European Journal of Archaeology 2026, page 1 of 23

Faces in Places: Portable Clay Figurines from Åland and South-Western Finland in the Light of Chemical and Petrographic Analysis

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This study of Neolithic Comb Ware and Pitted Ware clay figurines from south-western Finland and Åland focuses on their provenance, technological traits, and cultural significance. Using ICP-MA/ES chemical analysis and thin-section petrography, forty-two figurines were analysed to identify clay sources and preferences in fabrication techniques. The data indicate that the figurines, and thus the humans, moved between contemporaneous locations along the south-western Finnish coast and on Åland, suggesting regional connections between sites. Most figurines were crafted locally, but a significant number was non-local, signifying mobility within a cross-Baltic network. Distinct clay recipes included calcareous or plant-based tempers and the use of grog. The symbolic value of adding grog is seen as reinforcing connections to a place, indicating that portability and provenance, i.e. movement between places, was an important characteristic of the hunter-gatherer figurine tradition of the Neolithic in the northern Baltic.

Keywords: clay figurines, ICP-MA/ES, thin-section, portable artefacts, Pitted Ware, Comb Ware

Introduction

The tradition of making figurines is rooted among Palaeolithic and Mesolithic hunter-gatherer groups in the north-eastern European Forest zone, who share a common imagery (see e.g. Wyszomirska, 1984; Nunez, 1986; Loze, 2005, 2008; Kashina, 2009; Fast, 2020; Khrustaleva & Kriiska, 2020, 2025). It is also seen in immovable rock-art and portable artefacts of different materials (Wyszomirska, 1984; Goldhahn et al., 2010; Iršėnas, 2010; Koivisto & Lahelma, 2021; Kashina & Mantere, 2022; Mantere, 2023: 293f., 332ff.; Iversen et al., 2024; Khrustaleva & Kriiska, 2025). Figurines of clay are predominantly associated with the Comb ceramic culture or Comb Ware (CW hereafter), dated to *c.* 5200–3250 cal BC, and the Pitted Ware culture (PWC hereafter), dated to *c.* 3300–2300 cal BC (Figure 1). The term CW refers to the geographical areas of Finland, Russia, and the eastern Baltic countries where different terminologies for the 'Comb Ware' complex and the figurine traditions are used (see e.g. Kashina, 2023 and Khrustaleva

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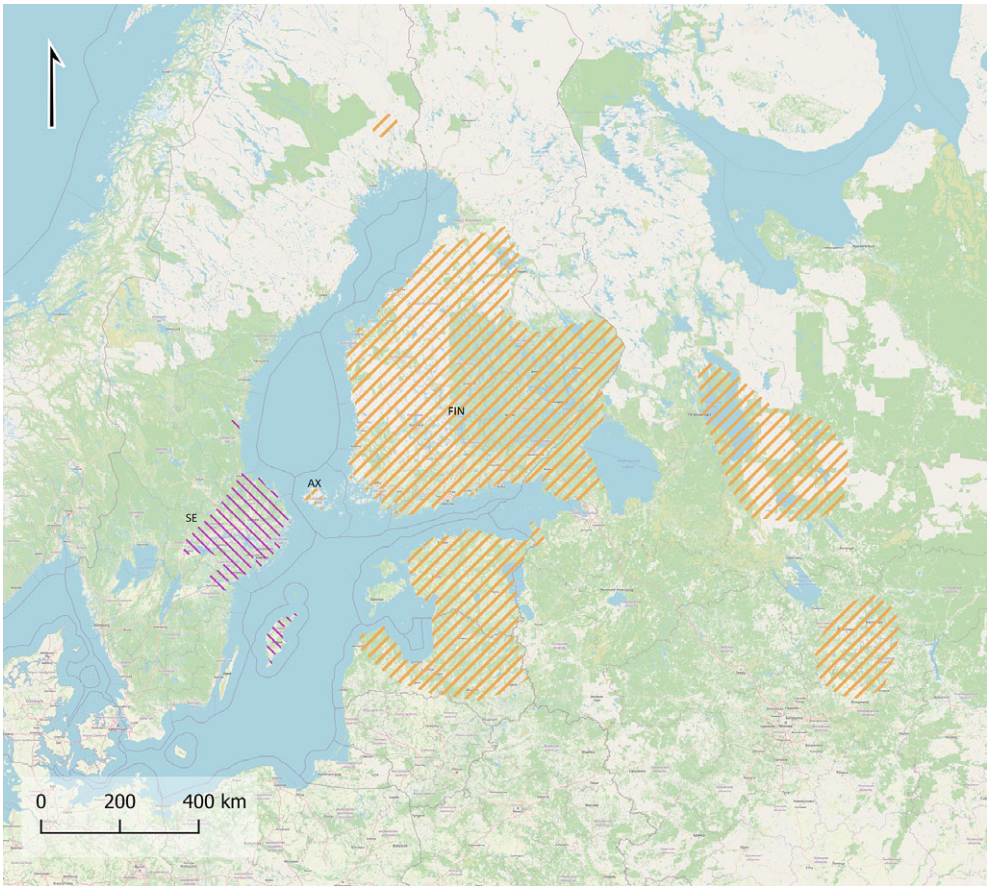

Figure 1. *Map of north-eastern Europe and the northern Baltic Sea showing the distribution of CW anthropomorphic figurines (yellow hatching) and PWC anthropomorphic figurines (purple hatching). Map created after Kashina, 2023, Khrustaleva & Kriiska, 2020 (CW), and Lindström, 2024 (PWC), using OpenStreetMap ODbL 1.0/CC-BY-SA 2.0. https://www.openstreetmap.org/copyright.*

& Kriiska, 2020, 2025, with references). The present study focuses on clay figurines associated with CW and PWC hunter-gatherer groups in the fifth to third millennia BC.

The CW and PWC figurines have mostly been recovered in settlement contexts and not in burials. They have been interpreted as either zoomorphs or anthropomorphs or as hybrids based on their morphological and ornate features, and are generally considered to be the material expression of some form of ritualistic behaviour such as shamanism or totemism (Wyszomirska, 1984; Nunez, 1986; Herva et al., 2014; Björck et al., 2020; Artursson et al., 2023), deities (Cederhvarf, 1912), animism and new animism (Artursson et al., 2023; Solfeldt 2024), or hunting or ancestral magic (Storå, 2001; Stenbäck, 2003; Loze, 2008; von Hackwitz, 2009; Kashina, 2023). Recent research offers interpretations based on morphological abilities, where figurines are doing instead of being (Lindström, 2024, 2025).

In Finland the oldest figurines found date to the early CW period, i.e. *c.* 5000–4800 cal BC (Pääkkönen et al., 2016). The figurines' upright bodies and small knoblike heads are generally interpreted as anthropomorphic (e.g. Nunez, 1986). Comb Ware animal figurines occasionally appear alongside

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anthropomorphic 'crouched figurines' (Leskinen & Pesonen, 2009) associated with the typical CW phase, dated to *c.* 3900–3200 cal BC (Haggrén et al., 2015; Pesonen, 2021). Anthropomorphic CW figurines, found for example in Vantaa (Fast, 2020), strongly resemble the (later) PWC anthropomorphs, which feature elaborately decorated faces. Chronologically, the Vantaa figurines are attributed to the typical or late CW period. All the figurine types mentioned in this article are found over a vast area including parts of Russia and the Baltic countries (e.g. Loze, 2008; Kashina, 2009; Fast, 2020; Khrustaleva & Kriiska, 2020) (Figure 1). On Åland, one zoomorphic figurine dated to the CW period has been found.

In Sweden, the overall spatial distribution of figurines within the PWC tradition is concentrated in eastern central Sweden and the island of Gotland (Figure 1). The anthropomorphic figurines appear around 2900–2300 cal BC and are spread even more narrowly, on the outer coastal areas of central Sweden and Åland (Lindström, 2024, figs. 28, 30). On the Åland Islands, the PWC anthropomorphic figurines were first found in 1911 on the Middle Neolithic site of Jettböle II (Cederhvarf, 1912), followed by several findings on contemporary PWC sites on the Åland Islands. Almost all figurines from Åland have been interpreted as standing anthropomorphs (Cederhvarf, 1912; Nunez, 1986; Lindström, 2024) or as human-animal hybrids (Storå, 2001). In the last decades, PWC sites on Åland (e.g. Fast & Soisalo, 2024) and Sweden (Björck et al., 2020; Kihlstedt et al., 2023) have yielded several new finds of Neolithic clay figurines, presenting an opportunity to reinterpret them in a cross-Baltic setting.

In a 2019 pilot provenance study of a small sample of Ålandic pottery (twenty-four sherds) and one figurine, we discovered that, although the analysed pottery was produced locally, the clay figurine from the PWC site of Glamilders was of non-local origin (Brorsson et al., 2019). This introduced the idea that figurines could be transported in a cross-Baltic network. This was recently further confirmed in a study of PWC figurines from the site of Tråsättra, situated outside Stockholm (Fauvelle et al., 2025). The connections between east and west seen in the archaeological record are evident in mobility research as well as aDNA and isotope analyses (e.g. Malmström et al., 2009; Fornander, 2011; Linderholm et al., 2014; Skoglund et al., 2014; Artursson et al., 2023: 92; Boethius et al., 2024). Nevertheless, interpretations of the social and cultural networks between the CW and PWC spheres are challenging (see Högberg et al., 2025). This study aims to gain a better understanding of the Åland figurines and their significance in a northern Baltic context.

