

Ornaments reveal resistance of North European cultures to the spread of farming

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SUPPORTING TEXTS

TEXT A: Archaeological cultures plotted in figures 1 and 2

- 1: Rubané Final du Bassin Parisien, Early Neolithic, Paris Basin, 5000-4800 cal BC[1].
- 2: Villeneuve Saint-Germain, Early Neolithic, Paris Basin, Brittany and Belgium, 4950–4650 cal BC[2].
- 3: Middle Linearbandkeramik, Early Neolithic, Central Europe, circa 5200 cal BC[3].
- 4: Late Linearbandkeramik, Early Neolithic, Central Europe, circa 5100 cal BC[3].
- 5: Rubané Récent du Bassin Parisien, Early Neolithic, Paris basin, 5100-4900 cal BC[4].
- 6: Hinkelstein, Early Neolithic, Middle Rhine valley, 5500-500 cal BC[5].
- 7: Linearbandkeramik sites from central Europe that were directly or indirectly attributed to the Early Neolithic with no further precision in the literature, 5500-5000 cal BC.
- 8: Early Linearbandkeramik, Early Neolithic, Central Europe, 5600-5450 cal BC[3].
- 9: Final Linearbandkeramik, Early Neolithic, Central Europe, circa 5000 cal BC[3].
- 10: Early Neolithic archaeological sites located in Crete and Greece, 6800-6600 cal BC[6].
- 11: Impressa, Early Neolithic, Adriatic coast, Italy and East of the lower Rhone valley, 5700-5600 cal BC[7].
- 12: Cardial, Early Neolithic, Western Mediterranean, 5600-4800 cal BC[8].
- 13: Epicardial, Early Neolithic, Western Mediterranean from Western Alps and Lower Rhône valley to Andalusia, 5400-4500 cal BC[7].
- 14: Starcevo, Early Neolithic, Danubian plain, Morava valley, Serbia and northwest Bulgaria, 6300-5500 cal BC [9].
- 15: Late Mesolithic sites from Lower Danube Valley, 7500-6400 cal BC[10,11].
- 16: Obanian, Late Mesolithic and Early Neolithic shell middens from Western Scotland, 7500–3900 cal BC[12].
- 17: Early and Middle Mesolithic, Southwest Europe, 8500- 7000 cal BC[13].
- 18: Beuronian, Mesolithic, Germany, 8500-6500 cal BC[14].
- 19: Asturian, Late Mesolithic shell middens from North Iberia Atlantic coast, 8100-5500 cal BC[15].
- 20: Early Mesolithic from Britain, 8600-7800 cal BC[16].
- 21: Early Mesolithic from the Lower Danube Valley, 8400-7500 cal BC[10,11].
- 22: Mesolítico Geométrico, Late Mesolithic from the Iberian Peninsula, 7000-5200 cal BC[17,18].
- 23: Mesolítico muescas y denticulados, Early Mesolithic from the Iberian Peninsula, 8200-6400 cal BC[19].
- 24: Mesolítico Macrolítico, Early Mesolithic from the Iberian Peninsula, 9800-7400 cal BC[20].
- 25: Cocina, Late Mesolithic from the Iberian Peninsula, 6500-5500 cal BC[17].
- 26: Late Mesolithic layers from Franchti Cave (Greece), 7050-6300 cal BC[21].

- 27:** Early Mesolithic from Franchti cave (Greece), 8750-8200 cal BC[21].
- 28:** Personal ornaments from the Middle Mesolithic site of la Chaussée-Tirancourt (France) dated circa to 7600 cal BC[22].
- 29:** Castelnovian, Late Mesolithic, Southwest Europe, 6500-5000 cal BC[23].
- 30:** Teviecian, North Atlantic coast Late Mesolithic culture, Brittany, 5700-5000 cal BC[24].
- 31:** Early Neolithic from the Baltic region, including archaeological layers from sites located in Scandinavia and Eastern coastal Baltic areas (Lithuania, Latvia, Estonia, North of Poland). Archaeological layers are directly or indirectly attributed to the Early Neolithic with no further precision in the literature (5500-4200 cal BC).
- 32:** Burials from Zvejnieki cemetery (Latvia) where both Mesolithic and Early Neolithic features are identified[25].
- 33:** Early Mesolithic archaeological layers from sites located in Scandinavia and Eastern coastal Baltic areas (Lithuania, Latvia, Estonia, North of Poland). Archaeological layers are directly or indirectly attributed to the Early Mesolithic with no further precision (9500-6500 cal BC).
- 34:** Narva culture, Early Neolithic, North East Poland, Lithuania, Latvia, Estonia and western Russia, 5500-4200 cal BC[26].
- 35:** Middle Mesolithic archaeological layers from sites located in Scandinavia and Eastern coastal Baltic areas (Lithuania, Latvia, Estonia, North of Poland). Archaeological layers are directly or indirectly attributed to the Middle Mesolithic with no further precision (5500-5200 cal BC).
- 36:** Early Ertebølle, beginning of the Late Mesolithic, Southern Scandinavia and Northern Germany, 5400-4800 cal BC[27,28].
- 37:** Late Kongemosian, final Middle Mesolithic, South Scandinavia and Denmark, 5700-5200 cal BC[27].
- 38:** Kongemosian, Middle Mesolithic, South Scandinavia and Denmark, 6500-5400 cal BC[27,28].
- 39:** Ertebølle, Late Mesolithic, Southern Scandinavia and Northern Germany, 5400-3800 cal BC[27].
- 40:** Mid-Ertebølle, Late Mesolithic, Southern Scandinavia and Northern Germany, 4800-4300 cal BC[27].
- 41:** Funnel Beaker culture, Early Neolithic, North of Central Europe and Southern Scandinavia, 4200-2800 cal BC[29].
- 42:** Janislawice, Late Mesolithic, Poland and Lithuania, 6400-5500 cal BC[30].
- 43:** Komornica, Early Mesolithic, Northeast Poland, 8500-7000 cal BC[31].
- 44:** Early Neolithic archaeological layers from Karelia and Volga, 6500 -5400 cal BC[32].
- 45:** Kunda, Mesolithic, Northeast Poland, Lithuania, Latvia, Estonia and western Russia, 8500-5500 cal BC[26].

46: Late Mesolithic from archaeological layers of sites located in Scandinavia and Eastern coastal Baltic areas (Lithuania, Latvia, Estonia, North of Poland). Archaeological layers are directly or indirectly attributed to the Late Mesolithic with no further precision (5500-4200).

47: Maglemosian, Early Mesolithic, South Scandinavia and Denmark, 9600-6500 cal BC[33].

48: Mesolithic from Karelia and Volga, 9500-6500 cal BC[32].

TEXT B: Bead typology used to create the binary data cultural matrix

We have simplified and homogenized bead typologies previously published [34–42] in order to create mutually exclusive bead-types.

Bead-types included in the database are characterized by their shape, raw material and system of suspension. Unshaped objects include small size Bivalvias, gastropods, scaphopods, mammal's teeth and short bones simply perforated, grooved or incised for suspension. Distinction is made between beads, pendants, platelets and bracelets.

Beads are made of 78 species of modern marine and 26 fossil shells, 9 freshwater shells, 2 terrestrial snails (Table S1, Fig. S1), the teeth or bones from 25 different species of vertebrates (Table S2, Fig. S2), amber, and 13 different types of mineral resources (Table S3), including 8 petrographic sub-types.

Shaped bead-types with common, or very similar, characteristics in terms of shape, section and profile were grouped into eleven major classes: discoid, oval, square, rectangular, trapezoidal and triangular beads, beads drop-shaped with a distal enlargement, round beads, bi-conical beads, tubular beads with circular section and linear profile, tubular beads with circular section and curved profile (Fig. S3; 1-11).

Pendants and platelets are described according to their width, elongation and number of perforations. Four types of pendants: arciform, straight, triangular and trapezoidal (Fig. S3; 12-20) and two categories of platelets (Fig. S3; 18-20): round to oval and square to rectangular, were considered.

Bracelets were ordered into four distinct types defined according to their section: oval (Fig. S3; 21-23), triangular (Fig. S3; 26-28), flat rectangular (Fig. S3; 29) and grooved ellipsoidal (Fig. S3; 24, 25).

