of the first component:<sup>23</sup> *Baku s’Ortu* (*baku* ‘gorge’ and *ortu* ‘depression, gully’); *Mar-osini* and *Mara Usala* (*mara* ‘swamp’ and \**ōsa* ‘outlet’); *Pala Turri* (\**pal* ‘running water’ and *iturri* ‘spring’); *Riu Lokorri* (RĪVUS and *lok-*, *loi* ‘wetland, subject to landslides’); *Riu Uras* (RĪVUS and *ur* ‘flowing waters’); *Riu s’Adde* (RĪVUS and VALLIS, at BĪrori, similar to the polysemes *aran* and \**nantu* described earlier). It is worth noting that these virtually synonymous pairs are often found in neo-Latin bases, for example, *Riu sa Roja* (RĪVUS and ARRŪGIA, Sp. *arroyo*), *Riu Pauli* (RĪVUS and PALUS, PALŪDIS, late Latin PADŪLEM); *Riu Foxi* (RĪVUS and FŌX, FŌCIS; cfr. *Flumen-d-osa*, with \**ōsa* ‘mouth of a river’).

**5. Practical applications of the operative principles.** I conclude with an example of a practical application of the operative principles of substratal research, as described herein. I first explore the correlation between Basque (*h)ibar* ‘valley’, (*h)ibai* ‘river’, and the name of the river *Ebro*, that is, *Iber*, and then comment briefly on an etymological theory proposed by Coromines on some Hispanic toponyms containing the segment *-mel-* (*Montmeló*, *Mutxamel*, *Puigmeló*).

It is well known that the *exonym* (that is, the ethnic name given to a group by those outside that group) *Iberus* or *Hiberus* is correctly associated with the name of the Iberian river *Ebro*; the form appears in early Greek texts as Ἰβήρη. The *Ebro* is the longest river contained entirely in Spain (approx. 565 miles); originating in Cantabria, it flows diagonally across all of the northern districts and into the delta near Tortosa. Schuchardt already had recourse to Basque (*h)ibai* ‘river’ to explain the ethnic name

23. Details and examples of these difficulties of interpretation may be found in the studies by Brendler and Brendler (2004), Marcato (2009), and Ballester (2009).

*Iberus*, but the same base does not work for the hydronym, because the reconstructed proto-form would be *\*(h)urbani*. Schuchardt's hypothesis was corrected by Schulten (1928, now 1974)<sup>24</sup> who also rejected the idea of deriving the ethnic term from the hydronym; he maintained that the name of the river was taken from the Iberi and not vice versa. My own theory, which is developed in more detail elsewhere (forthcoming b), is that, in principle, Schuchardt was correct; his error lies in postulating the etymon *(h)ibai*, rather than *(h)ibár* 'valley', more precisely, *\*(h)urbar*.<sup>25</sup> My argument is two-fold: first, in ancient times many peoples were named after rivers or other bodies of water. To give just a few examples: the Gallo-Italic tribe of the *Nantuates*, a formation derived from *\*nanto, -u* 'valley' (attested in the fifth-century Viennese glossary, *De nominibus Gallicis: tri nanto = tres valles*; Delamarre 2003:261–264); the *Ausōnes* and the *Aurunci*, derived, according to Devoto and Battisti, from *\*ausa*, 'the people living near the fountains'; the *Isarci* of the Alto Adige, derived from *Isar(a)*; and the *Brixenetes*, an ethnic name related to the 'valley' of *Brixen*, in the middle of the river *Inn*. Second, the evolution of paleo-Sardinian reveals all the stages necessary to prove my theory: I present here the phases that have proved useful in the reconstruction and subsequent comparison of the Iberic ethnonym: *badde Úrbara* (Santu Lussurgiu) and *erriu Úrbara* (Tertenia) > *badde Úrbera* (Scano Montiferru) > *ghemma* ('crossing') *Úbera* (Sórgono) > *arriu Ibar-eni* (Sórgono, present-day *Olonai*) and *badde Ibárgiu* (Ierzu), and above all, *Íbera* and *Ibéra* (Serrenti, Gonnosnó). That the referential contiguity between *VALLIS* and *RĪVUS* is inherent in or characteristic of many Sardinian microtoponyms which clearly reflect the paleo-Hispanic situation is shown in these additional 'hydronyms': *serra* ('chain of serrated mountains, with valleys') *Orbaris*, *riu*, and *baku Orbai* (Sinnai, Siliqua: *ur-* > *or-* is a regular development), *arriu Bai* (Siliqua), *arriu Baigodi* (Senorbí, from *bai* + Lat. *cōs, cōtis* 'rocky stream', beneath the rocky heights of Seuni), among others. It is clear that the paleo-Sardinian forms, taken together, provide a highly eloquent description of the reconstruction because, at the level of the signifier, they show how *\*(h)úrbar* safely leads us to *Íbera*, *Ib[é]ra* (note that *Ubéra* is the name of a district in Bergara, and that four variant forms are attested in Basque territory: *Ubara-Ubera*, *Ibara-Ibera*); at the level of meaning, they direct us to the interchangeable polysemy inherent in 'valley' and 'river that flows into the valley', which is precisely the case with the *Ebro*.<sup>26</sup> In conclusion, I have no doubt that *Iber* > *Ebro* conceals a paleo-

24. Schuchardt (1908:38), followed by Tovar (1987:53); Schulten (1974 [1928]). The proposed etymologies of *Iberia* have been collected by Rubén Giménez (2004).

25. An antecedent form of *hibar* 'valley' would seem to be found in οὐζαμα Βάρκα of Tolomeo, in the area near Bilbao (García Alonso 2003:229).

26. Regarding the development of [a] to [e] in hydronyms, Alberto Nocentini (personal communication) reminds me that the same change is revealed in other river names

Basque name, coined by the northern paleo-Hispanic peoples who shared a border with the Iberi. The ethnic term (*H*)*iberus* would have been coined by the Greeks and Romans, on the basis of the name they heard used among the Iberic peoples of the Ebro Delta and which referred, in fact, to the great valley through which the river flows. The hypothesis here succinctly formulated poses certain questions relating to the appropriation of lands and the contacts between two peoples in the northern area of ancient Hispania. As was noted above, various recent studies on the Iberic numerals allow us to presume that they were borrowed by the Iberic populations. This could only have occurred in the northern region, between Navarre and Aragon or western Catalonia, where, furthermore, Coromines had already discovered more than a few traces of Basque.<sup>27</sup>

The second point, which I treat at more length in a separate study (forthcoming a), and with additional data, has to do with certain Catalan toponyms which, in my opinion, conceal paleo-Iberic structures; they have been rendered opaque in part because of false etymologies. Once again, the paleo-Sardinian data come to the assistance of etymological research. Joan Coromines, in his etymological dictionary of Catalan (*DCELIC* V:557–558) and in the *Onomasticon Cataloniae* (*OC* V:327–328) proposes, for the Catalan toponyms *Puigmeló*, *Montmeló*, and related forms, a Latin base that is not found in either ancient or modern Catalan: \**meló*, based on Late Latin *MĒLŌ*, *MĒLŌNIS*, derived from *MĒLĒS* ‘badger’. However, the incongruity of the etymology is revealed in the statements of the author himself (*DCELIC* V:557–558):

No registrat pels diccionaris, però el vaig sentir per tot el Maestrat i Morella, en part conservat sobretot com a nom de coves i cavitats: *Cau del Meló* nom d’una cova a Palanques, *Coll del Meló* a Xert, a la part més alta i trencada de les muntanyes del terme, *Cova dels Melons* a la Vall Torta de Tírig prop de les coves de Vinromà (1961). També a la Ribagorça: *Font del Melon* en la part més boscosa del terme de les Viles del Turbó, *Font del Meló* a la part més agresta del terme de Montesa (entre grans obagues de pi) . . . És versemblant que el nom del poble de Montmeló, en el Vallès, provingui també d’aquest nom d’animal

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in Italy: *Saar* > *Serio*, *Grava* > *Greve*, *Nahar* > *Nera*. The development \**húrbar* > *Iber* however, would seem to be an internal development in paleo-Basque (hence also *Ubera*).

27. My analysis goes against the conclusions of Orduña (2005, 2006) and Ferrer (2005, 2006, 2009, 2010), who argue that it was the Basques who borrowed the terms for numbers from the Iberi. Internal data in the reconstruction of numerals suggest the contrary, namely, that the Iberians would have borrowed the outcomes from Basque proto-forms. According to my analysis, which I discuss more fully in a forthcoming work, the evidence of various Basque names in the Pyrenees, extending as far as the coast of Catalonia, suggests that at some unspecified time, the Iberi and the Basques engaged in intense economic exchanges, possibly in the areas around the valley of the Ebro (see Oroz 1981 and Jordán 2008 for similar theories, though the contours of their arguments differ greatly from my own).