Materials

To investigate the production and provenance of the CW and PWC clay figurines, samples from Åland (AX) and south-western Finland (FIN) were subjected to chemical ICP-MA/ES (inductively coupled plasma mass atomic emission spectrometry) and thin-section analyses. The material includes forty-two fragments of clay figurines (Table 1). The original datasets are presented in Tables 2 and 3. Including the CW Kraviojankangas figurines from the University of Turku collections allowed us to enhance our study both spatially and temporally. The figurines from five PWC sites on Åland were sampled from Ålands Museum (Glamilders, Jettböle, and Åsgårda) or in connection with archaeological investigations at Geta 16.9 (Fast & Soisalo, 2024) and Svinvallen. Visually differing fragments were chosen to avoid duplicates. The samples for analysis were taken from fractured surfaces in a way that did not affect the visual appearance of the artefact. Analyses of figurines from Swedish

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Table 1. *List of figurines from Åland (AX) and Finland (FIN) analysed here, using thin-section (T-S) or ICP-MA/ES analyses.*

ID	nr	Sample-ID	Site	Type	Figurine type	Part of figurine	Country	T-S	ICP-MA/ES
ÅM	726:1856	Glamilders4	Sa 20.8 Glamilders	PWC	anthropomorph	torso	AX		x
ÅM	113:3/ NM5180:397	Jettböle4	Jo 14.1 Jettböle II	PWC	anthropomorph	head, torso with knobs	AX		x
ÅM	704:184	Jettböle5	Jo 14.1 Jettböle II	PWC	anthropomorph	head/face	AX		x
ÅM	704:159	Jettböle6	Jo 14.1 Jettböle II	PWC	anthropomorph	head/face	AX		x
ÅM	662:5947	Åsgårda1	Sa 34.20 Åsgårda	PWC	anthropomorph	shoulder/back	AX		x
ÅM	662:2876	Åsgårda2	Sa 34.20 Åsgårda	PWC	anthropomorph/ zoomorph?	undefined, 3 limbs?	AX		x
ÅM	662:4537	Åsgårda3	Sa 34.20 Åsgårda	PWC	anthropomorph	torso, knob	AX		x
ÅM	662:308	Åsgårda4	Sa 34.20 Åsgårda	PWC	anthropomorph	undefined torso	AX		x
ÅM	662:1	Åsgårda5	Sa 34.20 Åsgårda	PWC	anthropomorph	undefined, torso or foot?	AX		x
ÅM	662:5042	Åsgårda6	Sa 34.20 Åsgårda	PWC	anthropomorph	undefined, head?	AX		x
ÅM	662:4613	Åsgårda7	Sa 34.20 Åsgårda	PWC	anthropomorph	torso, rounded	AX		x
ÅM	833:8	Geta6	Ge 16.9	PWC	anthropomorph	undefined	AX		x
ÅM	833:5	Geta5	Ge 16.9	PWC	anthropomorph	foot, flatbottomed	AX		x
ÅM	833:9	Geta3	Ge 16.9	PWC	anthropomorph	torso	AX		x
ÅM	833:10	Geta4	Ge 16.9	PWC	anthropomorph	lower torso	AX		x
ÅM	833:4	Geta2	Ge 16.9	PWC	anthropomorph	head/face	AX		x
ÅM	837:18	Geta12	Ge 16.9	PWC	anthropomorph	head/face	AX		x
ÅM	837:6	Geta13	Ge 16.9	PWC	anthropomorph	torso, foot?	AX		x
ÅM	837:22	Geta11	Ge 16.9	PWC	anthropomorph	head/face	AX		x
ÅM	837:21	Geta14	Ge 16.9	PWC	anthropomorph	torso/side	AX		x
ÅM	837:19	Geta15	Ge 16.9	PWC	anthropomorph	torso with knobs	AX	x	x
ÅM	837:14	Geta10	Ge 16.9	PWC	anthropomorph	unidentified	AX		x
ÅM	837:2	Geta9	Ge 16.9	PWC	anthropomorph	shoulder	AX		x
ÅM	784:1	Svinvallen5	Sa 20.8 Svinvallen	PWC	anthropomorph	neck /throat/part of chin	AX		x
ÅM	2023:301	Svinvallen14	Sa 20.8 Svinvallen	PWC	anthropomorph	neck	AX		x
ÅM	(2023) F2222	Svinvallen9	Sa 20.8 Svinvallen	PWC	anthropomorph	head/face	AX		x
ÅM	(2023) F2168	Svinvallen10	Sa 20.8 Svinvallen	PWC	anthropomorph	torso	AX	x	x
ÅM	(2023) F811	Svinvallen8	Sa 20.8 Svinvallen	PWC	anthropomorph	unidentified, shoulder?	AX		x
ÅM	(2023) F713	Svivvallen13	Sa 20.8 Svinvallen	PWC	anthropomorph	foot?	AX		x
ÅM	(2023) F895	Svinvallen12	Sa 20.8 Svinvallen	PWC	anthropomorph	unidentified	AX	x	x
ÅM	(2023) F858	Svinvallen7	Sa 20.8 Svinvallen	PWC	anthropomorph	torso	AX		x

Continued

Table 1. Continued

ID	nr	Sample-ID	Site	Type	Figurine type	Part of figurine	Country	T-S	ICP-MA/ES
ÅM	(2023) F795	Svinvallen11	Sa 20.8 Svinvallen	PWC	anthropomorph	foot, standing	AX	x	x
ÅM	687:1	Svinvallen6	Sa 20.8 Svinvallen	PWC	anthropomorph	complete, standing figurine	AX		x
TYA	151:119	Kokemäki5	271010050 Kraviojankangas	CW	anthropomorph	unidentified torso	FIN		x
TYA	151:1300	Kokemäki6	271010050 Kraviojankangas	CW	anthropomorph	torso, foot	FIN		x
TYA	151: 1301	Kokemäki7	271010050 Kraviojankangas	CW	anthropomorph	foot	FIN		x
TYA	151:1302	Kokemäki8	271010050 Kraviojankangas	CW	anthropomorph	torso, shoulder	FIN		x
TYA	151:1303	Kokemäki9	271010050 Kraviojankangas	CW	anthropomorph	torso, shoulder	FIN		x
TYA	151:145	Kokemäki11	271010050 Kraviojankangas	CW	anthropomorph	torso, lower part (foot)	FIN		x
TYA	151:45	Kokemäki12	271010050 Kraviojankangas	CW	anthropomorph	torso, lower part (foot)	FIN		x
TYA	116:1151	Kokemäki13	271010050 Kraviojankangas	CW	anthropomorph	torso, side	FIN		x
TYA	151:1304	Kokemäki10	271010050 Kraviojankangas	CW	anthropomorph	foot?	FIN		x
SHM	36413/ F783****	Norslunda4	L2016:8184 Norslunda	PWC	antropomorph	shoulder	SE		x
	F2716/3015279_HST***	Åby6	L2011:2734 Åby	PWC	zoomorph	torso	SE		x
Previously published (analyses)									
	FU. F2**	Tråsättra1	L2013:7729 Tråsättra	PWC	anthropomorph	foot	SE		x
	FU. F567**	Tråsättra2	L2013:7729 Tråsättra	PWC	anthropomorph	foot	SE		x
	SU.F11/ 1228734*	Tråsättra23	L2013:7729 Tråsättra	PWC	anthro-/zoomorph	undefined. (Possibly bear- Björck et al. 2020)	SE		x
	SU.F62/ 1228785*	Tråsättra24	L2013:7729 Tråsättra	PWC	anthropomorph	torso with knobs	SE		x

Continued

Table 1. Continued

ID	nr	Sample-ID	Site	Type	Figurine type	Part of figurine	Country	T-S	ICP-MA/ES
	SU. F95/ 1228818*	Tråsättra25	L2013:7729 Tråsättra	PWC	anthropomorph	head/face, shoulder	SE		x
	SU. F103/ 1228826*	Tråsättra26	L2013:7729 Tråsättra	PWC	anthropomorph	foot	SE		x
	SU.F105/ 1228828*	Tråsättra27	L2013:7729 Tråsättra	PWC	anthropomorph	head/face, torso	SE		x
	SU.F130/ 1228858*	Tråsättra28	L2013:7729 Tråsättra	PWC	anthropomorph	undefined, torso?	SE		x
	SU.F77/ 1228800*	Tråsättra29	L2013:7729 Tråsättra	PWC	anthropomorph	head/face	SE		x
	F3003***	Norvik36	Norvik	PWC	anthropomorph	undefined	SE		x
	F9184***	Norvik37	Norvik	PWC	anthropomorph	undefined, head?	SE		x

Previously analysed figurines from Sweden (SE) at the bottom of the list. For Swedish samples: *Find ID cross-referenced to Björck et al., 2020; **find ID: Kihlstedt, 2016; ***find ID: Kihlstedt et al., 2023; ****find ID: Runesson & Kihlstedt, 2017 and Lindström, 2024; *****find ID: Stenbäck & Vogel, 2010.

Table 2. *Results of the thin-section analysis of figurines from Åland.*

			Clay									Temper							
Thin Section nr.	**Collection ID**	**Site**	**Sorted/ unsorted clay**	**coarse/ medium/ fine clay**	**Silt**	**Sand**	**Iron oxide**	**Mica**	**Potassium carbonate**	**Diatoms**	**Organic matter**	**Calcium**	**Rock**	**Chamotte/ grog**	**Sieved temper**	**Temperl %**	**Largest grainsize, mm**	**Comments**	**ICP-MA/ ES groups**
22	ÅM726:1856	Sa 20.8 Glamilders	Sorted	Fine			+	-		n.o	x	x				27	1		G4
S10	field ID 2168	Sa 20.8 Svinvallen	Sorted	Fine			+	*		n.o	x*			x			0.5	*added	G3
S11	field ID 795	Sa 20.8 Svinvallen	Unsorted	Coarse	x	x	+	*		n.o	x*			x			0.5	*added	G3
S12	field ID 811	Sa 20.8 Svinvallen	Unsorted	Coarse	x	x	+	*		n.o		x		x			0.5		G4
G15	ÅM837:19	Ge 16.9 Geta	Sorted	Fine			+	*		n.o		x				8	2		G1

Abbreviations: * = normal quantity; - = lesser quantity; + = high quantity; ++ = very high quantity; x = occurrence; n.o. = not observed.