Ear Studs, and antler and bone rings are additional bead types included in the database.

SUPPORTING FIGURES



- 1) *Acanthocardia* sp., 2) *Chlamys varia*, 3) *Aporrhais pespelecani*, 4) *Arca noae*, 5) *Fusus* sp., 6) *Architectonica* sp., 7) *Buccinum* sp., 8) *Callista chione*, 9) *Charonia lampas*, 10) *Cerastoderma edule*, 11) *Littorina obtusata*, 12) *Trivia monacha*, 13) *Discus rotundatus*, 14) *Theodoxus* sp., 15) *Homalopoma sanguineum*, 16) *Clanculus* sp., 17) *Columbella rustica*, 18) *Gibbula* sp., 19) *Conus* sp., 20) *Crommium* sp., 21) *Cyclope neritea*, 22) *Luria lurida*, 23) *Antalis* sp., 24) *Nassarius comiculum*, 25) *Osilinus* sp., 26) *Littorina littorea*, 27) *Zebrina detrita*, 28) *Nassarius reticulatus*, 29) *Nassarius mutabilis*, 30) *Bythinia tentaculata*, 31) *Glycymeris* sp., 32) *Haliotis* sp., 33) *Natica* sp., 34) *Nucella lapillus*, 35) *Ocenebra* sp., 36) *Trochus* sp., 37) *Nassarius incrassatus*, 38) *Melanopsis* sp., 39) *Mitra* sp., 40) *Mytilus* sp., 41) *Pecten* sp., 42) *Ostrea* sp., 43) *Patella* sp., 44) *Potamides* sp., 46) *Phalium saburon*, 47) *Strombus* sp., 48) *Tapes* sp., 49) *Venus* sp., 50) *Stramonita haemastoma*, 51) *Turitella* sp., 52) *Ampullina* sp., 53) *Bayania* sp., 54) *Laevicardium* sp., 55) *Spondylus gaederopus*, 56) *Unio* sp., 57) *Amalda* sp., 58) *Trophon* sp., 59) *Corbicula* sp., 60) *Tympanotonos* sp., 61) *Donax* sp.

Fig. A. Examples of the shells species used as beads and recorded in the database



1) Badger canine, 2) Fox canine, 3) Bovidae incisor, 4) Fox incisor, 5) Bear canine, 6) Badger incisor, 7) Bear incisor, 8) Beaver incisor, 9) Horse canine, 10) Horse incisor, 11) Polecate canine, 12) Red deer canine, 13) Red deer incisor, 14) Ibex incisor, 15) Canidae canine, 16) Rutilus sp. pharyngeal tooth, 17) Canidae incisor, 18) Wild boar incisor, 19) Elk incisor, 20) Lynx canine, 21) Human incisor, 22) Wild boar canine, 23) Canidae molar.

Fig. B. Examples of vertebrae teeth used as beads and recorded in the database

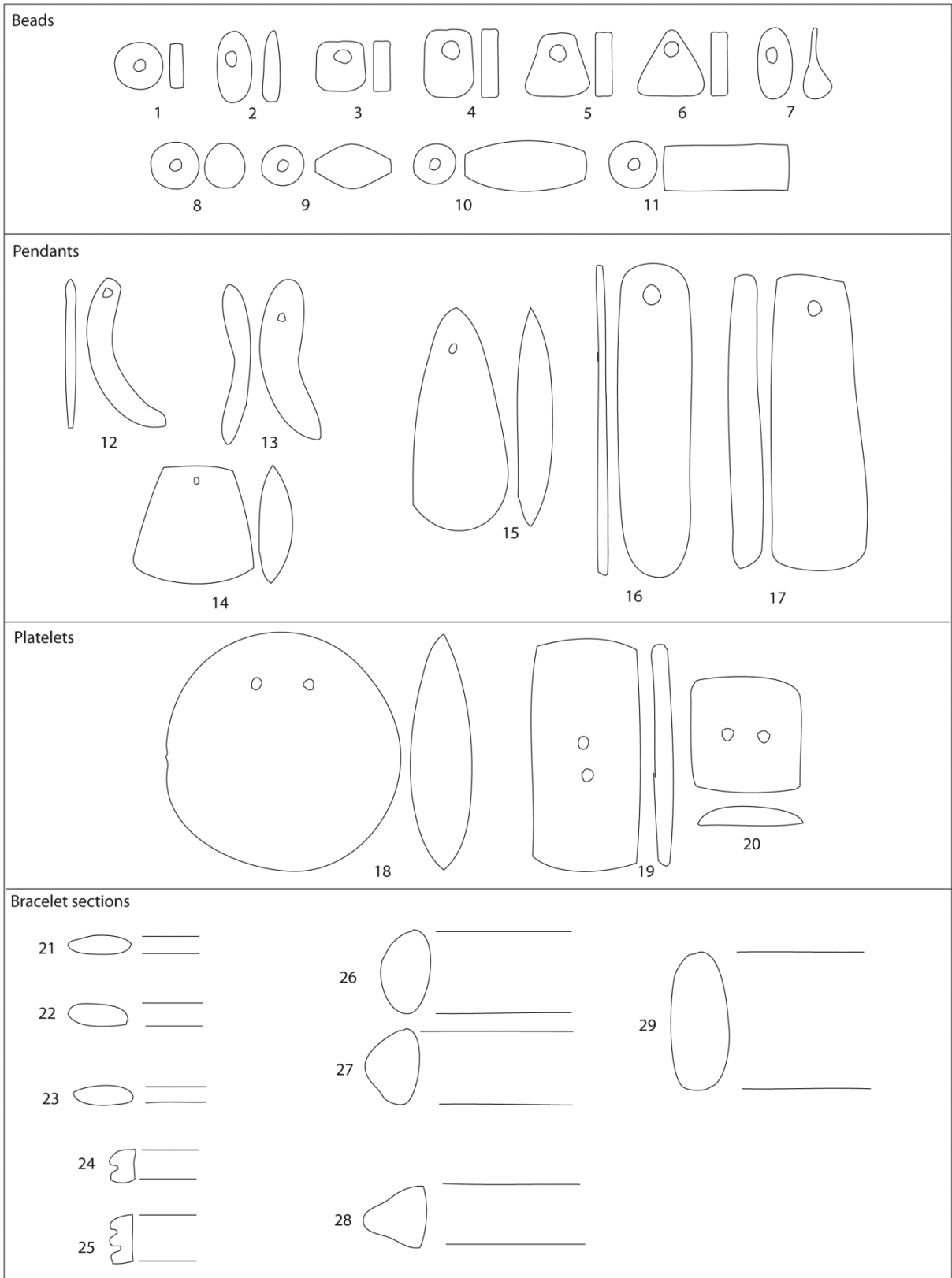


Fig. C. Classification of beads, pendants, platelets and bracelets. Some bead types were redrawn from [34,35,38,39].