(probablement *mons melonum*, en genitiu plural, ‘muntanyeta dels teixons’), car allò seria terreny selvàtic en els ss. V–IX.

The lack of any persistent trace of the Late Latin etymon in Catalan, on the one hand,<sup>28</sup> and even more importantly, the clear confirmation offered by the referents examined—‘places that are deep (grottos, hollows) and dark (woods)’, restores the approximative meaning of ‘dark, obscure, deprived of sun (= OPĀCUS)’, which matches the meaning of *\*bel* in Iberian and paleo-Basque. Even the interpretation of the Valencian toponym *Mutxamel* would be more satisfactory if we considered the first segment to be a southern Catalan outcome of *moixó* ‘bird’, or rather, ‘black bird’ (AVIS NĪGRA). This hypothesis seems to be clearly corroborated by the name given to the mountain peak that hovers over the village of the Alicante: *Bec de l’Àguila*, that is, ‘(black) eagle’s summit’.

The assistance provided by paleo-Sardinian is again relevant here. As I demonstrated in *Paleosardo*, the numerous outcomes of *\*bel* in Sardinia contain a bilabial nasal in place of [b]-: *mele*, later *mela*, *mula*. This substitution of bilabials, however, must have been unexceptional in the Iberic territory; we note that the knights of the *turma Salluitana* who, in 89 B.C., were awarded Roman citizenship, all bore names in [m]-: *Adi-mels*, *Ordu-melis*. The intuition that Catalan toponyms in *-mel* derive from the equivalent term is further strengthened by the paleo-Sardinian toponyms *perda Meloni* and *vrunku Melone*, which clearly have nothing to do with Sardinian or Italian *melone* ‘melon’ (a fruit which grows on flat terrain, and certainly not among the rocks at the top of a mountain!), but rather reflect the neo-Latin hybrid toponyms *Perda niedda* or *perda Mele* and *Vrunku nieddu* or *vrunku Mele*, which we have already seen. In Catalan, therefore, the lack of transparency of the Iberic outcome *-mel* has brought about a simple distortion and created a false etymology with *meló* (‘melone’). If my hypothesis is correct, this datum, together with the interpretation of *Iber*, would further reinforce the pan-Catalan diffusion of ancient Iberic structures. This contradicts the theory proposed by de Hoz (2009), according to which the ethnic language of the Iberi was always restricted to ancient Contestania (present-day Alicante).<sup>29</sup>

**6. Conclusions.** Research into substratal languages, based on the study of toponyms, poses specific questions, which require certain refinements in methodology. It is essential, above all, that, before comparing

28. Lat. MELES, late Lat. MELŌ ‘badger’, provides a clear isogloss separating Catalan and Castilian (*teixó* / *tejón*) from Aragonese (*melón*). For Aragonese, the dialect data are given in Rohlfs (1985:203) and in *Endize* (1999, III:1255).

29. Also surprising are unverified instances of *-mel* in Sicily, where traditionally it is thought that the Iberic Sicani established a pre-Roman colony; there are several instances of *Monte Mele*; more important is the incontrovertible form *Maga-mele*, which contains, in its first segment, our *Mago*-(*mad*as), and even more so, the compound *Maku-mele* ‘settlement on dark or basaltic lands’ (Ballester 2010).

roots belonging to two geographically distant languages, we conduct a carefully disciplined reconstruction of the etyma, that is, of the signifiers upon which the toponyms are based. In this regard, the example of paleo-Sardinian is highly instructive: bases that were determined from distributional analysis to have an initial [d] (\**des-* in *Desunele*, \**dur-* in *Durunele*, \**dog-* in *Dogolai*, and so on) are no longer found in present-day Basque, or are found only in certain compound forms (*han-dur* ‘cruel’ < ‘land animal’, with *han-* as in \**hanuntz* ‘goat’), and therefore are reconstructed by etymologizing contemporary forms (*leze* ‘chasm’, *lur* ‘earth’, *logi*, *loi*, *lok-atza* ‘alluvial tract, subject to landslides’). Ingenuous attempts at reconstruction that fail to make use of an appropriate methodology, but rather compare paleo-Sardinian forms with homophones from other languages, have yielded wildly erroneous results.

In addition to the reconstruction of the signifier, the accurate determination of meaning acquires validity, above all, by testing the meaning of the terms against their actual referents (*bau*, *baku*, *riu*, *kúkkuru*, *monte* + *mele*, *mela* etc.), and also by conducting a painstaking analysis of heterosynonymous calques (*Figù niedda* = *Thiku-nele* or *Filighe riju* = *Fili-kore*, *Fili-gorri*) and combinations of complementary roots (*Riu* < *RĪVUS* + *Uras* < (*h*)*ur* ‘flowing waters’).

Finally, the systematic examination of reconstructed roots requires a careful study of both the distribution and the frequency of the terms; such a method allows us to take into account productive roots and predictive contexts: in addition to the signifier we must take into consideration the meaning of the recovered elements.

Following this set of requirements provides us with a more certain methodology for conducting research on the substrata of ancient Europe, and especially of the Mediterranean. I believe that the results discussed herein, derived from applying this analytical method to the corpus of paleo-Sardinian toponyms, demonstrate *ad abundantiam* the significant advantages that may thereby accrue to the reconstruction of the linguistic prehistory of Sardinia and the ancient Mediterranean.

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### Appendix: Paleo-Sardinian Microtoponyms

These data on paleo-Sardinian microtoponyms are supplementary to the *corpus* presented in *Paleosardo: Le radici linguistiche della Sardegna neolitica* (Blasco Ferrer 2010). The additional materials assembled here have been verified against the actual referents; for that reason, before the review of each lexical item, I provide an example that is emblematic of the correspondence between the definition of the postulated root and the meaning that may be deduced from the actual location. Neo-Latin calques on the paleo-Sardinian toponyms are cited at the end of each entry.

### 1. *aran* < Basque (*h*)*aran* ‘valley’ and ‘river (in a valley)’

At Désulo, *Aran(n)ule*, a narrow valley of chestnut and oak trees in a north-facing hollow, and *Aranile*, a valley beneath the heights of Tacciaré. *Garaunele* (*g-ara[n]-nele*) at Mamoiada refers to a plateau that gradually slopes into a valley called *su Sabuku* (‘elder tree’). The distorted toponym at Gavoi \**Arrana*, which should be emended to *Arana*, indicates a stream that runs through a small plain, similar to many *aran* in the Pyrenees. At Irgoli is the well-known *fonte Aranzu*, which is homonymous with the Basque spring (the homophony with Sardinian *arantzu* ‘orange [fruit]’ is clearly to be disregarded, given the territory; Taramelli 1993, I:253).

OTHER PLACE NAMES: *Arana* (Sta. Teresa di Gallura), *skina s’Arani* (Teulada: ‘mountain crest facing some hollows’), *genna Aranili* (‘crossing’).

TRANSLATED FORMS: *Badde niedda* ‘dark valley’ (Austis, Villagrande Strisàili, and several other towns).

### 2. *ardi* < Basque *ardi* ‘sheep’

OTHER PLACE NAMES: *Ardai* (Villa S. Pietro), *Ardeu* (Sunì), *Ardalai* (Loceri), *Ardilia* (Seulo), *baku s’Arderia* (Talana, ‘gorge’), *Ardasulei* (Sórgono), *Ardasai* (Seulo).

TRANSLATED FORMS: *Brunku berbeghe* ‘sheep’s peak’ (Austis), *Baku de ar berbés* ‘sheep’s gorge’ (Urzulei).

### 3. *a(u)nuntz* < Basque *ahuntz* < \**han-hun-tz* ‘goat’

The only known attestation is *genn’A(u)nuntza* (Seulo).

TRANSLATED FORMS: *Baku de sa craba* (Arzana), *Monte craba* (Ardauli).

### 4. (*h*)*aritz* < Basque *haritz* ‘pedunculate oak’ or ‘English oak’ (QUERCUS RÖBŪR)

At Tonara is the *ghenna* (‘crossing’) *Aritzé*, a mountain pass covered entirely in oak trees; similarly, the nearby village of *Aritzo* is famous for its expanse of oak woods.

