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Archaeology and the application of artificial intelligence : case-studies on use-wear analysis of prehistoric flint tools

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Citation

Dries, M. H. van den. (1998, January 21). *Archaeology and the application of artificial intelligence : case-studies on use-wear analysis of prehistoric flint tools*. Retrieved from <https://hdl.handle.net/1887/13148>

Version: Corrected Publisher's Version

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Appendix I

The conceptual knowledge of the analysis procedure

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	SCORE	RULE
Retouch location	bifacial equal (not alternating)	perpendicular dynamic	80	retouch motion 1
		longitudinal	80	
		piercing	40	
		transverse	40	
		transverse	20	
	bifacial equal (alternating)	longitudinal	80	retouch motion 22
	dorsal only	transverse	60	retouch motion 2
		perpendicular dynamic	20	
		longitudinal	20	
		piercing	20	
	bifacial, dorsal more	transverse	40	retouch motion 3
		perpendicular dynamic	40	
		longitudinal	20	
		piercing	20	
diagonal		20		
ventral only	transverse	60	retouch motion 4	
	longitudinal	20		
	piercing	20		
	perpendicular dynamic	20		
bifacial, ventral more	transverse	40	retouch motion 5	
	perpendicular dynamic	40		
	longitudinal	20		
	piercing	20		
point (one facet)	diagonal	90	retouch motion 33	
	point (multiple facets)	boring	60	retouch motion 44
	diagonal	40		
	piercing	40		
Retouch distribution	overlapping	boring	60	retouch motion 6
		diagonal	40	retouch motion 7
		longitudinal	40	retouch motion 9

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	SCORE	RULE
		perpendicular dynamic	40	retouch motion 38
		hard material	40	expert knowledge 9
		transverse	20	retouch motion 8
	uneven	longitudinal	60	retouch motion 10
		transverse	40	retouch motion 11
		boring	20	retouch motion 12
		diagonal	20	retouch motion 13
		perpendicular dynamic	20	retouch motion 39
		piercing	20	retouch motion 40
	close	piercing	90	retouch motion 42
		transverse	60	retouch motion 14
		longitudinal	40	retouch motion 15
		medium hard material	40	expert knowledge 10
		diagonal	20	retouch motion 41
	single break	perpendicular dynamic	60	retouch motion 16
		boring	20	retouch motion 17
		diagonal	20	retouch motion 18
	clumped	piercing	20	retouch motion 43
		boring	—	retouch motion 19 (remark only)
		diagonal	—	retouch motion 20 (remark only)
		longitudinal	—	retouch motion 21 (remark only)
		perpendicular dynamic	—	retouch motion 22 (remark only)
		transverse	—	retouch motion 24 (remark only)
	multi generation	perpendicular dynamic	60	retouch motion 25
		piercing	—	retouch motion 25
		boring	—	retouch motion 25
		diagonal	—	retouch motion 25
		longitudinal	—	retouch motion 25
		transverse	—	retouch motion 25
		soft material	xx	expert knowledge 7
		hard material	40	expert knowledge 71
Retouch orientation	perpendicular	transverse	80	retouch motion 26
		boring	80	retouch motion 27
		perpendicular dynamic	80	retouch motion 28
		piercing	40	retouch motion 45
	diagonal	perpendicular dynamic	80	retouch motion 29
		longitudinal	80	retouch motion 30
		diagonal	80	retouch motion 37

— means that the motion/material does not receive a score, but is not excluded either
xx means that the motion/material is excluded from the analysis

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	SCORE	RULE
	even mix	boring	20	retouch motion 31
		longitudinal	20	retouch motion 34
		diagonal	20	retouch motion 32
		perpendicular dynamic	20	retouch motion 35
		piercing	20	retouch motion 46
Retouch length	very small	medium hard material	40	retouch wth 1
		soft material	80	retouch wth 9
		perpendicular dynamic	xx	retouch wth 1/9
		piercing	xx	retouch wth 1/9
	small	medium material	40	retouch wth 2
		soft material	60	retouch wth 3
		perpendicular dynamic	xx	retouch wth 2/3
		piercing	xx	retouch wth 2/3
	medium	hard material	40	retouch wth 6
		medium hard material	60	retouch wth 4
		soft material	20	retouch wth 5
		perpendicular dynamic	xx	retouch wth 4/5/6
		piercing	xx	retouch wth 5
	large	hard material	80	retouch wth 7
		medium hard material	20	retouch wth 8
		perpendicular dynamic	40	retouch wth 7/8
		piercing	40	retouch wth 7/8
	very large	hard material	60	retouch wth 10
		perpendicular dynamic	60	
		piercing	60	
		boring	xx	
		diagonal	xx	
		longitudinal	xx	
transverse		xx		
Retouch termination & no rounding	mostly step	hard material	80	retouch term1
		medium hard material	40	
		soft material	20	
	mostly hinge	hard material	60	retouch term 2
		medium hard material	40	
		soft material	20	
	mostly feather	soft material	60	retouch term 3
		medium hard material	40	
		hard material	20	
	snap	hard material	—	retouch term 8 (remark only)
		medium hard material	—	retouch term 9 (remark only)
		soft material	—	retouch term 10 (remark only)