SUPPORTING TABLES

Table A. SIMPER analysis identifying bead-types most responsible for cultural differences between Mesolithic and Early Neolithic archaeological datasets. Overall average dissimilarity : 91,11

Taxon	Av. dissim	Contrib. %	Cumulative %	WEM	BM	BEN	DEN	MEN
Antalis	2.432	2.67	2.67	0.625	0	0	1	1
ICelP	2.191	2.405	5.074	0.125	0.692	0.8	0	0.25
IAlcP	2.177	2.39	7.464	0	0.769	0.6	0	0
CCelP	2.104	2.31	9.773	0.563	0.538	0.2	0.444	0.75
Columbel	2.012	2.208	11.98	0.625	0	0	0.222	0.75
ISusP	1.869	2.051	14.03	0	0.615	0.6	0	0.25
Gly	1.63	1.789	15.82	0.438	0	0	0.333	0.75
nassariu	1.611	1.768	17.59	0.625	0	0	0	0.5
CSusP	1.513	1.661	19.25	0.0625	0.308	0.4	0.556	0.75
PSheDsc	1.445	1.586	20.84	0	0	0	0.889	1
PtOs	1.418	1.557	22.39	0.25	0.308	0.2	0.111	0.75
Cyclope	1.404	1.541	23.93	0.438	0	0	0.111	0.5
IBosP	1.385	1.52	25.45	0	0.462	0.6	0	0.25
Trivia	1.352	1.484	26.94	0.438	0	0	0.222	0.75
Pecten	1.35	1.482	28.42	0.438	0	0	0.111	0.75
Spond	1.279	1.404	29.82	0.0625	0	0	0.778	0.5
PSheOv	1.252	1.374	31.2	0	0	0	0.778	0.75
Theodoxu	1.244	1.366	32.56	0.313	0.154	0	0.333	0.5
PCalDsc	1.233	1.354	33.92	0.0625	0	0	0.667	0.75
PtAmb	1.215	1.333	35.25	0.0625	0.0769	0.6	0	0
POsTub	1.202	1.319	36.57	0.125	0.154	0.2	0.222	1
CCanP	1.161	1.274	37.84	0.0625	0.308	0.6	0.222	0.5
BrcSchi	1.147	1.259	39.1	0	0	0.2	0.556	0.5
Littor	1.121	1.23	40.33	0.438	0	0	0.111	0
Cerith	1.101	1.209	41.54	0.375	0	0	0.111	0.75
PAmb	1.079	1.184	42.73	0	0.308	0.4	0	0
PSpoTub	1.061	1.165	43.89	0	0	0	0.778	0
CVulP	1.049	1.151	45.04	0.188	0.0769	0.6	0.111	0.75
AnOs	1.043	1.145	46.19	0	0	0	0.667	0.5
Natica	1.011	1.109	47.3	0.25	0	0	0.333	0
Spolnc	0.9627	1.057	48.35	0	0	0	0.667	0.25
Cerast	0.9612	1.055	49.41	0.375	0	0	0.111	0.75
ICastP	0.9471	1.039	50.45	0	0.308	0.4	0	0
Nucella	0.9389	1.031	51.48	0.188	0	0	0.444	0
PtGal	0.9162	1.006	52.48	0.25	0.0769	0	0.222	0.25
CUrsP	0.8286	0.9094	53.39	0	0.308	0.4	0	0.25
ICanP	0.8206	0.9007	54.29	0	0.308	0.4	0	0
Lithogly	0.7581	0.8321	55.13	0.25	0	0	0.111	0
BrcSpond	0.7575	0.8314	55.96	0	0	0	0.444	0.5
Unio	0.7493	0.8224	56.78	0.0625	0	0	0.556	0
CMartP	0.7008	0.7692	57.55	0	0.154	0.6	0	0
PCalTub	0.6862	0.7531	58.3	0	0	0	0.444	0.25
CMelesP	0.6816	0.7481	59.05	0.0625	0.0769	0.6	0	0.25
Potamide	0.6456	0.7085	59.76	0.188	0	0	0.222	0
PSheTrg	0.6452	0.7081	60.47	0.0625	0	0	0.444	0
BrcCalc	0.6392	0.7015	61.17	0	0	0	0.444	0.5
BrcRv	0.6322	0.6939	61.86	0	0	0	0.444	0.25
PStoDsc	0.5737	0.6296	62.49	0.125	0	0	0	0.75
Patella	0.5723	0.6282	63.12	0.25	0	0	0	0.5
CLutP	0.5666	0.6218	63.74	0	0.154	0.4	0	0
CAIcP	0.5417	0.5945	64.34	0	0.231	0.2	0	0
PtSpo	0.5337	0.5857	64.92	0	0	0	0.222	0.5
PtSchi	0.5175	0.568	65.49	0.0625	0	0.2	0	0.25

Table S1. cont.

Taxon	Av. dissim	Contrib. %	Cumulative %	WEM	BM	BEN	DEN	MEN
BrcGly	0.493	0.5411	66.03	0	0	0	0.222	0.75
Acantho	0.4865	0.5339	66.57	0.125	0	0	0	0.75
IEquP	0.4808	0.5277	67.09	0	0.154	0.4	0	0
TGardon	0.4572	0.5018	67.6	0.188	0	0	0	0
CPhoP	0.4385	0.4813	68.08	0	0.0769	0.4	0	0
PSheRd	0.405	0.4445	68.52	0.0625	0	0	0.111	0
PSheGtt	0.3969	0.4357	68.96	0	0	0	0.222	0.5
BrcArg	0.3908	0.429	69.39	0	0	0	0.333	0
PSheTrz	0.3908	0.429	69.81	0	0	0	0.333	0
BrcOs	0.3889	0.4268	70.24	0	0.0769	0	0.111	0
Veneri	0.3805	0.4177	70.66	0	0	0	0.333	0
PSchiDsc	0.3697	0.4058	71.06	0.0625	0	0	0	0.5
ICaprP	0.3674	0.4032	71.47	0	0.154	0	0	0.25
AnShell	0.3652	0.4009	71.87	0	0	0	0	1
Ostrea	0.3599	0.395	72.26	0.188	0	0	0	0
Conus	0.3566	0.3914	72.66	0.125	0	0	0	0.75
EnaDetrita	0.3475	0.3814	73.04	0	0	0	0.222	0
BrcMbr	0.3353	0.368	73.4	0	0	0	0.111	0.5
Luria	0.3312	0.3635	73.77	0.0625	0	0	0	0.5
MCanP	0.3242	0.3558	74.12	0	0.0769	0.2	0	0.25
PIOs	0.3232	0.3548	74.48	0	0.0769	0	0	0.75
IUrSP	0.3083	0.3384	74.82	0	0.0769	0.2	0	0
MCastP	0.2996	0.3289	75.15	0	0.0769	0.2	0	0
BrcGres	0.2939	0.3226	75.47	0	0	0	0.222	0
Ampulli	0.2936	0.3223	75.79	0.188	0	0	0	0
PRVOv	0.2935	0.3221	76.11	0	0	0	0	0.75
BrcVC	0.2926	0.3211	76.43	0	0	0	0.222	0
CEqP	0.291	0.3194	76.75	0	0	0.4	0	0
PMSusP	0.291	0.3194	77.07	0	0	0.4	0	0
PMAIcP	0.291	0.3194	77.39	0	0	0.4	0	0
PtGly	0.2858	0.3136	77.71	0.0625	0	0	0	0.5
MHumP	0.284	0.3117	78.02	0.0625	0.154	0	0	0
PCalGtt	0.2822	0.3097	78.33	0	0	0	0.111	0.5
Melanopsis	0.2818	0.3092	78.64	0.0625	0	0	0	0.25
PArgTub	0.2817	0.3092	78.95	0	0	0	0	0.75
PSttDsc	0.2817	0.3092	79.26	0	0	0	0	0.75
PStoTub	0.2808	0.3082	79.56	0.0625	0	0	0.111	0.25
Turritel	0.2746	0.3014	79.86	0.0625	0	0	0.111	0
Mytilus	0.2676	0.2937	80.16	0.0625	0	0	0.111	0.25
MPhoP	0.2624	0.288	80.45	0	0.154	0	0	0
IHumP	0.2624	0.288	80.73	0	0.154	0	0	0
IMelP	0.2624	0.288	81.02	0	0.154	0	0	0
Ocenebra	0.2616	0.2872	81.31	0.188	0	0	0	0
Laevicar	0.2616	0.2872	81.6	0.188	0	0	0	0
PendCastP	0.2584	0.2836	81.88	0	0.0769	0.2	0	0
PtQrtz	0.2576	0.2827	82.16	0.0625	0.0769	0	0	0.25
MAIcP	0.2496	0.274	82.44	0	0.0769	0.2	0	0
PCalCar	0.2387	0.262	82.7	0	0	0	0.222	0
Cypraea	0.2367	0.2598	82.96	0.0625	0	0	0	0.5
Gyraulus	0.2352	0.2581	83.22	0.125	0	0	0	0
IRoeDeerP	0.2282	0.2505	83.47	0	0.154	0	0	0
Pirenella	0.2251	0.2471	83.71	0.125	0	0	0	0
PLignDsc	0.222	0.2436	83.96	0	0	0	0.222	0
Aporrhai	0.2211	0.2426	84.2	0.0625	0	0	0	0.25
PSerpDsc	0.2188	0.2402	84.44	0	0	0	0	0.5
Charo	0.2181	0.2394	84.68	0	0	0	0	0.75
Osilinus	0.2145	0.2354	84.92	0.0625	0	0	0	0.25
BrcRn	0.2123	0.233	85.15	0	0	0	0.111	0.25
Bayania	0.2116	0.2323	85.38	0.125	0	0	0	0
IVulpP	0.2108	0.2313	85.61	0	0.154	0	0	0

Table S1. cont.