Table 3. *ICP-MA/ES original dataset (see Table 1). The samples consist of figurines from Åland, Finland, and Sweden. Raw clay samples from Åland (sites and samples from the Långbergsöda area) are highlighted.*

	Al	Ca	Ce	Co	Cr	Ga	La	Mg	Mn	Na	Sr	V
Sample	**ppm**	**%**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**%**	**ppm**	**%**	**ppm**	**ppm**
Geta2	7.46	5.71	136.5	15.5	78	22.9	67.2	2.19	6590	0.79	195.5	79
Geta3	7.47	2.14	209	22.9	73	19.8	112	0.94	1635	0.96	252	56
Geta4	7.99	0.95	148.5	12.4	64	20.6	82.3	0.93	713	1.38	216	67
Geta5	8.49	1.22	175	29.8	85	23.1	83.4	1.3	1610	1.02	164.5	88
Geta6	7.42	3.21	152	15.9	79	22.1	71.5	21.85	2210	0.95	192.7	79
Geta9	0.45	0.14	5.01	0.2	12	7.38	2.5	0.05	44	0.13	23	5
Geta10	6.67	0.84	85	10.5	117	17.55	39.1	0.84	508	1.34	101	50
Geta11	9.27	0.91	179.5	19.2	102	26.3	91.5	1.57	815	0.9	161	116
Geta12	8.47	0.87	107	13.1	65	22.5	51.9	1.19	556	1.38	121	71
Geta13	6.17	0.73	101.5	14.9	46	22.4	52.2	0.45	1245	1.41	180	30
Geta14	8.1	0.73	108	9.6	57	19.75	54.6	0.91	544	1.54	121	61
Geta15	7.82	0.75	113	8.7	61	21.3	55.9	0.85	298	1.19	155	66
Glamilders2	7.67	3.49	156.5	14.9	70	21.9	90.8	0.96	1120	1.09	244	77
Jettböle4	6.62	1.66	82.2	17	78	18.65	40.2	1.6	1040	0.83	176.5	78
Jettböle5	6.92	2.17	96.8	17	77	19.9	45.9	1.32	924	0.87	153.5	94
Jettböle6	5.1	0.95	69.7	11.8	56	15	36.1	0.88	612	0.67	177	66
Svinvallen10	9.16	1.01	142	31	103	29.3	62.5	1.75	1400	1.01	110	118
Svinvallen11	7.95	0.94	144	16.3	82	24.1	73	1.35	563	1.11	109	97
Svinvallen12	8.19	1.42	199.5	23.3	101	25.1	100.5	1.13	918	0.86	305	86
Svinvallen13	8.04	0.77	93.9	16.5	85	27.2	43.7	1.31	564	1.03	99	97
Svinvallen14	7.87	0.97	96.1	14.1	104	38.6	44	1.44	567	0.91	75	116
Svinvallen5	6.01	0.88	86.3	15.6	60	17.9	40.3	0.86	801	0.92	104	70
Svinvallen6	8.39	0.94	141.5	18.6	98	23.3	71	1.52	845	1	120	108
Svinvallen7	8.8	1.14	138.5	26.4	103	30.8	65	1.56	946	0.96	158	106
Svinvallen8	9.05	0.89	118	21.1	98	30.6	55.1	1.62	1555	0.85	94	109
Svinvallen9	8.71	1.02	129.5	20.7	106	32.4	60.8	1.58	1025	0.92	96	115
Åsgårda1	3.23	0.76	40.8	6.5	32	8.46	19.2	0.49	403	0.53	109.5	40
Åsgårda2	5.38	1.64	74.3	8.5	53	14.45	37.7	0.53	1190	0.91	482	55
Åsgårda3	5.56	1.86	78.3	10.9	54	14.65	38.9	0.79	761	0.83	193	65
Åsgårda4	7.75	1.89	121	21	90	22.3	53.7	1.16	2330	0.86	329	92
Åsgårda5	8.45	1.84	135.5	36.5	101	25.3	61.2	1.51	6210	0.8	257	114
Åsgårda6	6.94	1.19	82.4	18.3	74	19.25	36.1	1.23	1810	1.07	137	88
Åsgårda7	6.67	2.27	98.5	14.9	67	15.85	50	1.08	1450	0.91	329	71
Alkärr4	8.5	0.84	155.5	17.6	94	24.4	78.9	1.55	546	1.03	107.5	123
Nygård1	8.43	0.83	126.5	19.8	82	24.6	64.1	1.46	557	1.13	112	109
Nygård2	4.69	0.69	55.3	3.4	17	12.9	27.3	0.26	233	1.32	108	24
Långbergsöda1	6.97	0.83	71	9	48	19.85	37.5	0.75	372	1.36	120	64
Långbergsöda2	7.18	0.79	88.2	9.4	51	19.25	45.6	0.77	358	1.46	127	67
Kokemäki5	8.75	0.99	118	16.9	90	23.5	56.4	1.34	543	1.13	201	109
Kokemäki6	9.11	0.89	141.5	21.3	106	24.7	69.7	1.54	768	1	125.5	118
Kokemäki7	8.14	0.97	96.2	17	102	23.5	47.6	1.07	775	1.06	212	99
Kokemäki8	9.46	1.06	110	35	119	27	53.4	1.66	1650	0.66	175	95
Kokemäki9	8.7	0.92	110.5	23	101	24	52.6	1.45	840	1.08	139.5	108
Kokemäki10	7.22	1.12	95.3	16.7	72	17.95	44.8	1.12	807	1.38	151	85
Kokemäki11	9.86	0.98	140	22.2	134	29.6	70.3	1.62	526	0.97	348	147
Kokemäki12	8.84	0.96	116.5	24.4	104	25.3	56.1	1.4	1475	0.98	206	113
Kokemäki13	9.03	1.32	136.5	19.7	103	24.7	68.7	1.46	749	1	416	108
Norslunda4	8.52	2.04	111.5	20.1	100	22.6	52.3	2.18	900	0.81	85.8	121
Åby6	6.71	0.86	102.5	6.7	49	20.6	54.4	0.54	244	1.12	232	57

ICP-MA/ES dataset. The samples consist of figurines from Åland (AX): Geta, Glamilders, Jettböle, Svinvallen Åsgårda; Finland (FI): Kokemäki, Kraviojankangas; and Sweden (SE): Norslunda, Åby. The highlighted samples are raw clay from Åland, the archaeological sites Sa 20.7 Alkärr and Sa 20.6 Nygård, and samples from the Lånbergsöda area. The data is curated by Dr rer. Nat Torbjörn Brorsson at Ceramic Studies, Höganäs, Sweden.

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PWC sites were included for comparison, totalling thirteen figurines from four different sites (Table 1). Unlike the other Swedish samples, the ICP-MA/ES results from two figurines from Norslunda and Åby have not been published previously.

Methods

The petrographic determinations of clay provenance start with the identification and characterization of clay fabrics; that is, raw material and technological additions that reflect their geographical origin (Quinn, 2022: 169). In the last decades, ICP-MA/ES analyses of pottery sherds have been increasingly used to determine the origin of ceramics (e.g. Little et al., 2004). Earlier artefact studies using ICP-MA/ES or pXRF (portable X-ray fluorescence) have been conducted on ceramics and other types of materials (e.g. Asplund & Stilborg, 2013; Brorsson et al., 2018a, 2019; Holmqvist et al., 2018; Ahola et al., 2022), successfully demonstrating contacts and movement patterns in the northern Baltic Sea region.

The selection and procurement of raw materials are the first steps in the production sequence of the figurines. The choice of raw materials is based on factors such as the accessibility and properties of the materials, but ethnographic analogies show that cultural preferences such as tradition and custom are principal factors in collecting the material. (Quinn, 2022). The study of thin sections of ceramics is a well-established method (e.g. Degryse & Braekmans, 2017; Quinn, 2022), which permits not only petrographic studies, but also helps to reveal other aspects such as the clay type and added temper.

ICP-MA/ES and thin-section analyses of clay and temper

Inductively coupled plasma mass atomic emission spectrometry is a chemical analysis that measures the elemental compositions of ceramic artefacts by measuring a spectrum of forty-four elements down to extremely low concentrations (Golitko & Dussubieux, 2016). Twelve trace elements, the post-transition metals Al, Ca, Ce, Co, Cr, Ga, La, Mg, Mn, Ma, Sr, and V, were chosen for analysis and the results used to identify the origin of the clay from which each figurine is made. The selection of trace elements is based on previous experience that demonstrated reliable discriminating processing (e.g. Thompson & Walsh, 1989). A minimum sample of 0.3 g was taken from each figurine, ground into a fine powder, and dissolved in an acid solution, which was then injected into excited argon plasma. When atoms are targeted with this massive energy, the electrons produce coloured rays that are unique to each individual element. The spectrum of atomic emissions can subsequently be measured by MA/ES. The ICP-MA/ES analyses were carried out by OMAC Laboratories Ltd in Loughrea, Galway, Ireland.

The ICP-MA/ES analyses provide a large amount of data that were statistically processed using the software SPSS PASW statistics 17.0. The data were organized in a factor- and a cluster analysis, which combine samples of the same chemical composition and thus indicate a probable geological origin (Little et al., 2004; Quinn, 2022). The data on the chemical composition of the samples have been statistically processed through cluster analyses aimed at identifying shared chemical composition. The material is analysed either in percentages or ppm (parts per million), and all was analysed at the same laboratory in the same format. The materials are partly calibrated with standard values for respective region. The ICP-MA/ES analysis is not biased by the treatment of the clay, which means that the impact of natural or added temper to the clay on the results is considered insignificant. A coarsely or finely worked clay originating from the same source will be

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placed into the same ICP group, while two fine clays from different places will be separated.

The 'criterion of abundance' means that the most abundant type of clay within the studied material is assumed to be the geographically closest preferred source of clay (Quinn, 2022), and the deviating samples are thought to derive from non-local or from different clay sources. The ICP-MA/ES analyses of pottery from the northern Baltic Sea area have, however, proved to be a challenge in terms of separating ceramics from coastal central Sweden, Åland, and south-western Finland, as their geology is similar. Therefore, as a first step, the figurines from each settlement were analysed separately to establish the intra-site geochemical signal. Previously analysed pottery from these sites, as well as geologically and archaeologically collected clay samples from various sites on Åland, were used as reference material (Table 3; Brorsson et al., 2019). After establishing the geochemical signal for each site, all the figurines included in our study were analysed to identify provenance, and the results were compared with those of previous studies to examine movement across the Baltic Sea.