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	SCORE	RULE
	feather & hinge equal	hard material	20	retouch term12
		medium hard material	60	
		soft material	20	
	feather & step equal	hard material	40	retouch term13
		medium hard material	40	
		soft material	20	
	hinge & step equal	hard material	80	retouch term14
		medium hard material	40	
		soft material	20	
	comminution	hard material	80	retouch term19
perpendicular dynamic		60		
piercing		40		
boring		xx		
diagonal		xx		
longitudinal		xx		
transverse		xx		
Retouch termination & slight rounding	mostly step	hard material	80+20	retouch term 4
		medium hard material	20	
	mostly hinge	medium hard material	60+20	retouch term 5
		soft material	20	
		medium hard material	20	
	mostly feather	medium hard material	60+20	retouch term 6
		soft material	40	
		hard material	20	
	snap	hard material	—	retouch term 8 (remark only)
		medium hard material	—	retouch term 9 (remark only)
soft material		—	retouch term 10 (remark only)	
feather & hinge equal	medium hard material	60+20	retouch term 15	
	soft material	20		
	hard material	20		
feather & step equal	hard material	40+20	retouch term 23	
	medium hard material	40		
	soft material	20		
hinge & step equal	hard material	80+20	retouch term 22	
	medium hard material	40		
	soft material	20		

(+ 20 = extra score due to presence of slight edge rounding)

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	SCORE	RULE	
	comminution	hard material	80+20	retouch term 21	
		perpendicular dynamic	60		
		piercing	40		
		boring	xx		
		diagonal	xx		
		longitudinal	xx		
		transverse	xx		
Termination & heavy rounding	mostly step		xx		
	mostly hinge		xx		
	mostly feather	medium hard material	60+20	retouch term 7	
	snap	hard material	—	retouch term 8 (remark only)	
		medium hard material	—	retouch term 9 (remark only)	
		soft material	—	retouch term 10 (remark only)	
		feather & hinge equal	medium hard material	60+20	retouch term 16
		feather & step equal	medium hard material	60+20	retouch term 17
		hinge & step equal	medium hard material	40+20	retouch term 18
		comminution	all materials	xx	
Rounding, no retouch	slight rounding	medium hard material	60	rnd1	
		soft material	40		
	heavy rounding	medium hard material	80	rnd2	
Polish location	bifacial equal	perpendicular dynamic	60	polish motion 1	
		diagonal	40		
		piercing	40		
		longitudinal	40		
		transverse	20		
		boring	20		
		dorsal only	transverse	60	polish motion 2
		perpendicular dynamic	40		
		piercing	20		
		longitudinal	20		
		bifacial, dorsal more	transverse	60	polish motion 3
		perpendicular dynamic	40		
		longitudinal	40		
		piercing	20		
		ventral only	transverse	60	polish motion 4
	perpendicular dynamic	40			

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	SCORE	RULE
		longitudinal	20	
		piercing	20	
	bifacial, ventral more	transverse	60	polish motion 5
		piercing	20	
		longitudinal	20	
		perpendicular dynamic	20	
		diagonal	20	
	point (one facet)	diagonal	40	polish motion 22
		piercing	20	
	point (multiple facets)	boring	60	polish motion 23
		piercing	40	
		diagonal	40	
Polish directionality	perpendicular	perpendicular dynamic	80	polish motion 6
		transverse	60	polish motion 8
		piercing	40	polish motion 24
		boring	20	polish motion 7
		diagonal	20	polish motion 9
		polish '23'	20	expert knowledge 13 + 14
	diagonal	diagonal	80	polish motion 10
		longitudinal	40	polish motion 12
		transverse	20	polish motion 11
		perpendicular dynamic	20	polish motion 18
		piercing	20	polish motion 26
	parallel	longitudinal	60	polish motion 13
		boring	20	polish motion 14
		diagonal	20	polish motion 15
	random	transverse	20	polish motion 16
		longitudinal	20	polish motion 17
		perpendicular dynamic	20	polish motion 19
		boring	20	polish motion 20
		diagonal	20	polish motion 21
		piercing	20	polish motion 25

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	N	%	PF	RULE
Polish distribution	greasy lustre	leather (8)	3	38	40	polish dist 1
		meat and fish (20)	6	30	30	
		soft wood (41)	6	15	20	
		hard wood (10)	1	10	10	

N = the frequency of occurrence

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	N	%	PF	RULE
		soaked antler (12)	1	8	10	
		soaked bone (50)	2	4	10	
		hide (24)	1	4	10	
	streaks	shooting (6)	6	100	100	polish dist 2
		fish scaling (6)	3	50	50	
		leather (8)	2	25	30	
		non sil.plants (8)	1	12	20	
		soft wood (41)	1	2	10	
		sil.plants (23)	1	4	10	
		shell (4)	1	25	10*	
	isolated spots	soaked bone (50)	38	76	80	polish dist 3
		hard wood (10)	6	60	60	
		dry antler (2)	1	50	50	
		soaked antler (12)	6	50	50	
		meat and fish (20)	7	35	40	
		hide (24)	5	21	30	
		leather (8)	2	25	30	
		soft wood (41)	7	17	20	
		fish scales (6)	1	17	20	
		shell (4)	3	75	10 *	
		pottery (2)	2	100	10 *	
		sil.plants (23)	2	8	10	
		cereals (21)	1	5	10	
		stone (1)	1	100	10 *	
		teeth (1)	1	100	10 *	
		dry clay (0)	—	—	10	
	spread	soil (5)	5	100	90	polish dist 4
		cereals (21)	13	62	70	
		non sil.plants (8)	5	63	70	
		sil.plants (23)	6	26	30	
		dry clay (6)	1	17	20	
		soft wood (41)	3	7	10	
		soaked bone (50)	2	4	10	
		soaked antler (12)	1	8	10	
	band along the edge	dry clay (6)	5	83	90	polish dist 5
		hide (24)	16	67	70	
		sil.plants (23)	11	48	50	
		soaked antler (12)	4	33	40	
		cereals (21)	7	33	40	
		fish scales (6)	2	33	40	
		soft wood (41)	10	24	30	
		hard wood (10)	2	20	20	
		leather(8)	1	13	20	
		soaked bone (50)	8	16	20	
		meat and fish (20)	1	5	10	
		non sil.plants (8)	1	13	10	