Taxon	Av. dissim	Contrib. %	Cumulative %	WEM	BM	BEN	DEN	MEN
BrcOsili	0.21	0.2305	85.84	0	0	0	0	0.5
spisula	0.2096	0.23	86.07	0.0625	0	0	0.111	0
Phalium	0.2018	0.2215	86.29	0.0625	0	0	0	0.5
PIspoAt	0.1956	0.2147	86.51	0	0	0	0.111	0
McelP	0.1819	0.1996	86.71	0.0625	0.0769	0	0	0
Euspira	0.1796	0.1972	86.91	0.125	0	0	0	0
Chlamys	0.1765	0.1937	87.1	0.0625	0	0	0	0.25
Trophon	0.168	0.1844	87.28	0.0625	0	0	0	0.25
Haliotis	0.168	0.1844	87.47	0.0625	0	0	0	0.25
MLutrGr	0.1657	0.1819	87.65	0	0.0769	0	0	0
POsD	0.1657	0.1819	87.83	0	0.0769	0	0	0
PMUrsGr	0.1657	0.1819	88.01	0	0.0769	0	0	0
PtAnt	0.1649	0.1809	88.2	0.0625	0.0769	0	0	0
PMudDsc	0.1611	0.1768	88.37	0.0625	0	0	0	0
AnSchi	0.1575	0.1729	88.54	0	0	0	0.111	0.25
CFelP	0.1571	0.1724	88.72	0	0.0769	0	0	0.25
PtCal	0.1552	0.1704	88.89	0	0	0	0	0.5
PhalCelP	0.1539	0.169	89.06	0.125	0	0	0	0
Macoma	0.1532	0.1681	89.22	0.0625	0	0	0	0
IPhoP	0.1501	0.1647	89.39	0	0	0.2	0	0
PArgRd	0.1471	0.1614	89.55	0	0	0	0	0.25
Stud	0.1471	0.1614	89.71	0	0	0	0	0.25
PtStt	0.1471	0.1614	89.87	0	0	0	0	0.25
PtSto	0.1471	0.1614	90.04	0	0	0	0	0.25
PtMbr	0.1471	0.1614	90.2	0	0	0	0	0.25
PRVTub	0.1471	0.1614	90.36	0	0	0	0	0.25
PRVBout	0.1471	0.1614	90.52	0	0	0	0	0.25
PMbrDsc	0.1471	0.1614	90.68	0	0	0	0	0.25
PGalDsc	0.1471	0.1614	90.84	0	0	0	0	0.25
PGalBic	0.1471	0.1614	91	0	0	0	0	0.25
Psteatdsc	0.1464	0.1607	91.16	0	0	0	0	0.5
AnCelAnt	0.1464	0.1607	91.33	0	0	0	0	0.5
POsDsc	0.1464	0.1607	91.49	0	0	0	0	0.5
DisStoP	0.1464	0.1607	91.65	0	0	0	0	0.5
DisOsP	0.1464	0.1607	91.81	0	0	0	0	0.5
Clancu	0.1461	0.1603	91.97	0.0625	0	0	0	0
Callista	0.1461	0.1603	92.13	0.0625	0	0	0	0
Tympano	0.1418	0.1556	92.28	0	0	0	0.111	0
PSheOvBi	0.1418	0.1556	92.44	0	0	0	0.111	0
Pisania	0.1412	0.155	92.59	0.0625	0	0	0	0.25
AstrFelP	0.141	0.1547	92.75	0	0	0.2	0	0
COttP	0.141	0.1547	92.9	0	0	0.2	0	0
AstrCasP	0.141	0.1547	93.06	0	0	0.2	0	0
EmOrbi	0.141	0.1547	93.21	0	0	0.2	0	0
Conorbis	0.1397	0.1533	93.37	0.0625	0	0	0	0
Keilosto	0.1397	0.1533	93.52	0.0625	0	0	0	0
Amalda	0.1397	0.1533	93.67	0.0625	0	0	0	0
PSheRectBip	0.1372	0.1506	93.82	0	0	0	0.111	0
Pnéphrite	0.1372	0.1506	93.97	0	0	0	0.111	0
Pmbr	0.1372	0.1506	94.12	0	0	0	0.111	0
Strombus	0.1346	0.1478	94.27	0	0	0	0	0.5
PCalOv	0.1346	0.1478	94.42	0	0	0	0	0.5
Stramoni	0.1346	0.1478	94.57	0	0	0	0	0.5
Nerita	0.125	0.1372	94.71	0	0	0	0.111	0
Corbicul	0.125	0.1372	94.84	0	0	0	0.111	0
Stenomph	0.125	0.1372	94.98	0	0	0	0.111	0
PtUnio	0.125	0.1372	95.12	0	0	0	0.111	0
PSheCrrMI	0.125	0.1372	95.25	0	0	0	0.111	0
PSheCrrBi	0.125	0.1372	95.39	0	0	0	0.111	0
BrcAntl	0.125	0.1372	95.53	0	0	0	0.111	0

Table S1. cont.

Taxon	Av. dissim	Contrib. %	Cumulative %	WEM	BM	BEN	DEN	MEN
Granulo	0.125	0.1372	95.67	0	0	0	0.111	0
MandiCastP	0.1141	0.1252	95.79	0	0.0769	0	0	0
MandiAlcPerf	0.1141	0.1252	95.92	0	0.0769	0	0	0
ILagomP	0.1141	0.1252	96.04	0	0.0769	0	0	0
ICastPI	0.1141	0.1252	96.17	0	0.0769	0	0	0
PhalOursgorge	0.1141	0.1252	96.29	0	0.0769	0	0	0
PCastP	0.1141	0.1252	96.42	0	0.0769	0	0	0
dentRequin	0.1141	0.1252	96.54	0	0.0769	0	0	0
Buccinum	0.1077	0.1182	96.66	0.0625	0	0	0	0
Nerinea	0.09693	0.1064	96.77	0	0	0	0.111	0
POsTrz	0.09693	0.1064	96.87	0	0	0	0.111	0
PosBic	0.09693	0.1064	96.98	0	0	0	0.111	0
BrcVCTrP	0.09693	0.1064	97.09	0	0	0	0.111	0
CPutP	0.09668	0.1061	97.19	0	0.0769	0	0	0
Marginel	0.0835	0.09164	97.28	0	0	0	0	0.25
PVascOv	0.0835	0.09164	97.38	0	0	0	0	0.25
Gibberul	0.0835	0.09164	97.47	0	0	0	0	0.25
DisNacrP	0.0835	0.09164	97.56	0	0	0	0	0.25
AnCalc	0.0835	0.09164	97.65	0	0	0	0	0.25
TmamSeaGr	0.082	0.09001	97.74	0.0625	0	0	0	0
PICalcAt	0.082	0.09001	97.83	0.0625	0	0	0	0
Bithynia	0.082	0.09001	97.92	0.0625	0	0	0	0
Venus	0.07194	0.07895	98	0.0625	0	0	0	0
Fagotia	0.07194	0.07895	98.08	0.0625	0	0	0	0
Calliost	0.07194	0.07895	98.16	0.0625	0	0	0	0
Melongen	0.07174	0.07873	98.24	0	0	0	0	0.25
ArcaNoae	0.07174	0.07873	98.32	0	0	0	0	0.25
PSiliDsc	0.07174	0.07873	98.39	0	0	0	0	0.25
POsTrg	0.07174	0.07873	98.47	0	0	0	0	0.25
POsRect	0.07174	0.07873	98.55	0	0	0	0	0.25
POsMola	0.07174	0.07873	98.63	0	0	0	0	0.25
POsCra	0.07174	0.07873	98.71	0	0	0	0	0.25
Pophio	0.07174	0.07873	98.79	0	0	0	0	0.25
BolmOper	0.07174	0.07873	98.87	0	0	0	0	0.25
PGrDsc	0.07174	0.07873	98.94	0	0	0	0	0.25
BolmaRug	0.07174	0.07873	99.02	0	0	0	0	0.25
DisArgP	0.07174	0.07873	99.1	0	0	0	0	0.25
MpodCanP	0.06291	0.06904	99.17	0	0	0	0	0.25
Scaphand	0.06291	0.06904	99.24	0	0	0	0	0.25
PtPect	0.06291	0.06904	99.31	0	0	0	0	0.25
CLynxP	0.06291	0.06904	99.38	0	0	0	0	0.25
PtGr	0.06291	0.06904	99.45	0	0	0	0	0.25
AnMbr	0.06291	0.06904	99.52	0	0	0	0	0.25
BrcCharo	0.06291	0.06904	99.59	0	0	0	0	0.25
PRVDsc	0.06291	0.06904	99.65	0	0	0	0	0.25
POsOv	0.06291	0.06904	99.72	0	0	0	0	0.25
POsGtt	0.06291	0.06904	99.79	0	0	0	0	0.25
Hyniapfeifferi	0.06291	0.06904	99.86	0	0	0	0	0.25
CardBip	0.06291	0.06904	99.93	0	0	0	0	0.25
Donacill	0.06291	0.06904	100	0	0	0	0	0.25