OTHER PLACE NAMES: *punta Aritzu* (Teulada, ‘peak’), *arriu Aritzu* (Villaputzu, ‘river’ that runs through a wooded tract of land), *Aritzu* (Santadi, located in the southwestern region of Sulcis, is known for its dense woods, which extend as far as Teulada and Capoterra); in *Golo-anitzo* (Olzai, with [r] > [n] by dissimilation) the root of the first segment *golo-* is probably connected with *golosti(u)*, Basque *gorosti* and Aegean κήλαστρον ‘holly’).

### 5. *arte* < Basque *arte* ‘holm oak or holly oak’ (QUERCUS ĪLEX)

Some miles from the town of Tonara, near Sórgono, a majestic ridge of holly oaks and chestnut trees, striking for their ‘reddish’ color, is appropriately called *Artigoria* (with \*-kor). At Tiana, a woods of holly and cork oaks is called *Artalasai*. At Seulo, a crossing covered in holly oaks is called *genn’Artoa* (another eight locations in the same mountainous community bear the translated form *iligi*). Clear from the context are the many *Artunele* in the mountainous region of the center of the island; the dark color describes the absence of light in the dense holly woods. Thus, the secondary meaning of *littu*, in and around Sórgono, refers not necessarily to ‘the woods (*scil.* of holly oaks)’, but rather to places that have dense, tall vegetation, and are therefore ‘dark’ (< \*ĒLĪCTUM, from ĒLEX for ĪLEX).

OTHER PLACE NAMES: *Artalasai* (Tonara), *arku Arten(n)ulu* (Seulo, with -nulu ‘black, dark’), *Arteni* (Tortolí), *genna* and *kúkkuru Artulu* (Ussássai), *punta Artora* (Siniscola).

TRANSLATED FORMS: *arriu Īlixì* at Villaputzu.

### 6. *asuni* < Basque *asun* ‘nettle’ (Vázquez Molina 1991)

PLACE NAMES: *Asuni* (town), *bau Asuni* (Láconi, ‘ford’), *Azuni* (Gúspini), *cuili Asunis* (Sinnai, ‘mountain enclosure for animals’), *su accili de perd’Asuni* (Seulo, with (b)*acili* ‘stone enclosure for cattle’). The family name *Asuni* is, obviously, derived from the toponym.

### 7. *bar-* < Basque (*h*)*ibar* < \**húrbar* ‘valley crossed by a river’

At Santu Lussurgiu *badde* (VALLIS) *Úrbara* is an exact reflection of the proposed etymon; further proof is found, in a more advanced stage of formal development, in the *ghenna* (‘crossing’) *Úbera* of Sörgono, ‘valley crossed by a mountain stream’, close to the border of the state demesne. The toponym and its historical referent completely correspond in *Barí* (Barisardo, da *Bar* + *-í*): the village was originally located in a territory that bears the traces of sedentary settlements going back to the Neolithic age, protected by the heights *su Pranu*, *Tekku*, *su Crastu*, *Pissu de Monti*, and *ir Gibas*; it opens out into the sea by way of a passage through the *riu Mannu*. *Barotto* (*bar* + *hotz* ‘cold’) at Teti indicates a ‘canyon’ through which rain water passes in the winter. At Loceri, there is the transparent formation *Bárkulis* (with *-[r]*- at Lanusei), which is a ‘crest of porphyry’ below which disgorge springs of water that come together in the valley below. The description of *Barumeli* at Ales is quite revealing (Various authors 1968:10–11 and 42): the castle is set on an isolated height, in the valley that surrounds the *Monte Arci*; numerous streams and winter torrents run down the sides of the mountain, leaving behind a residue in which “brilla il nero lucicchio dell’ossidiana.” The village of *Baressa* is the lowest-lying of the neighboring villages; it is located near a water way, *s’erriu de Baressa*. *Barùmini* (for the suffix cfr. *Nur-áminis*) lies on a vast plain, bathed by the *riu Mannu*, which was once clearly a river of considerable importance. Finally, of particular relevance for the inference of the ethnic name *Iberus* is *Íbera*, at Serrenti, 35 km. from Cagliari: it is a wide ‘valley’ formed where two mountains come together, one of which is named, by referential contiguity, *monte Íbera*; the waters that accumulate in the winter run down to the modern-day village, located a few hundred meters below. At Gonnosnó, in a place named *Figus*, a rivulet that runs under a low hill gives the name *Íbera* to the entire area.

Different place names reveal successive stages in the linguistic evolution of the proto-base, which shows itself to be highly productive (with some remarkable cognates in compounding patterns, as in *Ibar-eni*, which reflects Basque *Ibar-gain*, following the same evolution as *Soro-gain* > *Soro-eni*). In many cases, as a result of false segmentation, the second segment *-bara* has become independent. Finally there is a clash of outcomes in the kindred term (*h*)*ibai* < \**hurbáni* ‘river’ (literally, ‘riverbed, waterway’).

OTHER PLACE NAMES: *badde Úrbera* (Scano Montiferru), *riu Úrbara* (Tertenia), *ghenna Úbera* (Sörgono), *serra Orbaris* (Sédilo, ‘ridge with hollows’), *Urbanu* (Bórore), *genna Solábani* (Silius, with *sola* ‘dry, deforested’), *riu Orbai* (Siliqua), *baku Orbai* (Sinnai), *arriu Bai* (Siliqua), *Íbera* and *Íbera* (Serrenti, Gonnosnó), *Ibar-eni* (Sörgono), *Ibárgiu* (Ierzu). Forms with *bara-*: *Bárbara* (Villagrande S., ‘valley’), *Barai* (Síligo), *riu Bara* (Osini, S. Basilio, Sindia), *riu Barau* (Orune), *Baraci* (Nurri, Serri), *Bárala* (Torpé), *geca Baressa* (Setzu, ‘crossing’), *Bardedu* (Sédilo), *sa konka Bareddu* (Seulo, ‘hollow’), *Bareka* (Turri), *Barisone*, *-i* (Sénnori, Seulo, Orune, Tertenia, Sinnai).

### 8. *bas-* < Basque *baso* ‘forest, wooded tract’

At Olíena, Teti, and Fonni, the tract of woods which, because it is on a slope, is given to landslides, is called *Masiloi* (*loi* ‘alluvial plain’; the initial [m] suggests

the form in [b]). At Sant'Andrea Frius, l'*arriu Baskuri*, a stream that crosses over several wooded lands, is called, at one section of its course, *riu Pirastu* 'river of the wild pear trees'.

OTHER PLACE NAMES: *Bas(o) de nuxi* (Santadi, with NUCEM) 'woods of walnut trees', *su Pasturri* (Turri, with *iturri* 'spring'; the initial [p] is a hypercorrection through *sandhi*, according to the pattern [su'βani] = *su pani* 'the bread'), *riu Baseuri* (San Basilio), and *Basáura* (Tortolì: tract of land crossed by a river which empties into the sea), with *ur* 'water'; *Basonilo* (by dissimilation, from \*-*nulo*, Oniferi), *serra Masí* (Siliqua), *Dolimasio* (Baunei, with *dol* 'blood-red color'), *Masini* (Sindia), *Masani* (Sórgono), *Masonassi* (Loceri), *Mason(i)eli* (Barisardo, with *-nele* 'dark, obscure'), *Thókoromasi* (Gavoi, with *thógoro* 'wild thistle [used to card wool]'). Three different *comuni* located in the eastern-central part of the island reveal three successive phases of evolution in the compound \*-*baso* + *mel*, with [b/m], which becomes [b/n] (*Baso-nilo*, Oniferi), [m/n] (*Maso-n(i)eli*, Bari) and finally [n/n] (*Nasoneli*, Olzai).

TRANSLATED FORMS: *Foresta arrúbia* (Sinnai) and the hybrid *Littokoro* (Illorai, with *littu* 'woods') for *Baskuri*, and *Padenti nieddu* (Sard. *padente* 'woods') = *Littu de Mela* (Tula, with *-mele* 'dark').

### 9. *bide* < Basque *bide* 'path, mountain trail, track'

At Tonara, a famous town in the high mountains, there is a path bristling with tall, dark vegetation, which remains dark for many hours and is difficult to transverse, called *Biduluni* (with *il(h)un* 'dark'); it is in surprising contrast to other mountain paths and trails in the same territory, which are easier to navigate, called *Bidoni* (with *(h)on* 'good'). A shepherd of the area informed us that the old path near S. Sebastiano, heavily wooded (with oak, cork, and chestnut trees), is impassable in the winter. Taramelli (1993, II:292) gives an illuminating description of the *riu Bidiena*, which follows the course of the *riu Ordari* at Silanus: "allineamento di costruzioni megalitiche (*nuraghi* e tombe dei giganti) allineate lungo questo rio dal corso molto infossato nell'altipiano. Evidentemente il corso del fiume, come i corsi paralleli, rappresentavano *vie naturali* dal piano alla montagna del Marghine" (my italics; *-ena* is clearly *vĒNA*, a hybrid form, 'waterway, course of a river'). At Baunei there is a clear "translation" of *Bidunie*, as supplied by the climber Aldo Nieddu (2004, 2:27): it refers to the only accessible path, which begins at the *Coile Boschittu*, 700 meters high, along a ridge covered with junipers.