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	N	%	PF	RULE
	reticulated	soft wood (41)	9	22	30	polish dist 6
		hard wood (10)	2	20	20	
	spots & streaks	meat and fish (20)	4	20	20	polish dist 7
	thin line along the edge	sil.plants (23)	3	13	20	polish dist 8
		dry antler (2)	1	50	10*	
		fresh hide (24)	2	8	10	
		meat and fish (20)	2	10	10	
		soft wood (41)	4	10	10	
		non sil. plants	—	—	10	
		leather	—	—	10	
		hard wood	—	—	10	
		soaked bone	—	—	10	
		soaked antler	—	—	10	
		dry clay	—	—	10	
		pottery	—	—	10	
		fish scales	—	—	10	
		shell	—	—	10	
		stone	—	—	10	
	teeth	—	—	10		
	bevel	soaked bone (50)	7	14	20	polish dist 9
		hard wood	—	—	10	
		transverse	—	—	80	expert knowledge 4
		boring	—	—	xx	expert knowledge 41
		diagonal	—	—	xx	expert knowledge 43
		longitudinal	—	—	xx	expert knowledge 44
		perpendicular dynamic	—	—	xx	expert knowledge 45
		piercing	—	—	xx	expert knowledge 42
melting snow field	transverse	—	—	40	polish dist 10	
	soaked antler (12)	—	—	30		
band away from the edge	meat and fish (20)	—	—	50	polish dist 11	
	fish scales (6)	—	—	50		
	longitudinal	—	—	80	expert knowledge 3	
	boring	—	—	xx	expert knowledge 31	
	diagonal	—	—	xx	expert knowledge 33	
	transverse	—	—	xx	expert knowledge 34	
	perpendicular dynamic	—	—	xx	expert knowledge 35	
	piercing	—	—	xx	expert knowledge 32	
Band along the edge, or spread	polish '23' (side one)	—	—	20	polish dist 12 + 13	
Polish brightness & texture	very bright & smooth/matt	cereals (21)	18	86	90	polish combi 4
		sil.plants (23)	19	83	90	polish combi 2
		soaked antler (12)	8	67	70	polish combi 5
		soft wood (41)	23	56	60	polish combi 3

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	N	%	PF	RULE
		hard wood (10)	5	50	50	polish combi 1
		non-sil.plants (8)	4	50	50	polish combi 6
		soaked bone (50)	23	46	50	polish combi 8
		polish '23'	—	—	20	polish combi 49 + 51
	very bright & rough/matt	dry clay (6)	6	100	100	polish combi 22
		soil (5)	5	100	100	polish combi 21
		shooting (6)	3	50	50	polish combi 20
		soaked antler (12)	1	8	10	polish combi 10
		meat and fish (20)	2	10	10	polish combi 14
		soaked bone (50)	6	12	10	polish combi 15
		hide (24)	2	8	10	polish combi 9
		soft wood (41)	1	2	10	polish combi 47
		leather (8)	1	13	10	polish combi 7
	bright & smooth/matt	hard wood (10)	5	50	50	polish combi 17
		soft wood (41)	11	27	30	polish combi 16
		soaked antler (12)	2	17	20	polish combi 13
		meat and fish (20)	4	20	20	polish combi 26
		non sil.plants (8)	1	13	20	polish combi 24
		sil.plants (23)	3	13	20	polish combi 11
		cereals (21)	1	5	10	polish combi 25
		limestone (1)	1	100	10 *	polish combi 29
		soaked bone (50)	4	8	10	polish combi 12
		dry antler (2)	2	100	10 *	polish combi 23
	bright & rough/matt	shooting (6)	3	50	50	polish combi 28
		non sil.plants (8)	1	13	20	polish combi 18
		meat and fish (20)	3	15	20	polish combi 32
		teeth (1)	1	100	10 *	polish combi 27
		shell (4)	3	75	10 *	polish combi 30
		pottery (2)	2	100	10 *	polish combi 31
		soaked bone (50)	4	8	10	polish combi 19
		dry clay	—	—	10	polish combi 53
	bright & rough/greasy	hide (24)	13	54	60	polish combi 34
		fish scales (6)	2	33	40	polish combi 37
		leather (8)	1	13	20	polish combi 33
		meat and fish (20)	2	10	10	polish combi 35
		soaked antler (12)	1	8	10	polish combi 36
	dull & rough/matt	fish scales (6)	3	50	50	polish combi 45
		leather (8)	1	13	20	polish combi 38
		polish '23'	—	—	20	polish combi 50 + 52
		meat and fish (20)	1	5	10	polish combi 41
		soaked bone (50)	4	8	10	polish combi 42
		soft wood (41)	1	2	10	polish combi 43
		hide (24)	2	8	10	polish combi 39
		soaked antler	—	—	10	polish combi 48