Table B. List of the shell taxa used as beads and recorded in the database

Valid name		Class	Valid name		Class
Marin shells			Freshwater shells		
<i>Acanthocardia echinata</i>	Linné, 1758	Bivalvia	<i>Anodonta</i> sp.	Lamarck, 1799	Bivalvia
<i>Acanthocardia</i>	Linné, 1758	Bivalvia	<i>Margaritifera</i> sp.	Schumacher, 1816	Bivalvia
<i>Arca noae</i>	Linné, 1758	Bivalvia	<i>Unio</i> sp.	Philipsson, 1788	Bivalvia
<i>Callista chione</i>	Linné, 1758	Bivalvia	<i>Bithynia tentaculata</i>	Linnaeus, 1758	Gastropoda
<i>Cardita</i> sp.	Bruguière, 1792	Bivalvia	<i>Esperiana</i> sp.	Férussac, 1823	Gastropoda
<i>Cardium</i> sp.	Linné, 1758	Bivalvia	<i>Lithoglyphus naticoides</i>	Pfeiffer, 1828	Gastropoda
<i>Cerastoderma edule</i>	Linné, 1758	Bivalvia	<i>Melanopsis</i> sp.	Férussac, 1807	Gastropoda
<i>Mimachlamys varia</i>	Linné, 1758	Bivalvia	<i>Theodoxus danubialis</i>	Pfeiffer, 1828	Gastropoda
<i>Donacilla cornea</i>	Poli, 1791	Bivalvia	<i>Theodoxus fluviatilis</i>	Linné, 1758	Gastropoda
<i>Donax trunculus</i>	Linné, 1758	Bivalvia	Terrestrial shells		
<i>Glycymeris glycymeris</i>	Linné, 1758	Bivalvia	<i>Zebrina detrita</i>	Müller, 1774	Gastropoda
<i>Glycymeris</i> sp.	da Costa, 1778	Bivalvia	<i>Discus rotundatus</i>	Müller, 1774	Gastropoda
<i>Glycymeris</i>	Lamarck, 1819	Bivalvia	Fossil shells		
<i>Laevicardium crassum</i>	Gmelin, 1791	Bivalvia	<i>Corbicula convexa</i>	Deshaves, 1854	Bivalvia
<i>Macoma balthica</i>	Linné, 1758	Bivalvia	<i>Spisula solida</i>	Linné, 1758	Bivalvia
<i>Mytilus edulis</i>	Linné, 1758	Bivalvia	<i>Glycymeris obovatus</i>	Lamarck, 1805	Bivalvia
<i>Mytilus</i> sp.	Linné, 1758	Bivalvia	<i>Glycymeris pulvinata</i>	Lamarck, 1805	Bivalvia
<i>Ostrea edulis</i>	Linné, 1758	Bivalvia	<i>Pinctada</i> sp.	Röding, 1798	Bivalvia
<i>Pecten Maximus</i>	Linné, 1758	Bivalvia	<i>Isognomon maxillata</i>	Lamarck, 1819	Bivalvia
<i>Pecten</i> sp.	Müller, 1776	Bivalvia	<i>Ampullina</i> sp.	Férussac 1822	Gastropoda
<i>Spisula</i> sp.	Linné, 1758	Bivalvia	<i>Bayania lactea</i>	Lamarck, 1806	Gastropoda
<i>Spondylus gaederopus</i>	Linné, 1758	Bivalvia	<i>Granulolabium Plicatum</i>	Bruguière, 1792	Gastropoda
<i>Venericardia antiquata</i>	Linné, 1758	Bivalvia	<i>Conorbis</i> sp.	Swainson, 1840	Gastropoda
<i>Venus verrucosa</i>	Linné, 1758	Bivalvia	<i>Gyraulus trochiformis</i>	Rafinesque, 1815	Gastropoda
<i>Aporrhais pespelecani</i>	Linné, 1758	Gastropoda	<i>Gyraulus sulcatus</i>	Hilgendorf, 1866	Gastropoda
<i>Architectonica</i> sp.	Röding, 1798	Gastropoda	<i>Keilostoma</i> sp.	Deshaves, 1850	Gastropoda
<i>Bolma rugosa</i>	Linné, 1767	Gastropoda	<i>Nerinea</i> sp.	Defrance, 1825	Gastropoda
<i>Buccinum undatum</i>	Linné, 1758	Gastropoda	<i>Amalda</i> sp.	Adams et Adams,	Gastropoda
<i>Calliostoma zizyphinum</i>	Linné, 1758	Gastropoda	<i>Potamides laevisimus</i>	Sanberger, 1863	Gastropoda
<i>Cerithium</i> sp.	Bruguière, 1789	Gastropoda	<i>Potamides lamarckii</i>	Brongniart, 1810	Gastropoda
<i>Cerithium vulgatum</i>	Bruguière, 1792	Gastropoda	<i>Potamides plicatus</i>	Brongniart, 1810	Gastropoda
<i>Charonia lampas</i>	Linné, 1758	Gastropoda	<i>Potamides</i> sp.	Brongniart, 1810	Gastropoda
<i>Clanculus corallinus</i>	Gmelin, 1791	Gastropoda	<i>Trophon fusulus</i>	Brocchi, 1814	Gastropoda
<i>Columbella rustica</i>	Linné, 1758	Gastropoda	<i>Stenomphalus</i>	Sandberger, 1853	Gastropoda
<i>Conus mediterraneus</i>	Hwass in Bruguière,	Gastropoda	<i>Theodoxus greagnus</i>	Thomä, 1845	Gastropoda
<i>Conus</i> sp.	Linné, 1758	Gastropoda	<i>Tympanotonos</i> sp.	Linné, 1758	Gastropoda
<i>Cyclope neritea</i>	Linné, 1758	Gastropoda	<i>Dentalium</i> sp.	Linné, 1758	Scaphopoda
<i>Cyclope</i> sp.	Linné, 1758	Gastropoda	<i>Distrupa</i> sp.	Berkeley, 1835	Canalipalpat
<i>Euspira catena</i>	da Costa 1778	Gastropoda	<i>Protula</i> sp.	Risso, 1826	Polychaeta
<i>Euspira pulchella</i>	Risso, 1826	Gastropoda			
<i>Euspira</i> sp.	Risso, 1826	Gastropoda			
<i>Gibberula miliaria</i>	Linné, 1758	Gastropoda			
<i>Haliotis</i> sp.	Linné, 1758	Gastropoda			
<i>Homalopoma</i>	Linné, 1758	Gastropoda			
<i>Littorina fabalis</i>	Turton, 1825	Gastropoda			
<i>Littorina littorea</i>	Linné, 1758	Gastropoda			
<i>Littorina obtusata</i>	Linné, 1758	Gastropoda			
<i>Littorina</i> sp.	Férussac, 1822	Gastropoda			
<i>Luria lurida</i>	Linné, 1758	Gastropoda			
<i>Marginella</i> sp.	Lam, 1799	Gastropoda			
<i>Mitra</i> sp.	Linné, 1758	Gastropoda			
<i>Nassarius comiculum</i>	Olivi, 1792	Gastropoda			
<i>Nassarius cuvierii</i>	Payraudeau, 1826	Gastropoda			
<i>Nassarius gibbosulus</i>	Linné, 1758	Gastropoda			
<i>Nassarius incrassatus</i>	Ström, 1768	Gastropoda			
<i>Nassarius mutabilis</i>	Linné, 1758	Gastropoda			
<i>Nassarius nitidus</i>	Jeffreys, 1867	Gastropoda			
<i>Nassarius reticulatus</i>	Linné, 1758	Gastropoda			
<i>Nassarius pfeifferi</i>	Philippi, 1844	Gastropoda			
<i>Natica</i> sp.	Scopoli, 1777	Gastropoda			
<i>Natica</i>	Gmelin, 1791	Gastropoda			
<i>Nerita tricarinata</i>	Linné, 1758	Gastropoda			
<i>Nuccella lapillus</i>	Linné, 1758	Gastropoda			
<i>Ocenebra erinaceus</i>	Linné, 1758	Gastropoda			
<i>Osilinus</i> sp.	Lamarck, 1822	Gastropoda			
<i>Osilinus turbinatus</i>	Born, 1778	Gastropoda			
<i>Patella caerulea</i>	Linné, 1758	Gastropoda			
<i>Patella</i> sp.	Linné, 1758	Gastropoda			
<i>Patella vulgata</i>	Linné, 1758	Gastropoda			
<i>Phalium saburon</i>	Bruguière, 1792	Gastropoda			
<i>Pisania striata</i>	Gmelin, 1791	Gastropoda			
<i>Ruditapes</i> sp.	Linné, 1758	Gastropoda			
<i>Scaphander lignarius</i>	Linné, 1758	Gastropoda			
<i>Stramonita haemastom</i>	Linné, 1767	Gastropoda			
<i>Strombus</i> sp.	Linné, 1758	Gastropoda			
<i>Trivia monacha</i>	da Costa 1778	Gastropoda			
<i>Trivia</i> sp.	da Costa 1778	Gastropoda			
<i>Trophonopsis muricatus</i>	Montagu, 1803	Gastropoda			
<i>Turritella communis</i>	Risso, 1826	Gastropoda			
<i>Turritella</i> sp.	Lamarck, 1799	Gastropoda			