Thin-section analysis provides a method for distinguishing between added and natural temper, which cannot be detected by ICP-MA/ES. A 0.03 mm-thick, thin section is made from the sampled material and examined under a polarizing microscope with magnifications between 40X to 100 XS. The thickness of the clay, type of temper, and the proportion of and largest grain size are determined. The clays used in the production of the vessels and figurines are classified as fine, medium, or coarse depending on the amount and size of silt and sand fractions, and the clays are defined as sorted or unsorted. In an unsorted clay, certain fractions are missing. Furthermore, the mineralogical composition and presence of organic matter and the presence of diatoms are noted.

Results

ICP-MA/ES analysis to track provenance

The ICP-MA/ES analysis of the Åland PWC figurines indicated that most figurines were made locally but eight were of non-Åland origin, using the criterion of abundance. All three figurines from Jettböle II that were analysed (3/3) were made on Åland. At Geta 16.9 (7/12), Svinvallen (7/8), and Åsgårda (5/7), most analysed figurines were made of clays collected intra-site or close to the sites.

The figurines from Åland were examined collectively to investigate whether it is possible to distinguish between non-Ålandic figurines and to identify different production centres within the Islands. The Åland material was grouped into three main and five smaller groups with slightly different geochemical signals (Figures 2 and 3). While none of the analysed elements differs significantly, among the locally made figurines, it is possible to define at least one common quarry area in north-eastern Åland for figurines from both Geta 16.9 and Svinvallen (group 3), and another shared area with figurines from Åsgårda, Svinvallen and Jettböle II (group 2). The distance between Svinvallen on northern Åland and Jettböle II in south-central on Åland is about 20 km. This means that either the sites utilized the same source of clay for some (but not all) figurines, or that contacts involving the exchange of figurines existed between them. Six of the figurines from Geta 16.9 (group 1) make up a homogenous group of their own. The clay samples included in group 1 are geological samples collected from areas some 55 m asl in the Långbergsöda area, indicating

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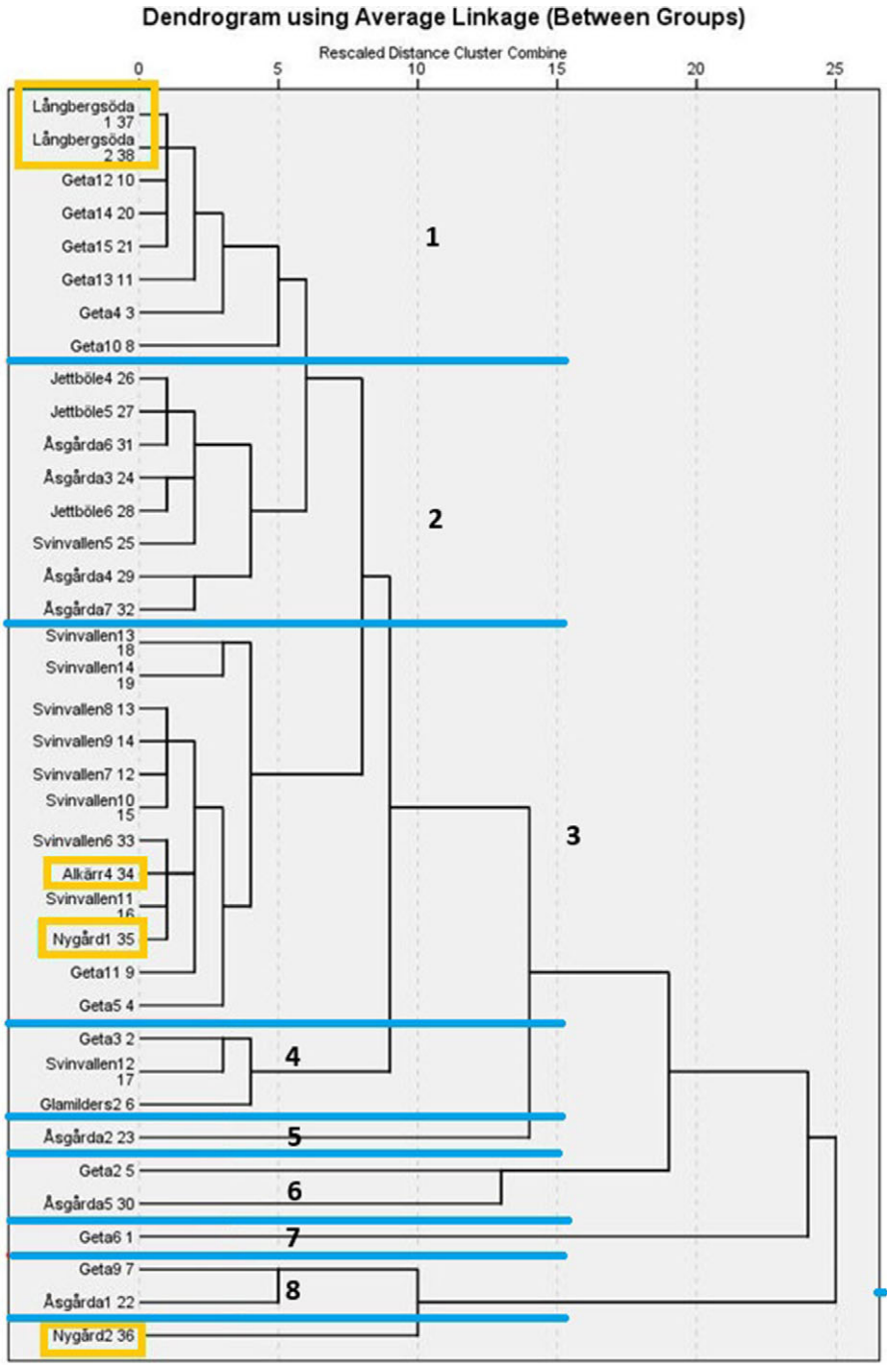

Figure 2. *Results of the ICP-MA/ES analysis of Åland figurines and raw clays (yellow boxes). The analysis revealed eight distinct geochemical groups: local figurines (groups 1–3) and non-local figurines (groups 4–8), and one group consisting of raw clay only. Groups are separated by blue lines.*

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Figure 3. *Figurine fragments from Åland: ÅM662:2876, ÅM662:4537, ÅM662:4613, ÅM662:5947 from Åsgårda; ÅM833: 4, ÅM837:18, ÅM837:19, ÅM837:22 from Geta; ÅM726:1856 from Glamilders; NM5180:397/ÅM113:3, ÅM704:59, ÅM704:184 from Jettböle; ÅM687:1, ÅM784:1, F795, F2168 from Svinvallen.* Photograph of ÅM 833:4 reproduced by permission of Marjo Karppanen & Jan Fast.

that the provenance of the clay in the Geta figurines comes from northern Åland. Two figurines from Geta 16.9 and Åsgårda (group 6) make up a group with Åland provenance but, since the geochemical marker differs from other groups ascribed to the northern Åland region, their clay probably derives from different quarries on Åland.

The figurines with a non-local geological signal are clustered at the bottom of the dendrogram in Figure 2. Figurines from

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Geta 16.9 and Åsgårda (group 8) differ from all other analysed figurines due to their low concentrations of Mn, Sr, and Al. The figurines are possibly made from clay similar to deposited clay that was sampled at the site (Sa 20.6) of Nygård in Långbergsöda, suggesting that the same type of clay used for pottery in a CW context was used for PWC figurines.

One of the Geta figurines, the Glamilders figurine, and one from Svinvallen (group 4) clustered together, exhibiting similarities with different ceramic reference materials from both Åland and the Stockholm area, which can be explained by similarities in the clay in the areas. Two of the figurines differ from any of the other figurines and make up their own groups (groups 5 and 7). Group 5 is a sole figurine from Åsgårda that has a probable provenance east of Åland. It does not contain any of the geochemical markers of the Swedish figurines. Group 7 is a figurine from the site Geta 16.9, probably made in Åland or the Stockholm region.

The Åland figurines were further compared to published data from PWC figurines (Table 1) and pottery from sites in Sweden. The analyses of nine figurines from the Swedish PWC site of Tråsättra had already established that links existed with Åland (Björck et al., 2020; see also Fauvelle et al., 2025), as one of the Tråsättra figurines exhibits the same provenance as the Glamilders figurine. The concentrations of Ca, Ce, and Sr are elevated in both samples, probably due to the use of a calcareous clay paste. The provenance of the clay has not been determined, but the high amount of Ca is a geological characteristic of the island of Gotland, from where figurines had been imported to Tråsättra (Fauvelle et al., 2025). At Ajvide on the island of Gotland, six figurines are known (Lindström, 2024) but none have been subjected to chemical provenance analysis. The other two non-local Tråsättra figurines had concentrations of Al, Co, Cr, Ga, Mn, and V that were higher than the rest of the samples from Tråsättra. These values are also elevated in pottery found on the CW Stockmyra site on Åland, making southern Åland a likely area of provenance (Björck et al., 2020; cf. Fauvelle et al., 2025). Both Stockmyra and the island of Kökar in the southern Åland archipelago are used as sources for determining the provenance for PWC pottery (Kihlstedt et al., 2023) and figurines (Fauvelle et al., 2025). The Otterböte (on Kökar) pottery originates from the southern Baltic Bronze Age (Hulthén, 1997) and the pottery from Stockmyra dates to the CW period (Brorsson et al., 2019), which means that both chronological and cultural affiliations should be taken into consideration when interpretating provenance. The remaining analysed Tråsättra figurines were of local origin, with clays quarried close to the site (Björck et al., 2020).