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	N	%	PF	RULE	
	dull & rough/greasy	leather (8)	4	50	50	polish combi 44	
		hide (24)	6	25	30	polish combi 40	
		meat and fish (20)	4	20	20	polish combi 46	
Polish width	0-250	meat and fish (20)	13	65	70	polish wth 1	
		teeth (1)	1	100	10 *	polish wth 14	
		dry antler (2)	2	100	10 *	polish wth 20	
		soaked antler (12)	7	58	60	polish wth 29	
		soaked bone (50)	36	72	80	polish wth 31	
		hide (24)	13	54	60	polish wth 39	
		leather (8)	5	63	70	polish wth 45	
		soft wood (41)	18	44	50	polish wth 51	
		hard wood (10)	6	60	60	polish wth 52	
		shell (4)	1	25	10 *	polish wth 53	
		sil.plants (23)	5	22	30	polish wth 54	
		non sil.plants (8)	1	13	20	polish wth 55	
		cereals (21)	4	19	20	polish wth 56	
		fish scales (6)	2	33	40	polish wth 9	
		limestone	—	—	10	polish wth 58	
		pottery	—	—	10	polish wth 59	
	dry clay	—	—	10	polish wth 60		
		251-500	fish scales (6)	3	50	50	polish wth 4
			hide (24)	5	21	30	polish wth 5
			meat and fish (20)	5	25	30	polish wth 10
			leather (8)	1	13	20	polish wth 3
			hard wood (10)	2	20	20	polish wth 6
			soft wood (41)	6	15	20	polish wth 7
			sil.plants (23)	2	9	10	polish wth 8
			soaked antler (12)	1	8	10	polish wth 12
			soaked bone (50)	3	6	10	polish wth 11
			cereals (21)	1	5	10	polish wth 13
			limestone (1)	1	100	10 *	polish wth 2
			pottery	—	—	10	polish wth 61
			dry clay	—	—	10	polish wth 62
			polish '23'	—	—	10	polish wth 63 + 64
		501-750	hard wood (10)	2	20	20	polish wth 15
			soft wood (41)	2	5	10	polish wth 16
			meat and fish (20)	1	5	10	polish wth 17
			hide (24)	1	4	10	polish wth 18
			soaked bone (50)	1	2	10	polish wth 19
		751-1000	soaked bone (50)	8	16	20	polish wth 21
			dry clay (6)	1	17	20	polish wth 22
			non sil.plants (8)	1	13	20	polish wth 23
			cereals (21)	3	14	20	polish wth 25
			fish scales (6)	1	17	20	polish wth 26
			soft wood (41)	5	12	20	polish wth 28
		hide (24)	1	4	10	polish wth 30	

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	N	%	PF	RULE
		meat and fish (20)	1	5	10	polish wth 27
		sil.plants (23)	2	9	10	polish wth 24
	1001-2000	dry clay (6)	2	33	40	polish wth 32
		sil.plants (23)	4	17	20	polish wth 33
		hide (24)	4	17	20	polish wth 35
		leather (8)	1	13	20	polish wth 34
		soft wood (41)	7	17	20	polish wth 36
		meat and fish	—	—	20	polish wth 65
		polish '23'	—	—	20	polish wth 63 + 64
		cereals (21)	2	10	10	polish wth 37
		soaked antler (12)	1	8	10	polish wth 38
	2001-5000	non sil.plants (8)	3	38	40	polish wth 40
		dry clay (6)	2	33	40	polish wth 42
		cereals (21)	5	24	30	polish wth 41
		sil.plants (23)	5	22	30	polish wth 43
		meat and fish	—	—	20	polish wth 66
		polish '23'	—	—	20	polish wth 63 + 64
		soft wood (41)	1	2	10	polish wth 44
	5001-10.000	non sil.plants (8)	2	25	30	polish wth 46
		cereals (21)	4	19	20	polish wth 47
		dry clay (6)	1	17	20	polish wth 48
		polish '23'	—	—	20	polish wth 63 + 64
		sil.plants (23)	2	9	10	polish wth 49
		soft wood (41)	1	2	10	polish wth 50
	>10.000	polish '23'	—	—	20	polish wth 63 + 64
		sil.plants	—	—	10	polish wth 67
		soil (5)	5	100	10	polish wth 57
Polish topography	domed	hard wood (10)	8	80	80	polish topogr 2
		soft wood (41)	25	64	70	polish topogr 3
		sil.plants (23)	15	65	70	polish topogr 4
		ns.plants (8)	2	25	30	polish topogr 5
		cereals (21)	6	29	30	polish topogr 6
		dry antler (2)	2	100	10 *	polish topogr 7
		limestone (1)	1	100	10 *	polish topogr 1
		soaked antler (12)	2	17	10	polish topogr 8
		+ scraping	—	—	40	polish topogr 8
	flat	soil (5)	5	100	100	polish topogr 9
		cereals (21)	11	52	60	polish topogr 10
		non sil.plants (8)	4	50	60	polish topogr 11
		polish '23'	—	—	20	polish topogr 59 + 60
		soaked antler (12)	2	17	10	polish topogr 13