OTHER PLACE NAMES: *riu Bide* (Ítiri, Martis), *Bidi* (Ales), *riu Bidiene* (Silanus), *Bidui* (Bírori), and the many instances of *Kumbida*, *-e* (Tonara: *kumida*), showing the blending of the root *konka* ('cave, hollow'), as in *Cumbidameli* (Seulo, with *-mele* 'dark and deep path') and *Kumbida lua* 'path on which is found *sa lue*' ('euphorbia plant').

The homophony with *vĪTIS* 'grape vine' is accidental; furthermore, because the form does occur in relation to many natural referents (rivers, mountain paths, for example, the *Bidi* in Ales, 'a long riverway', or the *Baku (de) (B)ide* at Ortueri, 'a basin covered by majestic, centuries-old oaks'), the homophony is irrelevant, because the toponomastic indications refer to *vĪNEAM* > *binza*, *bíngia*, indicating lands cultivated with grape vines. Regarding the spread of *bide* in Basque toponymy, see M. Gorrotxategi Nieto (2007) for an excellent overview and a wealth of examples.

### 10. *kor-* < Basque *gorri* < paleo-Basque \*-*kor/koR* 'red'

At Barisardo is the site, already discussed under *Lúrkuri*, that is equivalent to *Lorkorio* at Sarule. At Dorgali, facing Sant'Elena, a steep mountain slope, which

ends in a deep ford, was known from ancient times for its 'reddish loamy earth' used to make bricks for chimneys; it is called *Ikoré*, with the [i]- of *hibi* 'ford', equivalent to *Igori* at Tonara (and cfr. *Badu ruju* at Ozieri). There is a clear correspondence to the *arriu Baskuri* of Sant'Andrea Frius: the stream, which runs from the wooded area of *Pirastu* to the rocky zone of *Perdixeddas*, winds through a series of basins before taking a straight course through a territory distinguished by numerous veins of 'porphyry of a reddish color' that cut through the granite and the metamorphic rocks. The color, which has given its name to the river, is evident also in the many microtoponyms in the area that contain the neo-Latin adjective *arrúbiu* 'red' (*arriu Arrúbiu*, *arriu de Figù arrúbia*) or even the metaphor based on 'red blood' (*pranu Sànguni*). At Gavoi, from the hill that emerges from the *nodu Gurrài*, having the reddish color of granite, numerous *domos de janas* have been excavated (Cidu 1989:31). Several Sardinian toponyms with *gorr-/gurr-* find their equivalents in Basque place names. For Basque *Gorri-tz* and *Gorr-io*, similar to Sardinian *Gorriolo* and *Gurr-ia*, see Salaberri Zaratiegi 1997:32. At Orune, to the right of the river *Korrulai*, runs the tributary *Dukori* (\**dur* + *kor*) which, in the proximity of *Lorana* (\**lur-ana*), becomes reddish in color from the underlying rocks of porphyry.

OTHER PLACE NAMES: *Bissikoro* (Baunei, with *itz* 'frozen place'), *janna de Kòri* (Urzulei, 'crossing'), *Dukori* (Orune, with \**dur* 'earth'), *Talakori* (Ottana, with \**tala* 'hydronym'), *funtana Dodokkoro* (Baunei, with \**dodol*, antecedent form of *odol* 'blood'), *riu Kurui* (Sarule). Formed on the base *gorri* is *Filigorri* (Sédilo), corresponding to the many *Filikore* 'red fern', a plant that grows widely in Sardinia, lending a strong coloring to the hills and mountains.

TRANSLATED FORMS: *Kùkkuru orrùbiu* (Seulo, 'peak') and the synonym *Brunku arrùbiu* (Sinnai), this latter may be compared with *vrunku Dolau* at Ovodda, *Piskina rùggia* (Sindia, 'natural basin of water, pool'), *Monte arrùbiu* (Tertenia), *Foresta arrùbia* (Sinnai), *Terra ruja*, *arrùbia*, *orrùbia* (Sarule, Abbasanta, Seulo, Solarussa), *Benale ruju* (Santu Lussurgiu, 'underground stream, spring').

### 11. *dol-* < Basque (o)*dol* < \**dodol* 'blood', 'blood-red color'

A rivulet that crosses the reddish lands between Sarule and Mamoiada is called *rivu Dolau* (not \**doladu*) at Mamoiada and simply *su Dolau* at Sarule. Emblematic of the widespread synonymy is the spring at Baunei called *funtana Dodo-kkoro*, which combines the meanings 'blood' and 'red'; revealing the similarity between two toponyms are the forms *janna Doli* (Torpé) = *Janna Kori* (Urzulei), two 'mountain passes' characterized by vegetation and masses of red limestone.

OTHER PLACE NAMES: *rivu Duliai* (Orune), *funtana Sciridolai*, and *Nortiduli* (Talanta). Regarding the reddish stones of the *nuraghe* of *Nurdole*, see the description offered by Pittau (1997:32) in his volume on Sardinian place names.

TRANSLATED FORMS: *Bena sàmbene* (Bolótana), *Piskina sànguni* (Villacidro), *Pranu sàng(u)ini* (Sant'Andrea Frius), all of them formed on SANGUEN.

The result simply of false etymology is the association with the verb *dolare* 'to serrate, to file; to splinter' which, in the participial form in *-au*, has been associated with *vrunku*, without taking into consideration the referent (formations in *-au*, but having nothing to do with participles are, for example, *Kartau*, *Barau* and others). The verb already existed in Latin as a technical term relating to carpentry, and has remained minimally functional in the lexicon in Sardinian as well.

### 12. (i)*nin-* < Basque *ihin(tz)* < \**ninin-* 'frost, ice formed at night'

At Tonara, the terrain of *Inineri* (later *Ineneria*), which is completely frozen over from autumn to spring, lies close to the crossing of *Iscra de Mela* ('dark location bathed in waters') and to the dangerous crossing named *sa Kilighia* (Lat.

GĚĹĪĈĪDĪA ‘ice; hoarfrost’). Possibly by contamination with this form we find the variant *Kinighinitzo*, designating a crossing—like *Kilighia*, perpetually frozen—in which we again find the root *itz*. At Osini, the lower slope at the confluence of two rivers, also characterized by frost and ice, is called *Ninaras*.

OTHER PLACE NAMES: *Innori* (Seulo), *pineta de Ninikeri* (Ozieri, with the paleo-Sardinian root *kerē*), *Niniana* (Orune), *su bau* (‘ford’) *Perduninni* (Seulo, with *perda* ‘rock’), *Kilighinni* (Bórore, with *kili-*, as in *Kilivani*), *Cinnenerri* (Senis).

**13. *isti(l, -n)* < Basque *istil, istin(ga)* < \**itz-il* (cfr. *hertz* > *heste* ‘intestine’ and its toponymic twin in Basque *Itzileta-Istileta*), ‘pool, marsh, a short course of water which empties into a swamp’**

At Dorgali, between the lands of *Ikoré* and *Ortunule* (< \**ortu* + *nele*), there is a short mountain slope, where a large canyon fills with water during the winter and flows into the valley below: *Istelotte* (with *hotz* ‘cold’). At Austis, the small river (*orroja*) of *Istekorí* (with \**kor* ‘red’) is known for the color which is characteristic of the area covered by the flow of water, formed of granite and reddish porphyry. Between Bitti and Orune, in the territory of *Terresole*, which contains a perpetual spring, one finds *Istelai*; at Orani, rising beneath *monte Nule* (‘shady mountain’), is an age-old fountain of crystal-clear water, named *Istiarvu* (Taramelli 1993, I:98 and 214). *Orgóristi* (with *orga* ‘pool of water’) is a mountainside near Gáiro, at the confluence of three springs.

OTHER PLACE NAMES: *riu Isti* (Orune), *erriu Istis* (Loceri, and cfr. at Núoro *Ob-istis*), *funtana* and *orroja Istilí* (Ardauli), *funtana Istilia* (Seulo), *cuile Istilie* (Talana, ‘paddock’), *riu Istitti* (Lula, Orune, with *itz* ‘ice’), *riu Istiarvu* (Orani, with *albus*).