The figurines from Norvik, south of Stockholm, had a provenance in the Stockholm area, but some of the pottery from Norvik resembled pottery from Åland (Kihlstedt et al., 2023). A zoomorphic four-legged clay figurine from the PWC site of Åby in Östergötland (Runeson & Kihlstedt, 2017; see also Lindström, 2024) and an anthropomorphic figurine from the PWC site of Norslunda in Uppland (Stenbäck & Vogel, 2010) was included in the ICP-MA/ES analyses for comparison, both indicating a local Swedish provenance. The figurine from Norslunda (F783) was identified as an anthropomorphic shoulder piece by the authors of this article.

The figurines from the CW site of Kokemäki Kraviojankangas in mainland Finland were for the most part made of local clays (Figures 4 and 5). Two out of nine analysed figurines had a deviating geochemical marker with a probable provenance further south in the Turku region, based on comparisons to Neolithic pottery samples from the sites of Niuskala and Jäkärlä (cf. pottery samples in Pääkkönen et al., 2016). One of the figurines has an unknown provenance, but outside both the Kokemäki and Turku areas. Further analyses of ceramics from

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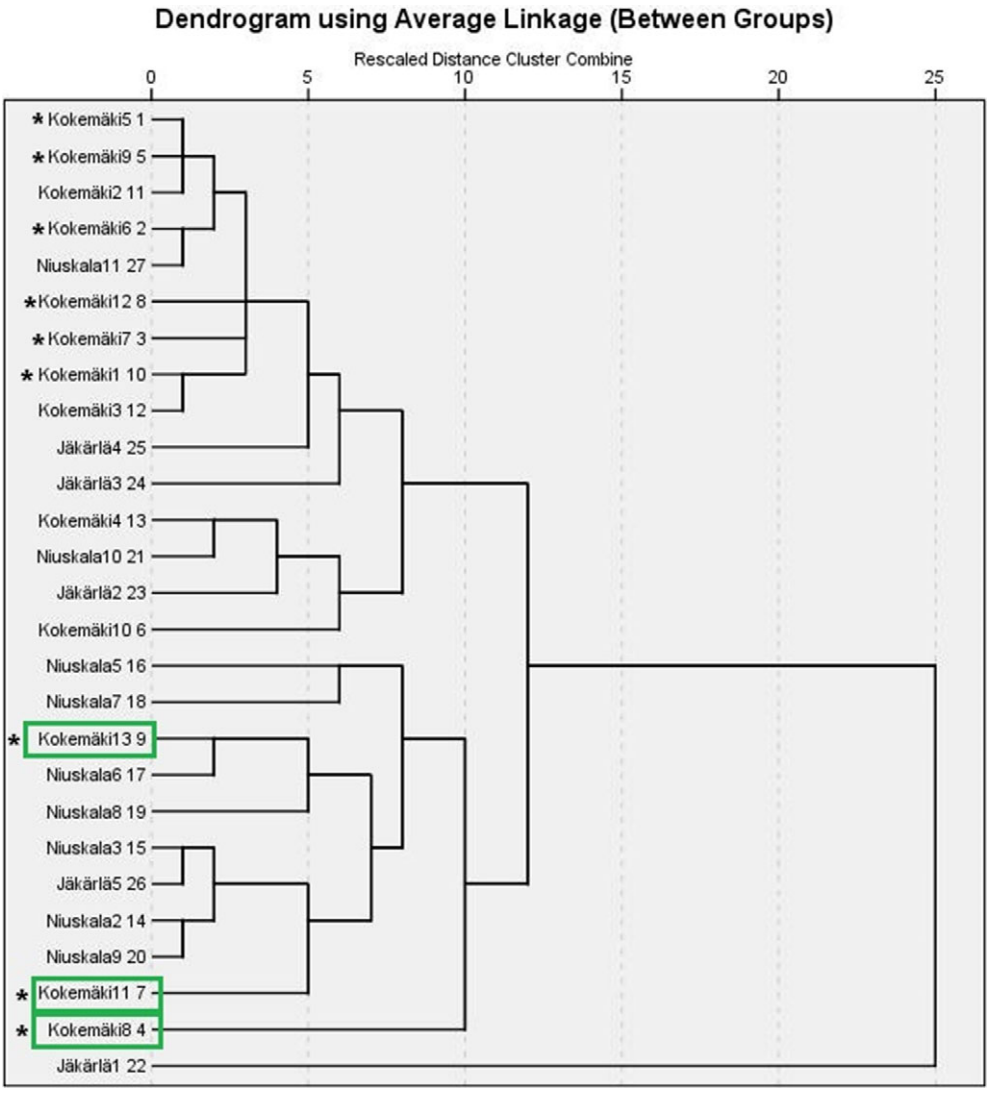

Figure 4. *Results of the ICP-MA/ES analysis of the Finnish figurines from Kraviojankangas (marked with *) compared to pottery from the sites of Niuskala and Jäkärlä in the Turku region. The figurine samples marked in green, Kokemäki 11_7 and 13_9, have a probable provenance in the Turku region and Kokemäki 8_4 has a non-local provenance.*

mainland Finland are required to narrow the areas of provenance.

Thin-section analysis of the fabrics

To investigate whether there are any distinguishing technological features among the figurines from Åland, five thin-section analyses were made (Table 2). The analyses showed that there were two kinds of fabrics used in making the figurines, one porous and the other compact. This seems to be the result of both added temper and the use of coarse, or respectively fine, clays. Two figurines from the sites of Geta and Glamilders were made from fine sorted clays that were tempered exclusively with deliberately added calcareous

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Figure 5. *Figurine fragments from Kraviojankangas, Kokemäki, in Finland.*

material. One Svinvallen figurine also had calcareous temper but was made of a coarser clay type. It is probable that the calcareous temper comprises limestone or seashells rather than osseous material, but more analysis is needed to establish this. Studies of seashells in Neolithic pottery from Finland have shown that the saltwater clam *Cerastoderma glaucum* was used as temper (Mökkönen, 2008: 124).

Of the figurines from Åland analysed by ICP-MA/ES, twelve displayed high quantities of manganese (Mn), in concentrations between 1000 and 6590 ppm. The high amount of Mn suggests either a calcareous or plant origin for the temper. Both animals and plants contain high levels of Mn, and the hollows in the clays visible in the thin sections suggest that added plant material probably accounts for these large quantities.

The thin-section analysis further revealed that three figurines from Svinvallen had been tempered with grog (Figure 6), i.e. crushed fired clay recycled into the clay paste. Two of these figurines had the same local geochemical source, while the third, made of coarser clay, had an origin somewhere on Åland or the Stockholm area. Grog as temper is not widely used in PWC pottery in eastern central Sweden (Larsson, 2009: 85–86), but the Jettböle I site on Åland has yielded PWC pottery containing grog (Brorsson et al., 2019). Grog is associated with Battle Axe/Corded Ware (BAC/CWC) pottery (e.g. Holmqvist et al., 2018), but has also been found in Late Neolithic Kiukainen (KIU) pottery in Finland. Grog as temper might have had a functional aspect (Larsson, 2009: 63; Quinn, 2022: 223 ff.), but the small amount of grog in the Svinvallen figurines suggests that the grog had a symbolic meaning rather than a practical function. The symbolic value of adding grog could be seen to reinforce a connection to place, indicating that portability and provenance were important characteristics of the PWC figurine tradition.

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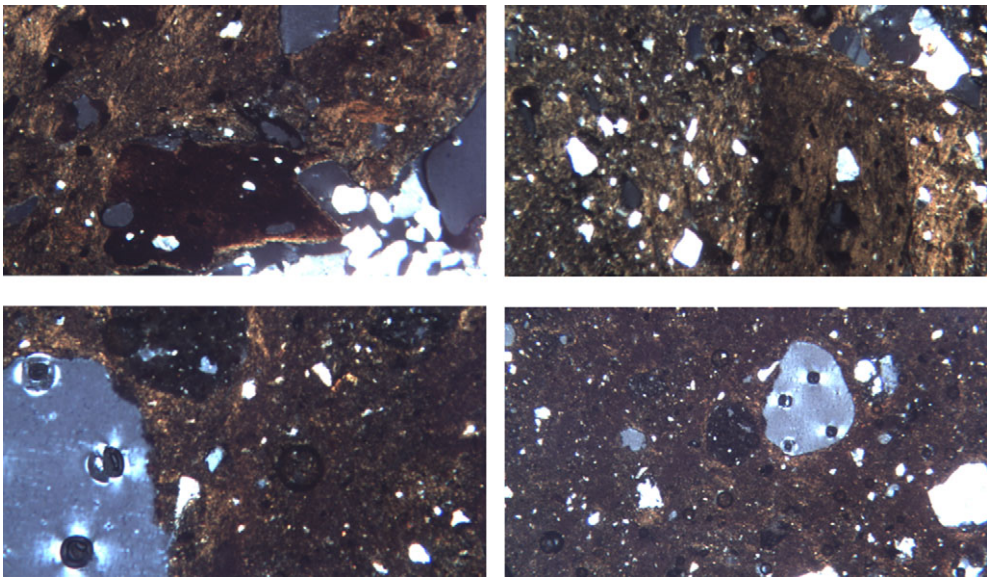

Figure 6. *Microscopic images of thin sections of clay figurines from Svinvallen containing grog. Upper left: Svinvallen 10, right: Svinvallen 11. Bottom row: both samples are from Svinvallen 12.*

Discussion

The results from the ICP-MA/ES analysis indicate that both the CW and PWC anthropomorphic figurines we analysed were made of both local and non-local clays: the non-local clays on Åland account for twenty-one per cent and in Finland for thirty-three per cent. The local clay was collected close to where the pottery and figurines were used and discarded. The data indicate movement between contemporaneous locations on Åland, suggesting preferences in clay sources and thus production within the archipelago. The same pattern is suggested for the early CW figurines from the Finnish mainland, where the Kraviojankangas figurines indicate interactions along the south-western coast of Finland.