Table C. List of the vertebrate bones and teeth recorded in the database (I: incisor, C: canine, M: molar, indet: indeterminate)

Family	Skeletal part
Bovidae	
<i>Bos</i> sp.	I
<i>Capra ibex</i>	I
<i>Caprinae</i> indet.	I
Cervidae	
<i>Alces alces</i>	I, C, PM, M, mandible
<i>Capreolus capreolus</i>	I, C
<i>Cervus elaphus</i>	I, C, M, antler, phalanx
Suidae	
<i>Sus scrofa</i>	I, C, PM
Equidae	
<i>Equus ferus</i>	I, C
Castoridae	
<i>Castor fiber</i>	I, M, astragalus, mandible
Mustelidae	
<i>Lutra lutra</i>	C, M
<i>Martes martes</i>	C
<i>Meles meles</i>	I, C
<i>Mustela putorius</i>	C
Felidae	
<i>Felis silvestris</i>	C, astragalus
<i>Lynx</i> sp.	C
Canidae	
<i>Vulpes vulpes</i>	I, C
<i>Canis familiaris</i>	I, C, M
<i>Canis lupus</i>	I, C, M
Ursidae	
<i>Ursus arctos</i>	I, C
Phocidae	
indet	I, C
Cyprinidae	
<i>Rutilus</i> sp.	Pharyngeal teeth
Hominidae	
<i>Homo sapiens sapiens</i>	I, C, M
Leporidae	
indet	long bone
Bird	indet
Fish	indet
	<i>Rutilus</i> sp.
	Shark
Tortoise	<i>Emys orbicularis</i>
	vertebra
	pharyngeal tooth
	tooth
	scale

Table D. List of the mineral raw materials recorded in the database

Type of mineral raw material	Sub-types
Clay	
Limestone	
Marble	
Soapstone	
Schist	
Sandstone	
Siltstone	
Quartz	
Grey stone	
Green stone	Serpentine Jade Amphibolite Hornblendite Pyroxenite Phyllite Nephrite Variscite
Black stone	Lignite Ophiolite
Granitic rock	
Pebble	Indet

Table E. List of the bead-types recorded in the database

Bead-type	Type description
Acantho	Acanthocardia sp.
Ampulli	Ampullina sp.
AnCalc	Limestone ring
AnCelAnt	Red deer antler ring
AnMbr	Marble ring
AnOs	Bone ring
AnSchi	Schist ring
AnShell	Shell ring
Antalis	Antalis sp.
Aporrhai	Aporrhais pespelecani
ArcaNoae	Arca noae
AstrCasP	Beaver Astragalus
AstrFelP	Felis astragalus
Bayania	Bayania sp.
Bithynia	Bithynia tentaculata
BolmaRug	Bolma rugosa
BolmOper	Bolma rugosa opercule
BrcAntl	Red deer antler bracelet
BrcArg	Clay bracelet
BrcCalc	Limestone bracelet
BrcCharo	Charonia lampas bracelet
BrcGly	Glycymeris bracelet
BrcGres	Sandstone bracelet
BrcMbr	Marble bracelet
BrcOs	Bone bracelet
BrcOsili	Osilinus bracelet
BrcRn	Black stone bracelet
BrcRv	Green stone bracelet
BrcSchi	Schist bracelet
BrcSpond	Spondylus bracelet
BrcVC	Green stone bracelet
BrcVCTrP	Green stone bracelet

Table S5. cont.	
Bead-type	Type description
Buccinum	Buccinum undatum
CAlcP	Elk canine
Calliost	Calliostoma zizyphinum
Callista	Callista chione
CCanP	Canidae canine
CCelP	Red deer canine
CEqP	Horse canine
Cerast	Cerastoderma sp.
Cerith	Cerithium sp.
CFelP	Felis canine
Charo	Charonia lampas
Chlamys	Chlamys varia
Clancu	Clanculus corallinus
CLutP	Otter canine
CLynxP	Lynx Canine
CMartP	Marten canine
CMelesP	Badger canine
Columbel	Columbella rustica
Conus	Conus sp.
Corbicul	Corbicula convexa
COTTp	Otter canine
CPhoP	Seal canine
CPutP	Polecat canine
CSusP	Wild boar canine
CUrsP	Bear canine
CVulP	Fox canine
Cyclope	Cyclope neritea
Cypraea	Cypraea sp.
dentRequin	Shark tooth
DisArgP	Discoïd clay bead
DisNacrP	Discoïd mother of pearl bead
DisOsP	Discoïd bone bead
DisStoP	Discoïd stone bead
Donacill	Donacilla cornea
EmOrbi	Emys orbicularis scale
EnaDetrita	Ena detrita
Euspira	Euspira catena
Fagotia	Fagotia
Gibberul	Gibberula miliaria
Gly	Glycymeris sp.
Granulo	Granulolabium Plicatum
Gyraulus	Gyraulus sp.
Haliotis	Haliotis sp.
Hyniapfeifferi	Hynia pfeifferi
IAlcP	Elk incisor
IBosP	Bovidae incisor
ICanP	Canidae incisor
ICaprP	Ibex incisor
ICastP	Beaver incisor
ICastPI	Beaver incisor
ICelP	Red deer incisor
IEquP	Horse incisor
IHumP	Human incisor
ILagomP	Lagomorph bone
IMelP	Badger incisor
IPhoP	Seal incisor
IRoeDeerP	Roe deer incisor
ISusP	Wild boar incisor
IUrsP	Bear incisor
IVulpP	Fox incisor
Laevicar	Laevicardium sp.
Lithogly	Lithoglyphus naticoides
Littor	Littorina sp.
Luria	Luria lurida
Macoma	Macoma balthica
MAlcP	Elk molar
MandiAlcPerf	Elk mandible
MandiCastP	Beaver mandible
Marginel	Marginella sp.