TRANSLATED FORMS: there is a clear correspondence between *Istiunele* (Fonni, with *nele* ‘black, cloudy’) and the numerous occurrences of *Ludu nieddu* (Austis, Tertenia: LŪTUM NĪGĚLLUM ‘flood plain or dark marsh’).

**14. *itz* < Basque (*ih*)*intz*, or rather \**itz* ‘cold water, ice, blanket of ice’**

The segment *itz* (Bittese [iθ], Logudorese [it], Ogliastrino [iss]) everywhere refers to a crossing of ‘frigid waters’ or a ‘blanket of ice’, as in the earlier mentioned case of *Istelotte*, as well as in the name of the town *Bitti* ([‘viθi]), with prosthetic [b]-, as in *Bittiri* at Barisardo (cp. *Íttiri*). *Brunku s’Itzo*, on the heights of Láconi, is also well known as an area of perpetual cold. At Tiana, a stream named *Trobelitzo* descends from the heights of *Otzigale*; the name is particularly interesting because the first segment bears the neo-Latin base TŪRBĀRE, which originally meant ‘to disturb the waters’. There is evidence of numerous hydronyms formed from this base in the high mountain town of Tonara: *Itzí* (and *erriu B-itzi*, as in *Bitti*), *Itziló* (and *Bitziló*, stream and spring), *Istiritzo* (with *istil*).

OTHER PLACE NAMES: *nuraghe Itzu* (Síligo, on a scenic hill), *Itzu Melone* (Ardauli, with a distorted form of *mele* ‘dark’), *s’Itzeo* (Gonnosnó), *su Bissi* (Ussássai, and cfr. *Olobissi* at Baunei), *riu Mitti* (Silanus, with prosthetic [m]-), *bena Itziddo* (Aidomaggiore, ‘spring’), *Biditzai* (Talana, with *bide* ‘icy path’), *Lakonitzi* (Villagrande Strisáili, with *lakon-*, as in *Láconi*), *Mogoritzi* (Sia, with *mógoro* ‘hill’), *Nuritzzi* (Sélegas, with *nur* ‘stone’), *Sinitzai* (Sorradile, with *sini*, as in *Sinikorra* and other hydronyms), *Talitte* (Lula, with \**tala* ‘waterway’).

**15. *lats* < Basque *lats* ‘stream, rivulet’**

At Austis, a spring near the river *Otzisai* is called *Latsaké*, with the plural marker *-ak*. At Loceri, a ‘small fordable stream’ is known as *Bobelasta*, with *bau* (*d*)e + *lats* and metathesis.

OTHER PLACE NAMES: *ri(v)u Latsones* (Sarule, Ghilarza), *riu Latturighe* (Pattada, with *ur-* ‘water’).

### 16. *leze* < Basque *le(i)ze* ‘chasm, precipice’

Between Bolótana and Lei lies a wide plateau called *Lezana* (with *-ana*, as in *Tal-ana*, *Otz-ana*), which ends abruptly in a precipice, *Ortakis* (da \**ortu*, that is, ‘depression’). This is clearly a case where the form has been determined by referential contiguity. From the evidence of the microtoponyms that I have examined so far, I have found numerous attestations of the reconstructed proto-root \**des-*, to which we may attribute modern *Désulo*, *Desu-nele*.

### 17. *lok-* < Basque *lok-* (Bergara *lók-atza*), *logi*, *loi* < \**dog-* < \**don-gi* ‘alluvial plain, subject to landslides’

At Olíena, and to some extent at Dorgali, there are many *Dogones* ‘places that are repeatedly subjected to landslides, being located on muddy terrain or dislocated on sharp precipices’, for example, *Dogone malu* ‘foul’ or *Dogulana*, now ‘swamp’. *Lokorri*, or *Logorro*, at Olzai, corresponds to the Lower-Navarrese toponym *Lohigorri* ‘alluvial tract of a reddish color’. The village of *Loceri* (province of Ogliastra) is in fact situated in a wide basin (or valley); in the winter it is often overrun by a surfeit of water that creates alluvial plains. Taramelli’s description of *Loke* is quite revealing; describing the *nuraghe* at the foot of the plateau, he writes “dovette essere il guardiano della gola stretta che conduce all’ampia vallata fertilissima” (1993, I:255).

OTHER PLACE NAMES: *Dogolai* (Orune, with *ola*, ‘primitive hut made of branches’), *Lokele* (Sédilo), *Lókiri* and *Lokirioé* (Fonni), *Lokorru* (Teti), *Luceri* (Sinnai).

### 18. *lur*, *dur-* < Basque *lur* < \**dur* ‘earth, terrain’

At Orgósolo a tract of land where oak trees grow is called *Durunele*. In an interview, a local shepherd informed us that the name relates to the fact that the wooded tract is ‘dark’ (*nele*), [ɛst t'erra (d)e 'ʔelʔos] (‘it’s a land of oak trees’). Baurnei yields the interesting form *códula Orgoduri*, a dried-up river bed showing traces of many natural basins (*orga* ‘spring of water, wetland’). At Tonara, an area which, because it faces north is always iced over, is called *Loritzé* < \**lur-itx-é*. The shepherds of Austis use the revealing term *Lutzurró* (*lur* + *zuri* ‘white’, with the regular lengthening of *-r-*) to describe “una terra bianca, comente anta passau s’istrada” (‘a white land, as though it were paved with stone’).

OTHER PLACE NAMES: the reconstructed paleo-Basque \**dur* (cfr. *edur* ‘snow’, *handur* ‘cruel’) yields *Durrísola* at Dorgali and Olíena (with *sola* ‘arid, lacking trees’) and *Dudurri* (Orosei), in which we find the iterative model of paleo-Sardinian and paleo-Basque roots (\**dodol*, \**ninin*). An abandoned village and a site with *nuraghe* near Bitti are called *Dure*. By referential contiguity, a stream named *Durane* at Fonni surrounds the archaeological site of *Bidistili* (< *bide* + *istil* ‘stretch of water-soaked land’). Containing the alternate outcome *lurare* *Lure* (Sédilo), *funtana Luri* (Tissi), *Luros* (Ítiri), *Lúrkuri* (Barisardo).

TRANSLATED FORMS: the series of names having the pattern *terra* + *alba/nigëlla/rübea* (land + white/black(ish)/reddish) is highly productive in the Eastern and Central territories of Sardinia. They correspond closely to Basque toponyms: *Terralba* (Silius), *Terrarba* (Sinnai, Ulássai) = *Lutzurró* (Austis, Basque *Lurzuri*); *Terra arrúbia* (Solarussa), *orrúbia* (Seulo), *ruja* (Sarule, Abbasanta) = *Lúrkuri* (Basque *Lurgorri*); *Terra niedda* (Escalaplano), as well as to hybrids of the type *Terra mele*, *mula* (Barbagia) = *Durunele* (Basque *Lurbeltz*, *Lubeltza*).

### 19. *mele, nele* < Basque *bel(-tz)* < \**bel* 'black, dark'

This root represents one of the most productive and significant loans from paleo-Hispanic to paleo-Sardinian toponymy. It is applied to the semantic groups 'gorge, ravine, cave', 'mountains, slopes, peaks', and 'waters, swamps', with the related meanings of 'dark, opaque, shady, facing north, cloudy'. Formal linguistic differences have yielded productive allomorphs: *mela, mula, melas, mulas, melone, mulu* and *nele, nule, nuli, nulo, nulu*. At Mamoiada the stream *Maramele* owes its name to the crossing between lateral heights, which creates a 'dark, cold waterway'. Along inland highway 128, facing the municipality of Tiana, there rises a mountainside covered with small oak trees and holly oaks, having a northern exposure; the lower portion of this slope, which extends to a wide ditch that rarely sees sunlight, is called *Nulo* 'dark'. At Orani, the *rīvus Mele* becomes *Rosi-nele* (< [risu] with metathesis of the vowel); today, because it receives the waste water of the village, the course of the river has become a virtual swamp. At Tonara, the 'dark, cold, high mountain pasture' is called *minda Mela*; the same *comune* contains names with different allomorphs, all of them relating to 'dark, cold places': *sa Mela, orroa de sa Mela* 'stream', *iska de sa Mela* 'saturated earth' (< *INSULA*), *konkita de sa Mela* 'peak, small peak', *kosta de su Mòlinu* 'slope, side [of a mountain]', *kosta de Nulu*. A mule-track at Ottana, which connects one side of the Sarule mountains, deprived of sun, is called *Neunele* (Taramelli 1993, I:221). Finally, in the territory of Ozieri the place called *Meleu* refers to "a ridge which descends in a southwesterly direction to a deep, narrow hollow" (Amadu 1978:65).