Note: polish resulting from shooting has not been included

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	N	%	PF	RULE
		+ longitudinal	—	—	40	polish topogr 13
		sil.plants (23)	2	9	10	polish topogr 14
		soaked bone (50)	2	4	10	polish topogr 12
		shell	—	—	10	polish topogr 53
		shooting	—	—	10	polish topogr 54
		teeth	—	—	10	polish topogr 55
	corrugated	dry clay (6)	6	100	100	polish topogr 19
		fish scales (6)	1	17	20	polish topogr 16
		sil.plants (23)	1	4	10	polish topogr 15
		soft wood (41)	1	2	10	polish topogr 17
		pottery (2)	2	100	10*	polish topogr 18
	cratered	hide (24)	15	63	70	polish topogr 20
		polish '23'	—	—	20	polish topogr 61 + 62
	pitted	soaked bone (50)	24	48	50	polish topogr 22
		soaked antler (12)	3	25	30	polish topogr 21
		+ scraping	—	—	40	polish topogr 21
		hide (24)	3	13	20	polish topogr 23
		leather (8)	1	13	20	polish topogr 24
		polish '23'	—	—	20	polish topogr 56 + 57
	comet tails	soaked bone (50)	23	46	50	polish topogr 28
		meat and fish (20)	10	50	50	polish topogr 29
		hard wood (10)	2	20	20	polish topogr 27
		sil.plants (23)	2	9	10	polish topogr 26
	not distinctive	all materials	—	—	—	polish topogr 32 - 52
		polish '23'	—	—	—	polish topogr 58
Striations	absent	soil (5)	—	—	xx	striations 1
		dry clay (6)	—	—	xx	striations 2
		soft wood (41)	—	—	20	striations 4
		non sil.plants (8)	—	—	20	striations 9
		stone (1)	—	—	xx	striations 15
	a few	hard wood (10)	—	—	20	striations 3
		soft wood (41)	—	—	20	striations 4
		pottery (2)	—	—	20	striations 7
		fish scales (6)	—	—	20	striations 8
		soaked antler (12)	—	—	20	striations 10
		polish '23' (plant-side)	—	—	20	striations 17
	moderate	pottery (2)	—	—	20	striations 7
		fish scales (6)	—	—	20	striations 8
		hide (24)	—	—	20	striations 13
		cereals (21)	—	—	20	striations 14
		sil. plants	—	—	20	striations 20
		polish '23'	—	—	20	striations 17

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	N	%	PF	RULE
	a lot	shooting (6)	—	—	20	striations 5
		soaked bone (50)	—	—	20	striations 6
		soil (5)	—	—	20	striations 11
		shell (4)	—	—	20	striations 12
		hide (24)	—	—	20	striations 13
		cereals (21)	—	—	20	striations 14
		stone (1)	—	—	20	striations 16
		polish '23'	—	—	20	striations 17
		dry clay (6)	—	—	20	striations 18
Invasiveness	polish=retouch	medium hard material	—	—	80	inv 5
	polish>retouch	soft material	—	—	80	inv 4
		medium hard material	—	—	40	inv 3
	polish<retouch	hard material	—	—	80	inv 1
		medium hard material	—	—	40	inv 2
VARIABLE	WEAR FEATURE	MOTION/MATERIAL	SCORE		RULE	
Grainsize	coarse	non.sil.plants	—		morphology 3 (remark only)	
		meat and fish	—		morphology 4 (remark only)	
Edge angle	>90	longitudinal (polish)	xx		morphology 5	
		longitudinal (retouch)	xx		morphology 51	
	61-90	transverse (polish)	80		morphology 6	
		transverse (retouch)	80		morphology 61	
	31-60	—				
	<30	transverse (polish)	—		morphology 7 (remark only)	
		transverse (retouch)	—		morphology 71 (remark only)	
		hard material	xx		morphology 8	
	< 60	perpendicular dynamic (polish)	xx		morphology 30	
		perpendicular dynamic (retouch)	xx		morphology 31	
Edge shape	concave	boring (polish)	xx		morphology 9	
		boring (retouch)	xx		morphology 91	
		diagonal (polish)	xx		morphology 10	
		diagonal (retouch)	xx		morphology 20	
		longitudinal (polish)	xx		morphology 11	
		longitudinal (retouch)	xx		morphology 21	
		perpendicular dynamic (polish)	xx		morphology 12	
		perpendicular dynamic (retouch)	xx		morphology 22	

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	SCORE	RULE
		piercing (polish)	xx	morphology 33
		piercing (retouch)	xx	morphology 32
	convex	boring (polish)	xx	morphology 13
		boring (retouch)	xx	morphology 23
		piercing (polish)	xx	morphology 35
		piercing (retouch)	xx	morphology 34
		diagonal (polish)	xx	morphology 36
		diagonal (retouch)	xx	morphology 37
	straight	boring (polish)	xx	morphology 14
		boring (retouch)	xx	morphology 24
	irregular	transverse (polish)	xx	morphology 15
		transverse (retouch)	xx	morphology 25
		boring (polish)	xx	morphology 16
		boring (retouch)	xx	morphology 26
	pointed	longitudinal (polish)	xx	morphology 17
		longitudinal (retouch)	xx	morphology 27
		perpendicular dynamic (polish)	xx	morphology 18
		perpendicular dynamic (retouch)	xx	morphology 28
		transverse (polish)	xx	morphology 19
		transverse (retouch)	xx	morphology 29

Additional expert knowledge:

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	SCORE	RULE
Retouch termination	comminution	perpendicular dynamic	80	expert knowledge 6
		boring	xx	expert knowledge 61
		piercing	xx	expert knowledge 62
		diagonal	xx	expert knowledge 63
		longitudinal	xx	expert knowledge 64
		transverse	xx	expert knowledge 65
Edge angle & retouch	C or D & present	soft material	xx	expert knowledge 8
Retouch length	very small	piercing	xx	expert knowledge 18
	small	perpendicular dynamic	xx	expert knowledge 17
Location	retouch dorsal only & polish ventral only	transverse	80	expert knowledge 1
		diagonal	40	

VARIABLE	WEAR FEATURE	MOTION/MATERIAL	SCORE	RULE
	retouch ventral only & polish dorsal only	transverse	80	expert knowledge 2
		diagonal	40	
rounding & invasiveness	absent polish < retouch	cereals	xx	expert knowledge 60
rounding & retouch & striations	heavy, absent, a lot	dry clay	40	expert knowledge 5
		hide	40	expert knowledge 51
		soaked bone	xx	expert knowledge 52
		dry antler	xx	expert knowledge 53
		fish scales	xx	expert knowledge 54
		fresh or soaked antler	xx	expert knowledge 55
		meat & fish	xx	expert knowledge 56
		sil. plants	xx	expert knowledge 57
		teeth	xx	expert knowledge 59
rounding & retouch	heavy, absent	shooting	xx	expert knowledge 58
	present, absent	perpendicular dynamic	xx	expert knowledge 15
Polish width	0 - 250	perpendicular dynamic	xx	expert knowledge 16
Polish texture (side one) & texture (side two)	rough/matt, rough/matt	polish '23'	xx	expert knowledge 12
	smooth/matt, smooth/matt	polish '23'	xx	expert knowledge 11