Table S5. cont.	
Bead-type	Type description
MCanP	Canidae molar
MCastP	Beaver molar
McelP	Red deer molar
Melanopsis	Melanopsis sp.
Melongen	Melongena sp.
MHumP	Human molar
MLutrGr	Otter molar
MPhoP	Seal molar
MpodCanP	Perforated Canidae metapod
Mytilus	Mytilus sp.
nassariu	Nassarius sp.
Natica	Natica sp.
Nerinea	Nerinea
Nerita	Nerita tricarinata
Nucella	Nucella lapillus
Ocenebra	Ocenebra erinaceus
Osilinus	Osilinus sp.
Ostrea	Ostrea sp.
PAmb	Amber bead
PArgRd	Round clay bead
PArgTub	Tubular clay bead
Patella	Patella sp.
PCalCar	Square limestone bead
PCalDsc	Discoïd limestone bead
PCalGtt	Limestone bead with circular section and curved profile
PCalOv	Oval limestone bead
PCalTub	Tubular limestone bead
PCastP	Beaver incisor
Pecten	Pecten sp.
PendCastP	Beaver bone
PGalBic	Pebble pendant
PGalDsc	Discoïd stone bead
PGrDsc	Discoïd sandstone bead
PhalCelP	Red deer phalanx
Phalium	Phalium saburon
PhalOursgorge	Bear phalanx
Pirenella	Pirenella sp.
Pisania	Pisania striata
PICalcAt	Limestone plate
PLignDsc	Discoïdal black stone bead
PIOs	Bone plate
PISpoAt	Spondylus plate
PMAIcP	Elk premolar
Pmbr	Round amber bead
PMbrDsc	Discoïd marble bead
PMSusP	Wild boar premolar
PMudDsc	Discoïdal clay bead
PMUrsGr	Grooved bear molar
Pnéphrite	Discoïd black stone bead
Pophio	Discoïd black stone bead
PosBic	Biconic bone bead
POsCra	Bone bead red deer canine shaped
POsD	Bone pendant
POsDsc	Discoïd bone bead
POsGtt	Bone bead with circular section and curved profile
POsMola	Bone bead mammal molar shaped
POsOv	Oval bone bead
POsRect	Rectangular bone bead
POsTrg	Trivangular Bone Bead
POsTrz	Trapezoidal shell bead
POsTub	Tubular bone bead
Potamide	Potamides sp.
PRVBout	Round green stone bead
PRVDsc	Discoïd green stone bead
PRVOv	Oval green stone bead
PRVTub	Tubular green stone bead
PSchiDsc	Discoïd schist bead
PSerpDsc	Discoïd green stone bead
PSheCrrBi	Square shell bead

Table S5. cont.	
Bead-type	Type description
PSheCrrMI	Square shell bead
PSheDsc	Discoïd shell bead
PSheGtt	Shell bead with circular section and curved profile
PSheOv	Oval shell bead
PSheOvBi	Bi-perforated oval shell bead
PSheRd	Round shell bead
PSheRectBip	Restangular shell bead
PSheTrg	Triangular shell bead
PSheTrz	Trapezoidal shell bead
PSiliDsc	Discoïd siltstone bead
PSpoTub	Tubular spondylus bead
Psteatdsc	Discoïd soapstone bead
PStoDsc	Discoïd stone bead
PStoTub	Tubular limestone bead
PSttDsc	Discoïd soapstone bead
PtAmb	Amber pendant
PtAnt	Red deer antler pendant
PtCal	Limestone pendant
PtGal	Pebble pendant
PtGly	Glycymaris pendant
PtGr	Sandstone pendant
PtMbr	Marble pendant
PtOs	Bone pendant
PtPect	Pecten pendant
PtQrtz	Quartz pendant
PtSchi	Schist pendant
PtSpo	Arciform Spondylus pendant
PtSto	Stone pendant
PtStt	Soapstone pendant
PtUnio	Unio sp.
PVascOv	Oval green stone bead
Scaphand	Scaphander lignarius
spisula	Spisula solida
Spolnc	Notched Spondylus
Spond	Spondylus sp.
Stenomph	Stenomphalus
Stramoni	Stramonita haemastoma
Strombus	Strombus sp.
Stud	Clay ear stud
TGardon	Rutilus pharyngeal tooth
Theodoxu	Theodoxus sp.
TmamSeaGr	Grooved Seal canine
Trivia	Trivia sp.
Trophon	Trophonopsis muricatus
Turritel	Turritella sp.
Tympano	Tympanotonos sp.
Unio	Unio sp.
Veneri	Venericardia antiquata
Venus	Venus verrucosa