OTHER PLACE NAMES: With *mele*: *badu* 'deep ford' (Orosei), *gùtturu* 'gorge' (Talanta), *riuvu* (Perdasdefogu, Nùoro). With *mela*: *badu* (Orani, Loceri, Villagrande Strisàili), *baku* 'gorge' (Villagrande Strisàili), *badde* 'valley' (Putifigari), *funtana* (Sádali, Bórore), *genna* 'crossing' (Villagrande Strisàili), *monte* (Ussássai, Nughedu San Nicoló), *riu, arriu* (Villanova Truschedu, Sinnai, Guasila, Capoterra, Sárabus), *littu* 'woods' (Tula, Austis), *pedra, perda* (Barbagia, Nughedu San Nicoló). With *melas*: *bau* (Villamar), *baku* (Teulada), *canali* (Sélegas), *funtana* (Siniscola, Nuragùgume). With *mula(s)*: *péntuma* 'chasm, precipice' (Olíena; perhaps the result of an irregular development from \**FĒNDĪTA* 'cleft [that is, 'rock, gorge']', with *F* > [p]-, as in *puntana* 'fontana'), *baku* (Barisardo). With *nele*: *Desunele* (Orgósolo, with *leze* 'chasm'), *Durunele* (Orgósolo, with *lur* 'earth'), *monte Nele* (Olíena). With *nule*: *Ortumule* (Dorgali, with \**ortu* 'depression, profundità'), *Nulé* (Sórgono), *monte Nule* (Orani); we may add to these *badde Múlinu* (Montresta), *Itzu Melone* (Ardauli, with \**itz* 'blanket of ice').

TRANSLATED FORMS (too numerous to list in full): *Bau nieddu* (Perdaxius, Florinas), *Baku nieddu* (Barisardo), *Funtana niedda* (Sádali), *Gùtturu nieddu* (Serbariu), *Monte nieddu* (Tertenia, Villagrande Strisàili), *Ri(vu) ni(gh)eddu* (Nùoro, Lóculi, Villacidro). Of interest are two hybrid forms: *Bukanele* at Nughedu San Nicoló, which corresponds in meaning to *Gutturunele* 'dark gorge' (Maxia 1998:223), and *Puntanele*, with *puntana* 'fontana' ('fountain'). Also revealing is the hybrid form *Eligan(n) ele* = *élighe* + *nele* at Buddusó, not far from Tirso, on a plateau covered with 'holly oaks' (Taramelli 1993, I:76).

The correspondence, in Sardinian, of Sard. *mele* (*mēl*), *mela* (*mēla*), *melone*, and *mula* (from Italian *mula*; however, in Sardinia there are *asini*, but no *muli*!) is entirely due to homophony; all the forms are easily refuted by comparing them to their referents, which are 'deep, hidden places; places deprived of sun'.

### 20. *ortu* < Iberic *ortín, ortú*, possibly 'hollow, depression'

At Dorgali, opposite the mountains of Sant'Elena, there is a sharp downward slope having a northern exposure, which is consequently 'dark or shady' for long

periods of time, called *Ortunule* (from *-mele*—the name appears thus in land registers from the late nineteenth century); in the same village of Baronia, a great ‘depression’ of land, which is the source of waterways that empty into the sea, is called *s’Ortei*. The correlation with the referent is also clear in *Ortulé* (Urzulei), a deep gorge, *Ortueri*, a vast basin encircled by mountains, and finally, in the toponym of Bolótana and Lei, *Ortakis*, a ‘ravine’ which brings to an abrupt close the high plateau of *Lezana*. Baunei yields the interesting compound form, *s’Art-ain-osti* (a photograph and description may be found in Nieddu 2004, I:32). This refers to a steep spur that rises between two rock arches (*baku Urussó* and *baku Addas*); at the bottom are centuries’-old woods of *taxus baccata* (‘common, or European, yew’) with their conspicuous foliage (\**ortu* + *ain* + *osto* ‘leaves of yew trees at the bottom of a ravine’). The tree which in Basque is called *eni* ‘yew’ grows almost exclusively at Baunei.

OTHER PLACE NAMES: *Ortu* (four instances at Talana, all of them referring to depressions or gorges; also at Tadasuni, Sisini, and Bolótana), *baku s’Ortu* (Tertenia), *Ortei* (Paulilátino), *Ortúi* (Teti), *kosta* (‘slope’) *de s’Ortu* (Villasalto), *Mortu Cannedda* (Barisardo, with [m]- from *monte*, as in *Mortumele* at Talana), *su Ortale* (Bolótana), *baku s’Ortali* (Ulássai), and *s’Ortali de Bittiri* (Barisardo), *riu Burtui* (Silanus, with prosthetic [b]- from *baku*), *brunku Ortolí* (Sórgono), *Mortolai* (Settimo S.P., with prosthetic [m]- from *monte*), *funtana Gortai* (Ula, with prosthetic [g]-).

Clearly Sard. *ortu* < HÖRTUS is the result of homophony, the product of a forced semantic association with the forms listed above.

## 21. *osa* < paleo-European \**ōsa* ‘spring, mouth of a river’

This root is fully confirmed in *Osala* (*Osalla*, at Orosei) ‘river’ and ‘mouth of a river’ (*Cala Osala*) in the area of Dorgali. Also *Orosei*, located not far from the mouth of the Cedrino River, the compound form, with the base \**ore*, refers to the settlement of the *comune* beneath the rocky heights, which lie a few kilometers from the mouth of the river. At Tiana one of the most tempestuous rivers is the *Tolosa* (probably from \**tala* + \**ōsa*, cfr. *Tolosa* > *Toulouse* in France and in numerous twin forms of the type *Talavé* / *Tolové* in Sardinia).

OTHER PLACE NAMES: *arriu Bosì* (Villamar, with prosthetic [b]-), *funtana Gúsinu* (Seulo, with prosthetic [g]-, as in *Gúsana*), *erriu Orgosos* (Villagrande Strisáili, formed with *orgosa* ‘spring, place saturated with underground springs’), *Mummu-rusei* (Barisardo, from *mumm-* ‘dark’ and *orosei*), and, referring to *nuraghe* near a ‘waterway’, *Orosai* (Bírori), *Marausala* (Seui, with *mara* ‘swamp’).

## 22. *otz* < Basque *hotz* ‘cold’

Alongside *Otziddai*, at Olzai and Ardauli, we find *Gottiddai* [guθiˈd̪d̪ai] at Olíena, a mountain slope which remains cold because it is rarely touched by the sun. At Tiana, the *orroja* (‘torrent’) of *Otzigale* crosses the homonymous plateau, snow-covered in the winter, at about 900 meters above sea level. At Austis, a high mountain stream is named *orroja de Iskotzó* (one may perhaps discern *is-*, unless the form is related to *iska* ‘place bathed in water, alongside a river’, as in *Iskra-lotze*, a marshland on the Aidomaggiore plateau, which contains the form *-lats*). At Baunei, a vast terrain on the Supramonte, the source of copious springs, the waters of which are icy in the winter, bears the name *Otzio*.

OTHER PLACE NAMES: *badu Otzu* (Suni), *nuraghe Otzi* and *Otzi* (Sárdara, Ardauli), *Ótzia* (Abbasanta), *Ótzi* (Aidomaggiore), *Otzili* (Ales), *riu Otziga* (Tiana), *Bilotzo* (Paulilátino), *Otzisai* (Austis), *Loddotzó* (Austis, with *lodd-*, allomorph of *loll-* ‘huts’), *riu Otzerie* (Talana), *Golótzene* (in the Márghine mountain chain, near the

Tirso River), (*O)tzukori* and (*O)tzuilai* (Sédilo, with apheresis of the initial [o] of *\*hotz* ‘cold place’, and, respectively, *-kor* ‘red’ and *ili* ‘settlement’).

TRANSLATED FORMS: *Riu frittu* (Ittiri), *Frida* = *Otzi* (Pattada), *Funtana frida* (Seulo).