Appendix II

The conceptual knowledge of the hypothesis validation procedure of WAVES

RULE for antler 1

present OF use retouch; step and hinge equal OR step and feather equal OF retouch termination; medium OR large OF retouch width; close distribution OF retouch distribution; isolated spots OR thin line along edge OF polish distribution; class c OR class b OF polish width; very bright OF polish brightness; smooth and matt OF polish texture; domed OR pitted OR flat OF polish topography; retouch exceeds polish OR polish and retouch equal OF invasiveness.

RULE for antler 2

present OF use retouch; step and hinge equal OR step and feather equal OF retouch termination; medium OR large OF retouch width; close distribution OF retouch distribution; melting snow field OR band along the edge OF polish distribution; class c OR class b OF polish width; very bright OF polish brightness; smooth and matt OF polish texture; domed OR pitted OF polish topography; polish and retouch equal OR retouch exceeds polish OF invasiveness.

RULE for antler 3

present OF use retouch; mostly step OF retouch termination; medium OR large OF retouch width; close distribution OF retouch distribution; absent OF edge rounding; isolated spots OR thin line along edge OF polish distribution; class d OF polish width; bright OF polish brightness; rough and matt OF polish texture; domed OR flat OF polish topography; retouch exceeds polish OF invasiveness.

RULE for antler 4

absent OF use retouch; obtuse OF edge angle; absent OR slight OF edge rounding; isolated spots OR thin line along edge OF polish distribution; class d OF polish width; bright OF polish brightness; rough and matt OF polish texture; domed OR flat OF polish topography.

RULE for bone 1

present OF use retouch; step and hinge equal OR step and feather equal OF retouch termination; medium OR large OF retouch width; close distribution OR clumped distribution OF retouch distribution; isolated spots OR thin line along edge OR band along the edge OR spread OF polish distribution; very bright OR bright OF polish brightness; smooth and matt OR rough and matt OF polish texture; comet tails OR pitted OR flat OF polish topography; retouch exceeds polish OR polish and retouch equal OF invasiveness.

RULE for bone 2

present OF use retouch; step and hinge equal OR step and feather equal OF retouch termination; medium OR large OF retouch width; close distribution OR clumped distribution OF retouch distribution; bevel OF polish distribution; very bright OR bright OF polish brightness; smooth and matt OF polish texture; perpendicular OF polish directionality; retouch exceeds polish OR polish and retouch equal OF invasiveness.

RULE for bone 3

absent OF use retouch; obtuse OF edge angle; isolated spots OR thin line along edge OR band along the edge OR spread OF polish distribution; very bright OR bright OF polish brightness; smooth and matt OR rough and matt OF polish texture; comet tails OR pitted OR flat OF polish topography.

RULE for bone 4

absent OF use retouch; obtuse OF edge angle; bevel OF polish distribution; very bright OR bright OF polish brightness; smooth and matt OF polish texture; perpendicular OF polish directionality.

RULE for cereals 1

present OF use retouch; mostly feather OF retouch termination; small OF retouch width; uneven distribution OF retouch distribution; heavy OR slight OF edge rounding; band along the edge OR spread OF polish distribution; class e OR class f OF polish width; very bright OR bright OF polish brightness; smooth and matt OF polish texture; domed OR flat OF polish topography; polish exceeds retouch OF invasiveness.

RULE for cereals 2

absent OF use retouch; heavy OR slight OF edge rounding; band along the edge OR spread OF polish distribution; class e OR class f OF polish width; very bright OR bright OF polish brightness; smooth and matt OF polish texture; domed OR flat OF polish topography.

RULE for dry clay 1

heavy OF edge rounding; spread OR band along the edge OF polish distribution; class e OR class f OF polish width; very bright OF polish brightness; rough and matt OF polish texture; corrugated OF polish topography; many OF striations.

RULE for fish scales 1

present OF use retouch; mostly feather OF retouch termination; small OR very small OF retouch width; uneven distribution OR clumped distribution OF retouch distribution; band away from the edge OR band along the edge OF polish distribution; class d OR class b OF polish width; bright OF polish brightness; rough and greasy OF polish texture; polish and retouch equal OR retouch exceeds polish OF invasiveness.

RULE for fish scales 2

present OF use retouch; mostly feather OF retouch termination; small OR very small OF retouch width; uneven distribution OR clumped distribution OF retouch distribution; isolated spots OR thin line along edge OF polish distribution; class d OF polish width; bright OF polish brightness; smooth and matt OF polish texture; comet tails OF polish topography; polish and retouch equal OR retouch exceeds polish OF invasiveness.

RULE for fish scales 3

present OF use retouch; mostly feather OF retouch termination; small OR very small OF retouch width; uneven distribution OR clumped distribution OF retouch distribution; streaks OF polish distribution; class d OR class b OF polish width; dull OF polish brightness; rough and matt OF polish texture; corrugated OF polish topography; polish and retouch equal OR retouch exceeds polish OF invasiveness.

RULE for fish scales 4

absent OF use retouch; band away from the edge OR band along the edge OF polish distribution; class d OR class b OF polish width; bright OF polish brightness; rough and greasy OF polish texture.