The figurines of non-local provenance crossed the northern Baltic Sea during their lifespan. The PWC figurines from Åland formed part of the extensive circulation of artefacts in the northern Baltic during the Middle Neolithic, highlighting inter-Baltic connections and the PWC as a maritime and seafaring population. The exchange patterns also endorse Åland's central position and agency in the middle of the Baltic Sea. The links between Åland and the island of Gotland are supported by strontium isotope research conducted on both humans and dogs (Boethius at al., 2024), as well as the ICP-MA/ES results from the Tråsättra figurines (Fauvelle et al., 2025). The suggested places of origin of the figurines, based on the results of the provenance analysis, are presented in Figure 7.

We propose that the figurines should be interpreted in the light of their portability, their importance being (in part) embedded in their clay paste. The provenance of the chosen raw materials, the recipe, and perhaps even the act of making the figurines was linked to the spatial and temporal place embodied in them. When moved to a different place, the figurine served as a reminder of its origin or place, or as a token

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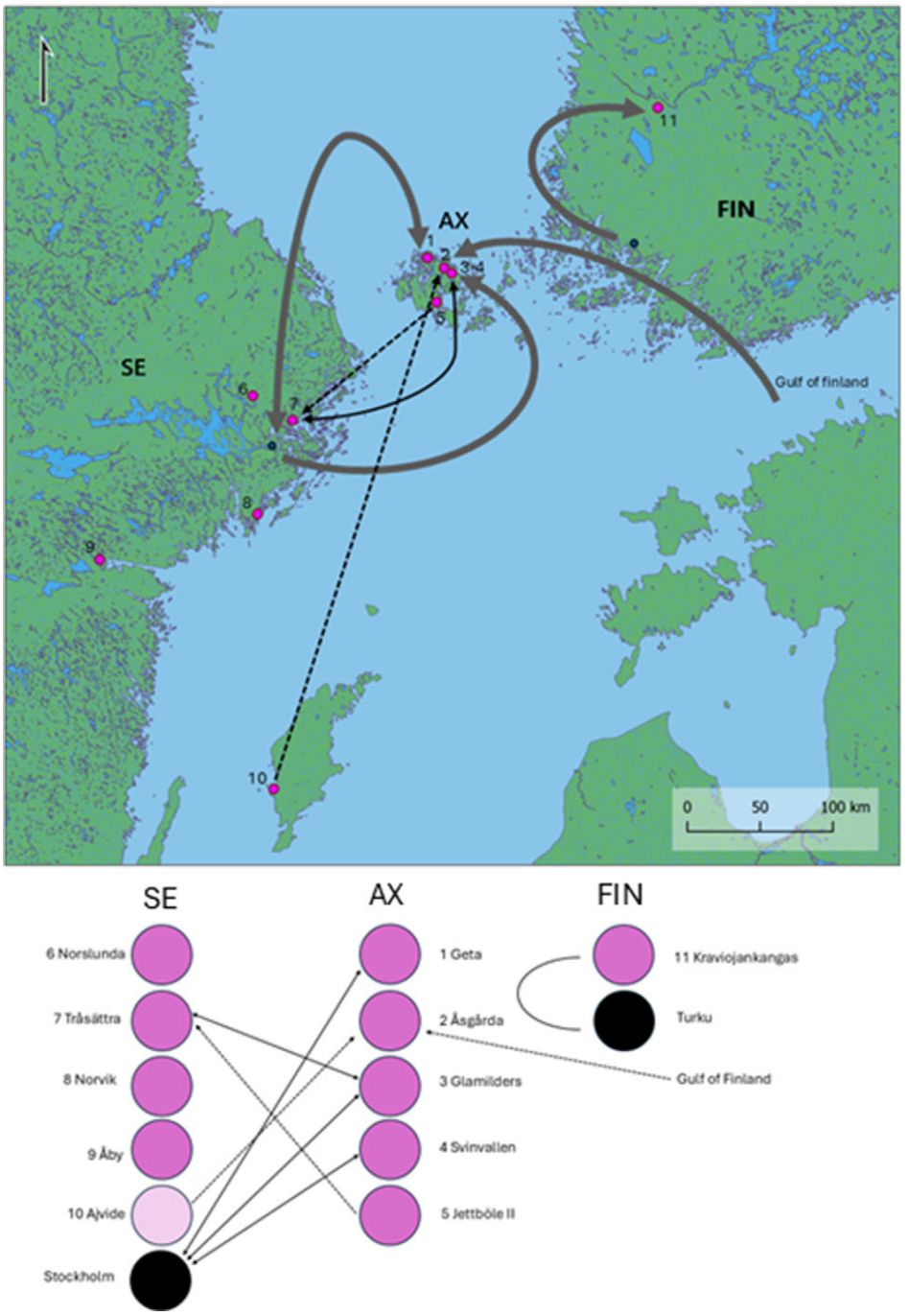

Figure 7. *Map showing the likely mobility of clay figurines across the northern Baltic Sea, suggesting interaction between the Åland (AX) and Swedish (SE), and Finnish (FI) PWC groups, as well as connections between PWC Åsgårda (AX, no.2) and the Gulf of Finland in the east. Full arrows represent conclusive results and dotted arrows probable results (for Gotland cf. Boethius et al., 2024; Fauvelle et al., 2025), thicker grey arrows represent regions of provenance. The arrows suggest the direction from the source to the find location; arrows pointing two ways indicate the possibility of provenance from either area.* Map created using ©EuroGeographics 2024.

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of social relationships (cf. Ahola et al., 2022; Holmqvist, 2022). Even though this was not visible to him or her, the person holding the figurine was likely to have known the source and provenance of the clay and its environmental context (Herva et al., 2014).

This interpretation is supported by the results of the thin-section analysis of the Åland figurines, which determined that some of the Svinvallen examples contained grog, i.e. they had a tangible bond to earlier ceramic items, perhaps even older figurines. The added grog and the clay used have different origins, but the provenance of the grog is difficult to evaluate (cf. Holmqvist, 2022). While two of the figurines containing grog had a local Svinvallen provenance and the third probably originated in Sweden, the mixing of different raw materials nonetheless reflects a symbolic merging or transformation of materials, memory, and place (cf. Larsson 2009). Grog has been found in pots from sites with multiple pottery styles (see Larsson, 2009; Holmqvist et al., 2018; Brorsson et al., 2019) and interpreted as representations of relocated potters (Holmqvist et al., 2018). Our investigations have revealed, for the first time, that grog was used in the Neolithic clay figurine tradition of Baltoscandia.

The temper added to the PWC figurines can be seen as a cultural rather than technological choice, since options were readily available. The fabric used for the figurines differs from the pottery from their respective site (cf. Brorsson et al., 2018b), demonstrating that different recipes were used for making the figurines. The high amounts of Ca found in some figurines, most likely to have derived from crushed seashells, emphasizes the maritime connection of the PWC (cf. Stenbäck, 2003). On the other hand, the elevated amount of Mn could also point to added plant material. Analyses of soil from the incisions in the head of figurines from Geta have revealed phytoliths of grass (Poaceae) (Rajamäki, 2024), suggesting that plants might have been significant in handling the figurines during their use.

Besides the non-visible choices of clays and added temper, the figurines we studied also display visible ways of altering their appearance, for example by painting or adding organic matter such as grass into incisions on the head. Painting objects with ochre or other pigment is thought to be linked to communication, making representations or characters visible (Gummesson, 2018; Solfeldt, 2024; Lindström, 2025). Two of the CW figurines from Kraviojankangas display traces of red ochre surface paint. Several PWC figurines from Åland also have traces of ochre (Cederhvarf, 1912; Wyszomirska, 1984; Nunez, 1986; Rajamäki, 2024). The use of red ochre is often associated with burials or painting, such as rock art (e.g. Lahelma, 2008: 60; Ahola, 2019), but there are also examples of finds from settlement contexts such as paint on the surface of pottery or, in our case, clay figurines.

Due to its location in the northern Baltic Sea, Åland functioned as both a gathering place and transit location for people and objects circulating within Neolithic networks. The assemblages at the PWC sites on Åland provide evidence of long-distance contacts through imported objects and materials as well as the pottery styles represented there. Pottery of PWC type is found together with BAC/CWC pottery at both Jettböle (Storå, 2001; Stenbäck, 2003) and Svinvallen, the latter also containing KIU pottery (Soisalo, 2025). Whether the circulation of figurines and the blending of ceramic materials was a way to reinforce temporality (ancestry) or contemporaneous spatiality (origin), we suggest that the key to understanding the figurines (faces) is their connection to place, as well as forming part of the local and regional social networks of the PWC.

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Conclusion

Forty-two clay figurines belonging to the Neolithic CW and PWC hunter-gatherer traditions on Åland and in Kokemäki in Finland were analysed to establish the clay recipes and provenance of the figurines. We identified similarities between the analysed CW and PWC figurines that go beyond typology and morphological traits. Preferences in recipes and provenance, indicating movement, support a common idea and origin for the figurines found among the CW and PWC traditions. The results of the thin-section analysis of five PWC figurines from sites on Åland suggest that there are distinct recipes for making clay figurines that differ from the pottery found on these same sites. The raw materials used reflect conscious choices, attested by the use of calcareous seashells and plant-based temper. The use of grog suggests the figurines had a tangible bond to earlier ceramic items, perhaps even older figurines. The ICP-MA/ES analysis of thirty-three PWC figurines from Åland and nine CW figurines from Kokemäki resulted in the identification of clays with both local and non-local provenance. Most figurines were made of local clays quarried close to the sites. The figurines that were non-local had clays that were either collected interregionally or had a cross-Baltic provenance indicating connections between Åland, eastern central Sweden, Gotland, and south-western Finland. Our results suggest that the importance of the CW and PWC figurines was linked to portability and to concepts of origin and place.

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References

Ahola, M. 2019. *Death in the Stone Age: Making Sense of Mesolithic-Neolithic Mortuary Remains from Finland (ca. 6800 to 2300 cal BC)*. Helsinki: University of Helsinki.