### 23. *pal* < peri-Indo-European *\*pal* ‘stagnant / flowing water’

Alongside *Papalope*, near Olfena, at a place where the waters of the Cedrino River flow; at Dorgali we have *Papadosa* (< *\*pal-pal* + *ōsa*, cfr. *Flumen-d-osa* ‘mouth of the river’), which refers to the extensive system of inlets under the river Cedrino. There is a clear relation to the meaning ‘running water’ in the name of the river *Pelau* (possibly from *\*pal-au*), in the Ogliastra province below Cardedu; in Ghilarza we have the corresponding *riu Palai*.

OTHER PLACE NAMES: *riu Pel* (Ozieri), *Palai* (Bolótana), *mara Pala* (Tresnuraghes, with *mara* ‘swamp, land penetrated by a water way’), *funtana Pala* (Ozieri), *Paleadu* (< *Pala* + *badu*, Bolótana), *Torkopale* (Olfena, with *thorko*, a variant by metathesis of *thókoro* ‘thistle’), *sos Papades* (Orune), *Papalai* (Orani), *Papaló* (Villasalto), these last three showing the typical reduplicative stem of many forms in paleo-Sardinian and paleo-Basque.

### 24. *sal* < peri-Indo-European *\*sala* ‘stream, mountain stream’

A narrow channel descends from the hills to the beach at Flúmini di Quartu, now paved over; just as in the past, the autumnal and inernal waters are called *Susalai* (< *\*sal-sal* with dissimilation); the form corresponds to *riu Sasalai* of Samugheo.

### 25. *sola* < Basque *soil*, *sol(l)a* ‘dry, deforested, stripped of vegetation’

The most interesting toponyms in this appendix to the *corpus* given in *Paleo-sardo* (Blasco Ferrer 2010) are the forms *Durrísola* and *Dogúsola*, in Olfena and its surroundings, and *Solábani* at Silius. The first of the three forms refers to a territory that is ‘arid, deforested’ and clearly reflects Basque *lur* + *soil* ‘arid, deserted land’, with the base *\*dur*, already commented on, and the regular lengthening of the trilled -r- when followed by a vowel.<sup>30</sup> A typological feature of the compound is the placement of the accent, which has shifted from the first to the second syllable of the first root, just as Mitxelena reported for *Mendísolla* < *mèndi* + *sól-la* ‘monte sin árboles, lugar descampado y sin árboles’. The second, *Dogúsola*, is formed on *\*dog-*, antecedent of *loki*, *logi*, *loi* ‘alluvial plain, subject to landslides’, and refers in fact to the ‘terrain of the Baronie, degraded and subject to landslides’, as was illustrated earlier with *Dogulana*. The third, *Solábani*, refers to a ‘dry river bed’ (-*bani*, as in *\*hur-bani* > *hibai* ‘river’).

OTHER PLACE NAMES: *Magósula* (Bórore, formed on Semitic *maqōm* ‘settlement’), *nuraghe Sollula* (Baunei), *riu Kulísola* (Benetutti), *riu Nurásola* (Esterzili, with *nur* ‘stone, rock’), *Pedrasolla* (Ozieri), *Soloai* (Oniferi), *Sólene* (Bórore), *terra Sollai* (Nuráminis), *riu Sobia* (Monti), *riu Soiles* (Mores), *riu Zola* (Meana), *riu Suloni* (Laertru), *Susula* (Sarule).

TRANSLATED FORMS: Italian *Riosecco* becomes, in Sardinian, *Riu mortu* (Láconi, Bolótana, Irgoli), and, in the case of ‘springs’, *Mitza morta* (or *murta*, by dissimilation) or *Funtana morta* (Austis), and less frequently *Riu siku* (Simala) or *Paule sika*

30. Mitxelena, in the *DGV*, cites the relevant forms: “Gral. *soil* (terreno) pelado, raso, calvo, (monte) pelado, raso; *mendi soilla*, ‘désolé, désert’; *soil dao* ‘está sin árboles’, *Mendísolla* ‘monte sin árboles’; *aiz mutur soillak* ‘peñas calvas’; *lur soil*” (XIX:784).

(Bolótana, 'swamp'); for 'dry, desert land, not cultivable' we have Sard. *Terra mala* (Flúmini di Quartu, Dolianova, Lodine).

**26. *susune* < Basque *susun-* (in family names), *zezun*, *zuzun* 'poplar'**

We have a complete correspondence with the Basque term (i.e., with the toponyms *Susune*, *Susun-aga*) at Atzara, where a shepherd accompanied us to a 'grazing pasture surrounded by waters and poplars'.

OTHER PLACE NAMES: *Susuni* (Nureci), *Rio Sasunis* (Sanluri, with dissimilation), *mura de Sune* (Norbello).

TRANSLATED FORMS: *orroja* 'place bathed with waters, torrent' *de sos Fustiarbos* (Austis: 'poplars').

**27. *turri* < Basque *iturri* 'spring, geyser'**

At Orani, *Turre* has become part of a village where there is a flowing stream, the source of which is an underground spring. In Irgoli, a 'mountain spring', famous for its abundant and beneficial waters, in the area of *Millones de kanna*, is appropriately named *Turrione* (with *on* 'good', as in *Funtana bona* at Bolótana or Sór-gono, *Riu bonu* at Esterzili, or *fiume Onele* at Ardauli). Also at *Ponte Turrone*, three kilometers from Olíena in the direction of Orgósolo, there is a perpetual spring, which is similarly appreciated by the local populace and by the farmers, who have built retaining basins. At Orotelli, *Sa Turre* is a plain where many springs feed into the river *Liskoi*, which empties into the Tirso River. At Paulilátino, a spring that feeds different pools is called *putzu de Turru*. The meaning of the toponym *nuraghe Turres* of Pozzomaggiore is very clear: "Questo nuraghe . . . presenta la particolarità . . . di contenere una fonte d'acqua che scaturisce nella cella" (Taramelli 1993, III:692; my italics).

OTHER PLACE NAMES: (*monte*, *kúkkuru*, *pala* 'spring', *canale*, *riu*) *Turre* or *Turri* (Terralba, Giave, Torpé, Tresnuraghes, Nurri, Tertenia, Guasila, Perdaxius, Serrenti, Sínnai, among others), *riu*, *arriu*, *benas*, *nuraghe Turriga* (Villa S. Pietro, Serdiana, Tuili, Sárdara, Sélegas), *funtana Turrana* (Ardauli), *mura de Turras* (Paulilátino), *funtana Turras* (Bosa), *Turresu* (Ulássai), *Turritto* (Torpé, with *hotz* > -[t]-). The paleo-Basque form receives full confirmation in *kúkkur' Iturri* (Sant'Antonio Ruinas).

TRANSLATED FORMS: the term *Funtana frida* (Seulo) is a literal translation of *Turritto* (Torpé), Basque *Iturr(i)otz*; similarly, there is a perfect correspondence between *Benale ruju* (Santu Lussurgiu) and *Turrikore* (Irgoli), Basque *Iturrigorri*.

**28. *ur* < Basque (*h*)*ur* 'water, waterway'**

At Ghilarza, a seasonal flow of water, which runs freely in the winter, is called *Urásala* (with *sala*). At Orani, the area surrounding a perpetual spring is called \**Urrana*, which clearly should be corrected to *Ur-ana* (Taramelli 1993, I:161; see the analogous case \**Arrana*). For Austis, the reliable geological report of Pisano (1984:36) tells us of a nucleus of 'eternal springs, with an abundant flow of water', beyond the territory of *Lorentzai*, called *Iskurigó*, in which we recognize *iska* 'place bathed by springs, not dense or wooded' and *ur*, with the plural morpheme *-ig* < *-ik*, allomorph of *-ak*. A mountain stream that runs not far from Loceri is called *Gurgurui*, corresponding, with prosthetic [g]-, to *Urgurui* and to *Orgurú* (Orgósolo, Mamaioada), all formed with *orga* 'spring of water' and *ur*.

OTHER PLACE NAMES: *riu Uras* (Solarussa), *konka* ('depression, small valley') *Uras* (Sínnai), *s'ena Urea* (Meana, 'fount, spring'), *Ureu* (Samugheo), *Urasala* (Scano Montiferru). At *Urau* (Cúglieri, Ovodda, two springs) there is merely homophony with (Barbaricino) *furau* 'robbed', a word which, obviously, has absolutely nothing

to do with the place names (intransitive, but transitive with the unexpressed complement of agent: *cuau* 'hidden', *pertuntu* 'perforated' etc.). The homophony created by false etymology has also produced, at Ovodda, an amusing sign that reads *Funtana \*furadu* (note the lack of agreement between the participial adjective and the noun), which is in fact pronounced without aspiration [hun'tana u'rau] ([h] < Lat. f-) in the noun designating 'the waters' of the spring.