RULE for fish scales 5

absent OF use retouch; isolated spots OR thin line along edge OF polish distribution; class d OF polish width; bright OF polish brightness; smooth and matt OF polish texture; comet tails OF polish topography; polish and retouch equal OF invasiveness.

RULE for fish scales 6

absent OF use retouch; streaks OF polish distribution; class d OF polish width; OR class b OF polish width; dull OF polish brightness; rough and matt OF polish texture; corrugated OF polish topography.

RULE for hard animal material 1

present OF use retouch; step and feather equal OR mostly step OF retouch termination; large OR medium OF retouch width; close distribution OF retouch distribution; isolated spots OR streaks OF polish distribution; very bright OF polish brightness; retouch exceeds polish OF invasiveness.

RULE for hard animal material 2

absent OF use retouch; obtuse OF edge angle; isolated spots OR streaks OF polish distribution; very bright OF polish brightness.

RULE for hard inorganic material 1

present OF use retouch; mostly step OF retouch termination; large OF retouch width; close distribution OF retouch distribution; isolated spots OR streaks OF polish distribution; bright OF polish brightness; many OF striations; retouch exceeds polish OF invasiveness.

RULE for hard inorganic material 2

absent OF use retouch; obtuse OF edge angle; isolated spots OR streaks OF polish distribution; bright OF polish brightness; many OF striations.

RULE for hard vegetal material 1

present OF use retouch; step and hinge equal OF retouch termination; medium OR large OF retouch width; close distribution OF retouch distribution; slight OF edge rounding; isolated spots OR thin line along edge OF polish distribution; very bright OF polish brightness; retouch exceeds polish OF invasiveness.

RULE for hard vegetal material 2

absent OF use retouch; obtuse OF edge angle; slight OF edge rounding; isolated spots OR thin line along edge OF polish distribution; very bright OF polish brightness.

RULE for hard wood 1

present OF use retouch; hinge and feather equal OF retouch termination; medium OR large OF retouch width; slight OF edge rounding; reticulated OR isolated spots OR thin line along edge OF polish distribution; very bright OR bright OF polish brightness; smooth and matt OF polish texture; domed OR comet tails OF polish topography; many OF striations; retouch exceeds polish OF invasiveness.

RULE for hard wood 2

absent OF use retouch; obtuse OF edge angle; slight OF edge rounding; reticulated OR isolated spots OR thin line along edge OF polish distribution; very bright OR bright OF polish brightness; smooth and matt OF polish texture; domed OF polish topography; many OF striations.

RULE for hide 1

slight OR absent OF edge rounding; band along the edge OR thin line along edge OF polish distribution; bright OR dull OF polish brightness; rough and greasy OR rough and matt OF polish texture; cratered OR pitted OF polish topography.

RULE for hide 2

heavy OF edge rounding; band along the edge OR spread OF polish distribution; bright OR dull OF polish brightness; rough and greasy OR rough and matt OF polish texture; cratered OR pitted OF polish topography; many OF striations.

RULE for leather 1

present OF use retouch; very small OR small OF retouch width; thin line along edge OR isolated spots OR streaks OF polish distribution; bright OR dull OF polish brightness; rough and greasy OR rough and matt OF polish texture.

RULE for leather 2

absent OF use retouch; slight OF edge rounding; thin line along edge OR isolated spots OR streaks OF polish distribution; bright OR dull OF polish brightness; rough and greasy OR rough and matt OF polish texture.

RULE for limestone 1

heavy OF edge rounding; absent OF polish.

RULE for limestone 2

present OF use retouch; hinge and feather equal OF retouch termination; medium OR large OF retouch width; absent OF edge rounding; isolated spot OR streaks OF polish distribution; class d OR class b OF polish width; bright OF polish brightness; smooth and matt OF polish texture; many OF striations.

RULE for meat and fish 1

present OF use retouch; mostly feather OF retouch termination; very small OR small OF retouch width; uneven distribution OR clumped distribution OF retouch distribution; greasy lustre OF polish distribution; dull with bright spots OF polish brightness; rough and greasy OF polish texture.

RULE for meat and fish 2

absent OF use retouch; greasy lustre OF polish distribution; dull with bright spots OF polish brightness; rough and greasy OF polish texture.

RULE for medium animal material 1

present OF use retouch; mostly feather OF retouch termination; small OF retouch width; slight OR absent OF edge rounding; band along the edge OR spread OF polish distribution; dull OF polish brightness; polish and retouch equal OR polish exceed retouch OF invasiveness.

RULE for medium inorganic material 1

heavy OF edge rounding; spread OR band along the edge OF polish distribution; very bright OF polish brightness; many OF striations.

RULE for medium vegetal material 1

present OF use retouch; hinge and feather equal OF retouch termination; medium OR large OF retouch width; uneven distribution OR clumped distribution OF retouch distribution; slight OF edge rounding; spread OR band along the edge OF polish distribution; very bright OF polish brightness; polish and retouch equal OR polish exceed retouch OF invasiveness.

RULE for non siliceous plants 1

present OF use retouch; mostly feather OF retouch termination; small OR very small OF retouch width; uneven distribution OR clumped distribution OF retouch distribution; band along the edge OR thin line along edge OR streaks OF polish distribution; class e OR class f OF polish width; very bright OR bright OR dull OF polish brightness; smooth and matt OF polish texture; domed OR flat OF polish topography; polish exceed retouch OF invasiveness.

RULE for non siliceous plants 2

absent OF use retouch; band along the edge OR spread OR thin line along edge OR streaks OF polish distribution; class e OR class f OF polish width; very bright OR bright OR dull OF polish brightness; smooth and matt OF polish texture; domed OR flat OF polish topography.