Ahola, M., Holmqvist-Sipilä, E. & Pesonen, P. 2022. Materialising the Social Relationships of Hunter-Gatherers: Archaeological and Geochemical Analyses of 4th Millennium BC 'Slate Ring Ornaments' from Finland. *Journal of Archaeological Method and Theory*, 29: 1259–93. https://doi.org/10.1007/s10816-022-09556-8

Artursson, M., Björck, N. & Lindberg, K.-F. 2023. Seal Hunters, Fishermen and Sea-Voyagers: Late Middle Neolithic (2600–2400 cal BC) Maritime Hunter-Gatherers in the Baltic Sea Archipelago at Träsättra, Sweden. *Journal of Neolithic Archaeology*, 25: 89–147. https://doi.org/10.12766/jna.2023.4

Asplund, H. & Stilborg, O. 2013. Förromersk keramikteknologi och finsk-svenska relationer: Keramologisk analys av Morby- och Morby-liknande keramik. *Finskt Museum*, 117: 88.

Björck, N., Artursson, M. & Lindberg, K.-F. 2020. *Träsättra: Aspekter på säljägarnas vardag och symbolik* (Arkeologerna Rapport 2019:40). Stockholm: Statens Historiska Museer.

Boethius, A., Storå, J., Gustavsson, R. & Kielman-Schmitt, M. 2024. Mobility Among the Stone Age Island Foragers of Jettböle, Åland, Investigated Through High-Resolution Strontium Isotope Ratio Analysis. *Quaternary Science Reviews*, 328: 108548. https://doi.org/10.1016/j.quascirev.2024.108548

https://doi.org/10.1017/eaa.2026.10033 Published online by Cambridge University Press

Brorsson, T., Blank, M. & Fridén, I.B. 2018a. Mobility and Exchange in the Middle Neolithic: Provenance Studies of Pitted Ware and Funnel Beaker Pottery from Jutland, Denmark, and the West Coast of Sweden. *Journal of Archaeological Science: Reports*, 20: 662–74. https://doi.org/10.1016/J.JASREP.2018.06.004

Brorsson, T., Lucenius, J. & Stenbäck, N. 2018b. Kulturella influenser på Åland under stenåldern: Exemplet kalkmagring i keramiken. *Åländsk Odling*, 69: 94–105.

Brorsson, T., Lucenius, J. & Stenbäck, N. 2019. Changing Perspectives: Thin Section and ICP Analysis of Neolithic Pottery From the Åland Islands. In: K. Mannermaa, M. Manninen, P. Pesonen & L. Seppänen, eds. *Helsinki Harvest: Proceedings of the 11th Nordic Conference on the Application of Scientific Methods in Archaeology*. Helsinki: Suomen arkeologinen seura, pp. 7–22.

Cederhvarf, B. 1912. Neolitiska lerfigurer från Åland. *Finska Fornminnesföreningens Tidskrift*, 26: 307–22.

Degryse, P. & Braekmans, D. 2017. Petrography: Optical Microscopy. In: A. Hunt, ed. *The Oxford Handbook of Archaeological Ceramic Analysis*. Oxford: Oxford University Press, pp. 233–65. https://doi.org/10.1093/oxfordhb/9780199681532.013.15

Fast, J. 2020. Kontakter i Östersjöområdet under subneolitisk stenålder-Tre människolinande leridoler från vetenskapscentret Heurekas utgrävningar i Ånäs. In: A. Koivisto, ed. *Helsingin pitäjä-Vantaa, Helsinge-Vanda 2021*. Vantaa-Seura: Vandasällskapet, pp. 10–27.

Fast, J. & Soisalo, J. 2024. NAU 2024: Kivikauden jäljillä Ahvenanmaalla. *Arkeologia NYT*: 4–10.

Fauvelle, M., Brorsson, T., Artursson, M., Björck N. & Horn, C. 2025. Maritime Exchange During the Middle Neolithic: Evidence of Trade in Ceramic Figurines at the Pitted Ware Culture Site of Tråsättra. *Journal of Archaeological Science: Reports*, 66: 105342. https://doi.org/10.1016/j.jasrep.2025.105342

Fornander, E. 2011. *Consuming and Communicating Identities: Dietary Diversity and Interaction in Middle Neolithic Sweden* (Theses and Papers in Scientific Archaeology, 12). Stockholm: Stockholm University.

Goldhahn, J., Fuglestvedt, I., Lahelma, A. & Ljunge, M. O. 2010. *Changing Pictures: Rock Art Traditions and Visions in Northern Europe*. Oxford: Oxbow.

Golitko, M. & Dussubieux, L. 2016. Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) and Laser Ablation Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS). In: A. Hunt, ed. *The Oxford Handbook of Archaeological Ceramic Analysis*. Oxford: Oxford University Press, pp. 399–423. https://doi.org/10.1093/oxfordhb/9780199681532.013.23

Gummesson, S. 2018. *Points on Production: Taphonomic Research on Mesolithic Osseous Assemblages in Sweden* (Theses and Papers in Osteoarchaeology, 9). Stockholm: Stockholm University.

Haggrén, G., Petri, H., Lavento, M., Raninen, S. & Wessman, A. 2015. *Muinaisuutemme jäljet: Suomen esi- ja varhaishistoria kivikaudelta keskiajalle*. Helsinki: Gaudeamus.

Herva, V.-P., Nordqvist, K., Lahelma, A. & Ikäheimo, J. 2014. Cultivation of Perception and the Emergence of the Neolithic World. *Norwegian Archaeological Review*, 47: 141–60. https://doi.org/10.1080/00293652.2014.950600

Högberg, A., Brink, K., Brorsson, T. & Malmström, H. 2025. Transdisciplinary Theoretical Approaches to Migration Studies in Archaeology. *Cambridge Archaeological Journal*, 35: 418–34. https://doi.org/10.1017/s0959774325000046

Holmqvist, E. 2022. Why Not Let Them Rest in Pieces? Grog-Temper, its Provenance and Social Meanings of Recycled Ceramics in the Baltic Sea Region (2900–2300 BCE). *Archaeometry*, 64: 8–25. https://doi.org/10.1111/arcm.12727

Holmqvist, E., Larsson, Å.M., Kriiska, A., Palonen, V., Pesonen, P., Mizohata, K., et al. 2018. Tracing Grog and Pots to Reveal Neolithic Corded Ware Culture Contacts in the Baltic Sea Region (SEM-EDS, PIXE). *Journal of Archaeological Science*, 91: 77–91. https://doi.org/10.1016/j.jas.2017.12.009

Hulthén, B. 1997. The Otterböte Pottery: A Ceramological Study. In: K. Gustavsson, ed. *Otterböte: New Light on a Bronze Age Site in the Baltic* (Theses and Papers in Archaeology, 4). Stockholm: Stockholm University, pp. 145–54.

Iršėnas, M. 2010. Anthropomorphic and Zoomorphic Stone Age Art in Lithuania, and its Archaeological Cultural Context. *Archaeologica Baltica*, 13: 175–90.

Iversen, R., Becker, V. & Bristow, R. 2024. Figurative Representations in the North European Neolithic—Are They There?

https://doi.org/10.1017/eaa.2026.10033 Published online by Cambridge University Press

Cambridge Archaeological Journal, 34: 601–19. https://doi.org/10.1017/S0959774323000537

Kashina, E. 2009. Ceramic Anthropomorphic Sculptures of the East European Forest Zone. In: P. Jordan & M. Zvelebil, eds. *Ceramics Before Farming: The Dispersal of Pottery Among Prehistoric Eurasian Hunter Gatherers*. Walnut Creek (CA): Left Coast Press, pp, 281–97.

Kashina, E. 2023. Connecting People: Ceramic Anthropomorphic Sculpture of Mid-Holocene Hunter-Gatherer-Fishers of the Circum-Baltic and Russian North-West. In: J.M. Grünberg, B. Gramsch, E.S. Brinch Petersen, T. Plonka & H. Meller, eds. *Mesolithic Art - Abstraction, Decoration, Messages: Tagungen des Landesmuseums für Vorgeschichte Halle*. Halle: Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt, pp. 465–76.

Kashina, E. & Mantere, V. 2022. Zoomorphic Stone Maces and Axes in the Forest Zone of Northeastern Europe: Manifestations of Interaction Between Hunter-Gatherers and Cattle Herding Groups in the 3rd Millennium BC. In: P. Halinen, V. Heyd & K. Mannermaa, eds. *Oodeja Mikalle / Odes to Mika / Оды Мике: Festschrift for Professor Mika Lavento on the Occasion of his 60th Birthday* (Monographs of the Archaeological Society of Finland 10). Helsinki: Archaeological Society of Finland, pp. 35–44.

Khrustaleva, I. & Kriiska, A. 2020. Inside the Dwelling: Clay Figurines of the Jägala Jõesuu V Stone Age Settlement Site (Estonia). *Baltic Journal of Art History*, 20: 11–57. https://doi.org/10.12697/BJAH.2020.20.01

Khrustaleva, I. & Kriiska, A. 2025. Comb Ware Cultures in the Eastern Baltic. *Estonian Journal of Archaeology*, 29: 72–105. http://doi.org/10.3176/arch.2025.1.03

Kihlstedt, B. 2016. *Tråsättra: En gropkeramisk boplats. Arkeologisk undersökning. RAÄ Österåker 553, Tråsättra 1:14, Österåkers socken och kommun, Stockholms län, Uppland*. Stiftelsen Kulturmiljövård (Rapport 2016:23). Stockholm: Stockholm University.

Kihlstedt, B., Gatti, C., Hinders, N., Holm, J., Runeson, H. & Forsgren, A. 2023. *Norvik: Gropkeramisk boplats och hantverk i ytterskärgård. Arkeologisk undersökning*. L2021: 5193 *(f. d. Nynäshamn 635). Kalvö 1:11. Nynäshamn socken och kommun, Stockholms län, Södermanland*. Stiftelsen Kulturmiljövård (Rapport 2023:45). Stockholm: Stockholm University.