### 29. *zur* < Basque *zuri* (*zur* + adjectival suffix -i) 'white'

Between Ortuveri and Neoneli there is a mountain peak, sunny but snow-covered for the entire winter, called, appropriately, *monte Zuri*. The same name is given to another mountain in Ardauli, where there also exists, in contradistinction, a *Monte nieddu*, that is, 'dark, shady'. At Ortuveri, a type of light-skinned pear, distinguished from the wild pear of a darkish hue, is called *pira (de) zuri* (the *de* is a secondary development, by false etymology with the village of *Zuri*). At Orosei, *sa badde Zuré*, where the *riu Zura* runs, is characterized by the presence *ab antiquo* of an enormous slab of white granite, now greatly deteriorated as a result of the effect of earth scrapers. The Sardinian pronunciation with the affricate is most likely the result of the strong dorso-alevolar articulation of the sibilant in paleo-Basque, which has produced, in certain modern-day Basque dialects, an interdental or prepalatal phoneme ([ʰuri, tʃuri]), similar to numerous words in Sardinian derived from Lat. s- (*SURA* > [ʰura] 'calf').

TRANSLATED FORMS: numerous *Monte arbu*, *Montarbu*, *Mortarbu* (Tertenia, Silanus etc.), *Nuraghe Arbu* (Sinnai, etc.).

### 30. OTHER BASES.

Here I present, without extensive commentary, other problematic bases, some of which (*\*seg-*, *\*men*) will be treated at more length in forthcoming studies.

(a) *atzeri*, family name and mountain (Villasalto), which reflects Basque *azari*, *azeri* 'fox', and which corresponds to innumerable translated forms: *monti*, *baku*, *serra*, *riu*, *codina* (< *cōs*, *cōtis* 'boulder, rocky height') + *Urpe*, *Ūrpina*, *Gurpia*, *Grupēs* (all from *vŪLPĒS* 'fox'), *Mariani*, *Marzane*, *Margiani* (also 'fox', all formed on the personal name *Mariane*).

(b) *ua* < Basque *uda* 'summer', possibly with the primary significance of 'flowering, luxuriant', as in *pala Uái* 'sunny and heavily wooded peak' at Désulo, and in the same *comune As-uái* (now a *rione*, cfr. *Asé*, *Asei* at Sörgono), *Ua-tzu* (Bórore, with a probable suffix marker signifying abundance). Wolf (1988:58) documents the medieval place name *Uda*. An alternative explanation might be Basque *asu* 'bramble, place where blackberries grow', hence *Asu-ai*, with the paleo-Sardinian suffix. Favoring the first explanation, in addition to forms without the segment *as-*, is the fact that even for the opaque series in *neo-/neu-* (*Neo-neli*, *Neu-neli*, *Neó-sula*, *riu Neó-i*) one can postulate a modern antonymic base *negu* 'winter', which exhibits, as in so many other languages, the semantic shift from 'cold, snowy place or weather; snow' to 'wintry period' (Basque has *negu-bel-tz*, which is the exact equivalent of *Neo-neli*, '[place of] snow, of piercing winter cold').

(c) *men-* < paleo-European (?) *\*mei-n* 'to flow (of water)', in *riu Mene* (Bórore, Cúglieri), *riu Men-si* (Scano Montiferru), *roja* ('stream') *Mene-ide* (Désulo, with *bide* 'pathway'), *riu Mene-tolia* (with *\*tol-*, as in *riu Tol-ida* of Nule, an Iberic base, widespread in Aragon and in the Catalonian Pyrenees: *Talustre*, *Talzó*, *Tolba*, *Toló*, *Toluges*). Many of the hydronyms treated by Krahe (1949:49) may be traced to a paleo-European base: *Moenus* > *Main*, *lettone maina* 'swamp', Irish *Maoin*, *Main*, Slavic *Mieň*, *Minanka*, Galician *Minius* > *Minho*, Tuscan *Minione* > *Mignone*.

(d) *seg-* < paleo-European \**segh* ‘strong, resistant’, in *Seg-olai* (with the frequently occurring base *Olai* ‘huts’), \**Ségene* > *Séneghe* and *Senis* (< *Sehenis*, with *-h-*, which, as Wolf rightly explains, goes back to a weakened consonant), and probably also in *Seuni*, *Seuna*, *Seunis* (Muravera, Giave, Thiesi, Sélegas, Guasila), which refer to ‘rocky mountains’, ‘rocky gorges’. In these last cases, it would be phonetically plausible to retrace the form to *-dūnum* (cfr. at Tonara *Ili-dune* and ancient *Segadon*, with dissimilation), similar to the Celtic bases containing this segment (\**sego-dūn-e* > *Seune*, *-i*), all of which raises the thorny question of the interference of paleo-European with (proto-)Celtic components.<sup>31</sup>

### Abbreviations

<i>DCELIC</i>	Coromines 1980–1991
<i>DGV</i>	Mitxelena 1987–2005
<i>IEW</i>	Pokorny 1959
<i>OC</i>	Coromines 1994–1998

31. Medieval attestations leave no doubt that the formation with *-dūnum* (or *-e*), and the loss of the voiced velar in \**seg-* seems to be regular when *-g-* is not followed by a vowel [o, u]; thus, Wolf (1988) adduces from medieval sources: *Seuin*, present-day *Seui* (18), and *Siuni*, present-day *Seunis* (25), along with *Seostos* and *Sogostos* < \**Segostos* (47), *Seg-aços* (35), *Segolai* and *Segulis* (36), to which he adds, in his most recent work (Wolf 2010:34), *Segadon*, *Segui*, *Segedi*, *Segogus*. From these one may readily appreciate the possibility of postulating *dunum*, *-e* in the first three forms, with the confirmation provided by the remarkable form *Sega-don*. The meaning of the base forms, following the interpretation given in the glosses on *dunum* in the classical documentation (*dunum enim montem*: Holder 1896, I:1376; Matasović 2009:327; Sevilla Rodríguez 1984:82 and the bibliography therein), would be ‘secure height, rocky, and consequently fortified’ (cfr. Celtic, within the limits of the island, *dūn-clad* ‘rampart’ < ‘fossé, talus fort’; example from Vendryes 1996:222). The *Rationes Decimarum Sardiniae* from the thirteenth and fourteenth centuries provide the forms *Seg-ariu*, *Sehenes* (with weakened *-g-*), *Seuni* (all forms in Sella 1945:289–290), *Séneghe* and *Senis* (Wolf 2010). There is a telling correspondence between Gallic and Iberic forms: *Suin* < \**Sego-dunum* (Saône-et-Loire, attested in the forms *Seodunum*, *Sedunum*; Holder 1904, III:1446, records the form *Segeduno* in England), *Syon* (Haute-Savoie), *Sedun*, as well as \**Sege-duno* in Great Britain (Delamarre 2003:269–270; Pellegrini 1994:116); *Segontia*, *Segovia*, *Segorbe* (García Alonso 2003:261). A number of toponyms, scattered over the Pyrenees and in Aragon, suggest an expansion of the boundaries traditionally assigned to the Celts (Coromines 1981, I:104: *Segun* > *Segu-r*, *Sahūn*), as well as the well-known *Segia* in Basque territory and the legendary Celtiberian city *Segida* (Untermann 1961:19; Jordán 2008:16–17); finally, there are related forms in the non-Indo-European Italic area, especially, in Liguria and western Sicily, *Segesta*, a toponym that was attributed by Pliny to the tribe of the Carni (Battisti 1959:328 and Devoto 1967:19–29; see De Bernardo Stempel 2009 for Celtic toponymic relics in Corsica, Sardinia, and Sicily). The distribution of the form brings to mind as well the paleo-Sicilian connection with the Iberian Peninsula, as a result of possible later colonization on the west coast, between Palermo and Trapani, of peoples from Liguria. This gave rise to the noted Elima triad *Erica-Segesta-Entella*, connected with *Lérici-Sestri-Entella*. Also interesting for their obvious homophony are the Gallic attestations *Segestis* and *Segestica*. As a consequence, these toponyms—Pyrenean, Italic, and most especially, Sardinian—seem to me to reveal a possible paleo-European base; the paleo-Sardinian forms with \**seg-* refer to ‘rocky places, offering resistance’ also applied to a ‘defensive or domestic settlement’ (*-dune*), which conforms to the primary meaning of the Indo-European root (*IEW*888).

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Diffusion of *\*is-* in Europe [based on Tovar 1977]  
(maximum diffusion in mainland Europe is indicated by circles)