Table F. List of the bead-types present in each of the archaeological cultures

Archaeological culture	Bead-types
1	AnOs, Antalis, BrcArg, BrcCalc, BrcGres, BrcSchi, Cerast, CSusP, Mytilus, PCalDsc, PCalGtt, PSheDsc, PSheTrz, PSpoTub, spisula, Spolnc, Spond, Turritel, Tympano, Unio, Veneri
2	AnOs, Antalis, BrcArg, BrcCalc, BrcGres, BrcRn, BrcRv, BrcSchi, CSusP, Natica, Nucella, PCalDsc, PCalTub, POsTub, PSheDsc, PSheTrz, PSpoTub, PtGal, Unio
3	AnOs, Antalis, BrcGly, PCalDsc, PCalTub, PSheDsc, PSheOv, PSheRd, PSpoTub, PtOs, Spolnc, Spond, Theodoxu
4	AnOs, Antalis, BrcRv, BrcSchi, EnaDetritra, Nucella, PCalDsc, Pecten, POsTub, PSheDsc, PSheOv, PSheTrg
5	AnOs, AnSchi, Antalis, BrcArg, BrcCalc, BrcGly, BrcRv, BrcSchi, BrcSpond, BrcVC, BrcVCTrP, CCanP, CCeIP, Cerith, CSusP, Cyclope, Littor, Natica, Nerinea, Nucella, PCalCar, PCalDsc, PLignDsc, PosBic, POsTrz, PSheDsc, PSheOv, PSheTrg, PSheTrz, PSpoTub, PtGal, Spolnc, Spond, Trivia, Veneri
6	Antalis, BrcAntl, BrcCalc, BrcRv, BrcSchi, CCanP, CCeIP, Corbicul, CSusP, Gly, Granulo, Nerita, PCalDsc, PLignDsc, Potamide, PSheCrrBi, PSheCrrMI, PSheDsc, PSheGtt, PSheOv, PtUnio, Spond, Stenomph, Theodoxu, Unio
7	Antalis, BrcSpond, CCeIP, Columbel, CSusP, CVulP, Lithogly, PCalTub, Pmbr, Pnéphrite, PSheDsc, PSheGtt, PSheOv, PSheRectBip, PSheTrg, PSpoTub, PStoTub, PtSpo, Spolnc, Spond, Theodoxu, Unio
8	Antalis, BrcMbr, BrcOs, BrcSpond, BrcVC, Gly, PISpoAt, Potamide, PSheOv, PSpoTub, PtSpo, Spolnc, Spond
9	AnOs, Antalis, BrcSpond, CCeIP, Columbel, EnaDetritra, Gly, Natica, Nucella, PCalCar, PCalTub, PSheDsc, PSheOv, PSheOvBi, PSheTrg, PSpoTub, Spolnc, Spond, Trivia, Unio, Veneri
10	AnShell, Antalis, BrcOsili, BrcSpond, PArgRd, PArgTub, PGalBic, PGalDsc, PMbrDsc, POsTub, PRVBout, PRVOv, PRVTub, PSchiDsc, PSerpDsc, PSheDsc, PStoDsc, PSttDsc, PtMbr, PtSpo, PtSto, PtStt, Spond, Stud
11	Acantho, AnShell, Antalis, ArcaNoae, BolmaRug, BolmOper, BrcGly, BrcSpond, CCanP, CCeIP, Cerast, Cerith, Charo, Chlamys, Columbel, Conus, CSusP, CUrsP, CVulP, Cyclope, Cypraea, DisArgP, Gly, IBosP, ICaprP, MCanP, Melongen, Osilinus, PArgTub, Patella, PCalDsc, PCalOv, PCalTub, Pecten, PGRdsc, Phalium, Pisania, PIOs, Pophio, POsCra, POsMola, POsRect, POsTrg, POsTub, PSchiDsc, PSerpDsc, PSheDsc, PSheOv, PSiliDsc, PStoTub, PSttDsc, PtCal, PtOs, PtQrtz, PtSpo, Spolnc, Spond, Stramoni, Strombus, Trivia
12	Acantho, AnCelAnt, AnMbr, AnOs, AnSchi, AnShell, Antalis, Aporrhai, BrcCalc, BrcCharo, BrcGly, BrcMbr, BrcOsili, BrcRn, BrcRv, BrcSchi, CardBip, CCanP, CCeIP, Cerast, Cerith, CFelP, Charo, CLynxP, Columbel, Conus, CSusP, CVulP, Cyclope, Cypraea, DisOsP, DisStoP, Donacil, Gly, Haliotis, Hyniapfeifferi, Luria, Melanopsis, MpodCanP, Mytilus, nassariu, PArgTub, PCalDsc, PCalGtt, PCalOv, Pecten, Phalium, PIOs, POsDsc, POsGtt, POsOv, POsTub, PRVDsc, PRVOv, PSheDsc, PSheGtt, PSheOv, Psteatdsc, PStoDsc, PSttDsc, PtGly, PtGr, PtOs, PtPect, Scaphand, Stramoni, Strombus, Theodoxu, Trivia, Trophon
13	Acantho, AnCalc, AnCelAnt, AnOs, AnShell, Antalis, BrcCalc, BrcGly, BrcMbr, BrcSchi, CCeIP, Cerast, Cerith, Charo, CMelesP, Columbel, Conus, CSusP, CVulP, DisNacrP, DisOsP, DisStoP, Gibberul, Gly, ICeIP, ISusP, Luria, Marginel, nassariu, Patella, PCalDsc, PCalGtt, Pecten, PIOs, POsDsc, POsTub, PRVOv, PSheDsc, PSheGtt, PSheOv, Psteatdsc, PStoDsc, PtCal, PtGal, PtGly, PtOs, PtSchi, PVascOv, Theodoxu,, Trivia
14	BrcGly, BrcSpond
15	Cyclope, Lithogly, Melanopsis, PCalDsc, PSheRd, TGardon
16	Acantho, CSusP, Littor, Nucella, Ostrea, Patella, Pecten, PtGal, Trivia
17	Ampulli, Antalis, Bayania, Calliost, CCanP, CCeIP, Cerast, Cerith, CMelesP, Columbel, Conus, CVulP, Euspira, Fagotia, Gly, ICeIP, Laeivicar, McelP, Mytilus, nassariu, Natica, Ocenebra, Ostrea, Patella, Pecten, PhalCelP, Phalium, Pirenella, Pisania, Potamide, PtAnt, PtGal, PtOs, spisula, Theodoxu, Unio, Venus
18	CCeIP, Cerast, Columbel, CVulP, Gyraulus, Lithogly, Macoma, Pirenella, POsTub, Potamide, PtOs, TGardon
19	Littor, nassariu, Natica, PtOs, Trivia
20	Aporrhai, CCeIP, ICeIP, Littor, nassariu, PMudDsc, POsTub, PSchiDsc, PStoDsc, PtAmb, Trivia
21	CCeIP, Cerith, Columbel, Cyclope, Lithogly, Luria, nassariu, Theodoxu
22	Antalis, Callista, CCeIP, Cerast, Cerith, Columbel, Littor, nassariu, Natica, Osilinus, Pecten, Theodoxu, Trivia
23	Antalis, CCeIP, Cerith, Clancu, Columbel, Cyclope, Gly, nassariu, PStoDsc, PtGly, Spond, Theodoxu, Trivia
24	Columbel, nassariu, Natica, Pecten
25	Antalis, Cerith, Columbel, Gly, Pecten
26	Antalis, Columbel, Cyclope, Gly
27	Antalis, Columbel, Cyclope, Gly, PtGal
28	Amalda, Ampulli, Antalis, Bayania, CCeIP, Cerast, Conorbis, Gly, Keilosto, Littor, nassariu, Nucella, Potamide
29	Ampulli, Antalis, Bithynia, CCeIP, Cerast, Cerith, Columbel, Conus, CVulP, Cyclope, Gyraulus, Laeivicar, Lithogly, Littor, MHumP, nassariu, Ocenebra, Patella, Pecten, PhalCelP, PCalcAt, PSheTrg, PStoTub, PtGal, PtOs, PtQrtz, PtSchi, TGardon, Theodoxu, TmamSeaGr, Trivia
30	Acantho, Antalis, Buccinum, CCeIP, Cerast, Chlamys, Cyclope, Cypraea, Euspira, Gly, Haliotis, Laeivicar, Littor, nassariu, Nucella, Ocenebra, Ostrea, Patella, Pecten, Trivia, Trophon
31	CCanP, CEqP, CLutP, CMartP, CMelesP, CPhoP, CSusP, CUrsP, CVulP, IAlcP, IBosP, ICanP, ICeIP, IEquP, IPHoP, ISusP, IUrsP, MCanP, PAmb, PendCastP, PMAlcP, PMSusP, PtAmb
32	AstrCasP, AstrFelP, CCanP, CEqP, CLutP, CMartP, CMelesP, COttP, CSusP, CVulP, EmOrbi, IAlcP, IBosP, ICanP, ICastP, ICeIP, IEquP, ISusP, MAlcP, MCastP, PMAlcP, PMSusP, PtOs
33	CCanP, CMartP, IAlcP, ICanP, ICastP, IMelP, IUrsP, MCastP, MLutrGr, PMUrsGr, POsD
34	CAlcP, CCanP, CMartP, CMelesP, CPhoP, CUrsP, CVulP, IAlcP, IBosP, ICastP, ICeIP, ISusP, PAmb, POsTub, PtAmb
35	CSusP, IAlcP, IBosP, ICeIP, ISusP
36	CAlcP, CCeIP, CSusP, CUrsP, IAlcP, IBosP, ICeIP, IHumP, ISusP, MPhoP, Theodoxu

Table S6. cont.	
Archaeological culture	Bead-types
37	IAlcP, ICeIP, PtOs
38	CCeIP, CLutP, IAlcP, ICanP, ICeIP, Pamb, PtOs
39	BrcOs, CCeIP, ICaprP, ICeIP, ISusP, Pamb, PtAmb
40	CCeIP, ICeIP, ISusP
41	CCeIP, ICeIP, PtAmb
42	CCeIP, IAlcP, IBosP
43	ISusP
44	BrcSchi, Pamb, PtAmb, PtSchi
45	CCanP, CursP, IAlcP, IBosP, ICanP, ICastP, ICastPl, ICeIP, ILagomP, IRoeDeerP, ISusP, IVulpP, MandiAlcPerf, MandiCastP, MCanP, PhalOursgorge, PIOs, POsTub, PtGal, PtOs, PtQrtz
46	CAIcP, CCanP, CCeIP, CPhoP, CSusP, CursP, dentRequin, IAlcP, IBosP, ICeIP, IEquP, IRoeDeerP, ISusP, MAIcP, MceIP, MHumP, Pamb, PCastP, PendCastP, POsTub, Theodoxu
47	CAIcP, CCanP, CCeIP, CFelP, CLutP, CMartP, CMelesP, CPutP, CSusP, CursP, CVulp, IAlcP, IBosP, ICanP, ICaprP, ICastP, ICeIP, IEquP, IHumP, IMelP, ISusP, IVulpP, MHumP, MPhoP, Pamb, PtAnt, PtOs
48	IAlcP, ICastP

SUPPORTING DATASET

DATASET S1 (Separate Excel sheet). Database of the Mesolithic and Early Neolithic European sites used in the analysis.

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