Koivisto, S. & Lahelma, A. 2021. Between Earth and Water: A Wooden Snake Figurine From the Neolithic Site of Järvensuo 1. *Antiquity*, 95 (Project Gallery): e19. https://doi.org/10.15184/aqy.2021.79

Lahelma, A. 2008. *A Touch of Red: Archaeological and Ethnographic Approaches to Interpreting Finnish Rock Paintings* (Iskos, 15). Helsinki: Finnish Antiquarian Society.

Larsson, Å. 2009. *Breaking and Making Bodies and Pots: Material and Ritual Practices in Sweden in the Third Millennium BC* (AUN, 40). Uppsala: Uppsala University.

Leskinen, S. & Pesonen, P. 2009. *Forntiden i Vanda*. Vantaan kaupunki /Vanda stad: Otava.

Linderholm, A., Fornander, E., Eriksson, G., Mörth, C-M. & Lidén, K. 2014. Increasing Mobility at the Neolithic/Bronze Age Transition: Sulphur Isotope Evidence from Öland, Sweden. *Internet Archaeology*, 37. https://doi.org/10.11141/ia.37.10

Lindström, T. 2024. *Människor, djur och varelser i miniatyr: Flerartliga förbindelser i den gropkeramiska kulturen* (Stockholm Studies in Archaeology, 85) Stockholm: Stockholm University.

Lindström, T. 2025. Eyeing the Beholder: Anthropomorphic Clay Figurines and Reciprocal Gazing. *Current Swedish Archaeology*, 32: 159–81. https://doi.org/10.37718/CSA.2024.08

Little, N.C., Kosakowsky, L.J., Speakman, R.J., Glascock, M.D. & Lohse, J.C. 2004. Characterization of Maya Pottery by INAA and ICP-MS. *Journal of Radioanalytical and Nuclear Chemistry*, 262: 103–10. https://doi.org/10.1023/B:JRNC.0000040860.14672.89

Loze, I. 2005. Small Anthropomorphic Figurines in Clay at Ģipka Neolithic Settlements. *Documenta Praehistorica*, 32: 155–65. https://doi.org/10.4312/DP.32.11

Loze, I. 2008. The Neolithic Anthropomorphic Clay Figurine from the Northern Kurzeme Littoral. *Archaeologica Baltica*, 9: 53–60.

Malmström, H., Gilbert, M.T., Thomas, M. G., Brandström, M., Storå, J., Molnar, P., et al. 2009. Ancient DNA Reveals Lack of Continuity Between Neolithic Hunter-Gatherers and Contemporary Scandinavians. *Current Biology*, 19: 1758–62. https://doi.org/10.1016/j.cub.2009.09.017

Mantere, V. 2023. *The Relationship Between Humans and Elks* (Alces alces) *in Northern*

https://doi.org/10.1017/eaa.2026.10033 Published online by Cambridge University Press

Europe c. *12 000–1200 cal BC* (Karhunhammas, 21). Turku: University of Turku.
Mökkönen, T.O. 2008. A Review of Neolithic Multi-Room Housepits as Seen From the Meskäärtty Site in Virolahti Parish, Extreme South-Eastern Finland. *Estonian Journal of Archaeology*, 21: 114–51. https://doi.org/10.3176/arch.2008.2.02
Nunez, M. 1986. Clay Figures from the Åland Islands and Mainland Finland. *Fennoscandia Archaeologica*, 3: 17–34.
Pääkkönen, M, Bläuer, A, Evershed, R.P. & Asplund, H. 2016. Reconstructing Food Procurement and Processing in Early Comb Ware Period Through Organic Residues in Early Comb and Jäkärlä Ware Pottery. *Fennoscandia Archaeologica*, 33: 57–75.
Pesonen P. 2021. *Continuity and Discontinuity in Early, Middle and Late Neolithic Pottery Types of Eastern Fennoscandia: Reflections from Bayesian*. Helsinki: University of Helsinki.
Quinn, P.S. 2022. *Thin Section Petrography, Geochemistry and Scanning Electron Microscopy of Archaeological Ceramics*. Oxford: Archaeopress. https://doi.org/10.2307/j.ctv2nwq8x4
Rajamäki, J. 2024. Östergeta Ge 19.9:sta löytyneet kuoppakeraamisen kulttuurin savi-idolit -mikroarkeologinen tutkimus (unpublished undergraduate dissertation, Faculty of Cultures and Archaeology, University of Helsinki).
Runeson, H. & Kihlstedt, B. 2017. *Åby. En klassisk gropkeramisk lokal i det inre av Bråviken. Arkeologisk undersökning. Kvillinge 36.1, Norrköping, Östergötland*. Stockholm: Stiftelsen Kulturmiljövård (Rapport 2017:26).
Skoglund, P., Malmström, H., Omrak, A., Raghavan, M., Valdiosera, C., Günther, T., et al. 2014. Genomic Diversity and Admixture Differ for Stone-Age Scandinavian Foragers and Farmers. *Science*, 344: 747–50. https://doi.org/10.1126/science.1253448
Soisalo, J. 2025. The Chronology of the Pyheensilta Group and Kiukainen Culture in Finland Based on Radiocarbon Dating. *Fennoscandia Archaeologica*, 42: 28–46. https://doi.org/10.61258/fa.160868
Solfeldt, E. 2024. An Archaeology of Animism: On the Mesolithic 'Portable Art' of the Baltic Sea. *Hunter Gatherer Research*, 9: 95–123. https://doi.org/10.3828/hgr.2024.14
Stenbäck, N. 2003. *Människor vid havet. Platser och keramik på Ålandsöarna perioden 3500–2000 f.Kr*. (Stockholm Studies in Archaeology, 28). Stockholm: University of Stockholm.
Stenbäck, N. & Vogel, P. 2010. Arkeologisk rapport 11. Uppsala: SAU.
Storå, J. 2001. *Reading Bones: Stone Age Hunters and Seals in the Baltic* (Stockholm Studies in Archaeology, 21). Stockholm. http://doi.org/10.13140/RG.2.2.33803.13609
Thompson, M. & Walsh, J.N., with additional chapters by Walton, S.J. & Hall, G.E.M. 1989. *Handbook of Inductively Coupled Plasma Spectrometry* (2nd edn). Glasgow & London: Blackie.
von Hackwitz, K. 2009. *Längs med Hjälmarens stränder och förbi: Relationen mellan den gropkeramiska kulturen och båtyxekulturen*. Stockholm: Stockholm University.
Wyszomirska, B. 1984. *Figurplastik och grafskick hos Nord- och Nordösteuropas neolitiska fångstkulturer* (*Acta Archaeologica Lundensia* in 4o, 18). Bonn: Rudolf Habelt & Malmö: Gleerup.

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Des visages à leur place: analyses chimique et pétrographique de figurines portables en terre cuite des îles Åland et du sud-ouest de la Finlande

Cette étude des figurines en terre cuite appartenant aux cultures néolithiques de la céramique peignée et de la céramique à fossettes et provenant du sud-ouest de la Finlande et des îles Åland porte sur leur provenance, leurs aspects techniques et leur signification culturelle. Les analyses chimiques par ICP-MA/ES et pétrographiques sur lames minces de quarante-deux figurines, ayant pour but d'identifier l'origine des sources d'argile et les préférences dans leurs techniques de fabrication, indiquent que ces figurines, et donc les personnes, se déplaçaient entre des sites contemporains de la côte sud-ouest de la Finlande et sur les îles Åland, ce qui suggère que des liens régionaux existaient entre eux. La plupart de figurines étaient de production locale mais un nombre assez important provenait d'ailleurs, ce qui signifierait une certaine mobilité au sein d'un réseau trans-baltique. L'argile était sujette à des recettes distinctes qui comprenaient des inclusions calcaires ou végétales ainsi que l'addition de chamotte. La valeur symbolique de l'inclusion de chamotte est considérée comme un renforcement des liens avec un lieu particulier, indiquant que la portabilité et la provenance des figurines, c'est-à-dire um mouvement entre les sites, étaient des éléments importants pour les chasseurs-cueilleurs du Néolithique dans le nord de la Baltique. Translation by Maddeleine Hummler

Mot-clés: figurines en argile, ICP-MA/ES, lames minces, objets portables, céramique à fossettes, céramique peignée

Gesichter an ihrer Stelle: chemische und petrografische Analysen von tragbaren Tonfigurinen aus Åland und Südwestfinnland

Diese Untersuchung von neolithischen Tonfigurinen aus Südwestfinnland und den Ålandinseln, die zu den kammkeramischen und grübchenkeramischen Kulturen gehören, betrifft ihre Herkunft, technologischen Merkmale und kulturelle Bedeutung. Die chemischen Analysen mittels ICP-MA/ES und die dünnschnitt-petrografischen Untersuchungen von zweiundvierzig Figurinen, welche zum Ziel hatten, Tonquellen und Präferenzen bei den Herstellungstechniken zu identifizieren, haben gezeigt, dass diese Figurinen und damit die Menschen einen Verkehr zwischen zeitgenössischen Stätten entlang der südwestlichen finnischen Küste und auf Åland bezeugen, was auf regionale Verbindungen zwischen den Fundorten hindeutet. Die meisten Figurinen waren lokal geschaffen, aber ein recht wichtiger Teil wurde außerhalb hergestellt, was auf Mobilität innerhalb eines-transbaltischen Netzwerks weist. Kalkhaltige oder pflanzliche Magerung und die Verwendung von Schamotte gehörten zu den unterschiedlichen Tonrezepten. Der symbolische Wert der Zutat von Schamotte kann man als eine Verstärkung der Verbundenheit mit einem bestimmten Ort interpretieren, was darauf schließen lässt, dass Beweglichkeit und Herkunft, also Verkehr zwischen verschiedenen Stätten, wichtige Bestandteile der Figurinentradition der neolithischen Jäger und Sammler im nördlichen Ostseeraum waren. Translation by Maddeleine Hummler

Stichworte: Tonfigurinen, ICP-MA/ES, Dünnschnitt Untersuchungen, tragbare Artefakte, Grübchenkeramik, Kammkeramik