RULE for polish '10' 1

heavy OR slight OF edge rounding; band along the edge OR spread OF polish distribution; class e OR class f OF polish width; dull with bright spots OF polish brightness; rough and greasy OF polish texture; cratered and flat OF polish topography; many OF striations.

RULE for polish '23' 1

heavy OF edge rounding; different OF polish character; band along the edge OR spread OF polish distribution; class e OR class f OF polish width; perpendicular OF polish directionality; plant like OF polish character; hide like OF polish character; many OF striations.

RULE for pottery 1

absent OF use retouch; slight OF edge rounding; isolated spots OR streaks OF polish distribution; bright OF polish brightness; rough and matt OF polish texture; corrugated OF polish topography.

RULE for shell 1

present OF use retouch; medium OF retouch width; step and hinge equal OF retouch termination; isolated spots OR streaks OF polish distribution; class a OF polish width; bright OF polish brightness; rough and matt OF polish texture; retouch exceeds polish OF invasiveness.

RULE for shell 2

absent OF use retouch; obtuse OF edge angle; slight OF edge rounding; isolated spots OR streaks OF polish distribution; class a OF polish width; bright OF polish brightness; rough and matt OF polish texture.

RULE for shooting 1

large impact scars OF retouch width OR snaps OF retouch termination; streaks OF polish distribution; bright OR very bright OF polish brightness; rough and matt OF polish texture.

RULE for siliceous plants 1

present OF use retouch; mostly feather OF retouch termination; small OR very small OF retouch width; uneven distribution OR clumped distribution OF retouch distribution; band along the edge OR spread OR thin line along edge OR streaks OF polish distribution; class e OR class f OF polish width; very bright OR bright OF polish brightness; smooth and matt OF polish texture; domed OR flat OR comet tails OF polish topography; polish exceed retouch OF invasiveness.

RULE for siliceous plants 2

absent OF use retouch; band along the edge OR spread OR thin line along edge OR streaks OF polish distribution; class e OR class f OF polish width; very bright OR bright OF polish brightness; smooth and matt OF polish texture; domed OR flat OR comet tails OF polish topography.

RULE for soft animal material 1

present OF use retouch; mostly feather OF retouch termination; very small OR small OF retouch width; uneven distribution OR clumped distribution OF retouch distribution; band along the edge OR spread OF polish distribution; dull OF polish brightness; polish exceed retouch OF invasiveness.

RULE for soft animal material 2

absent OF use retouch; band along the edge OR spread OF polish distribution; dull OF polish brightness; polish exceed retouch OF invasiveness.

RULE for soft vegetal material 1

present OF use retouch; mostly feather OF retouch termination; small OR very small OF retouch width; uneven distribution OR clumped distribution OF retouch distribution; absent OF edge rounding; band along the edge OR spread OF polish distribution; very bright OF polish brightness; polish exceed retouch OF invasiveness.

RULE for soft vegetal material 2

absent OF use retouch; absent OR slight OF edge rounding; band along the edge OR spread OF polish distribution; very bright OF polish brightness.

RULE for soft wood 1

present OF use retouch; hinge and feather equal OF retouch termination; small OR medium OF retouch width; slight OR absent OF edge rounding; reticulated OR spread OR band along the edge OF polish distribution; very bright OR bright OF polish brightness; smooth and matt OF polish texture; domed OF polish topography.

RULE for soft wood 2

absent OF use retouch; slight OF edge rounding; reticulated OR spread OR band along the edge OF polish distribution; very bright OR bright OF polish brightness; smooth and matt OF polish texture; domed OF polish topography.

RULE for soil 1

heavy OF edge rounding; spread OF polish distribution; class e OR class f OF polish width; very bright OF polish brightness; rough and matt OF polish texture; flat OF polish topography; many OF striations.

Appendix III

The input and output variables of WARP

Input neurons:

Distribution A = scintillation
Distribution B = on protruding points
Distribution C = reticulated
Distribution D = isolated spots
Distribution E = thin line along the edge
Distribution F = band along the edge
Distribution G = spread
Distribution H = streaks
Distribution I = isolated spots & streaks
Texture A = smooth & matt
Texture B = rough & greasy
Texture C = rough & matt
Brightness A = very bright
Brightness B = bright
Brightness C = dull
Topography A = domed
Topography B = flat
Topography C = corrugated
Topography D = cratered
Topography E = pitted
Topography F = bevel
Topography G = comet tails
Topography H = pitted & comet tails
Width A = 0-250 micron
Width B = 251-500 micron
Width C = 501-750 micron
Width D = 751-1000 micron
Width E = 1001-2000 micron
Width F = 2001-5000 micron
Width G = 5001-10.000 micron
Width H = > 10.000 micron

Output neurons:

Material 1 = dry hide
Material 2 = fresh hide
Material 3 = hard wood
Material 4 = soft wood
Material 5 = dry bone
Material 6 = soaked bone
Material 7 = dry antler
Material 8 = soaked antler
Material 9 = cereals
Material 10 = butchering meat and fish
Material 11 = pottery
Material 12 = stone
Material 13 = soil
Material 14 = siliceous plants
Material 15 = non-siliceous plants

Appendix IV

Descriptions of the blind test

experiment 1 cutting roots (20 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION RETOUCH DISTRIBUTION RETOUCH ORIENTATION RETOUCH TERMINATION RETOUCH WIDTH EDGE ROUNDING INVASIVENESS	bifacial equal, not alternating close even mix feather & hinge equal very small slight polish exceeds retouch	bifacial, dorsal more uneven perpendicular mostly feather very small slight polish exceeds retouch	bifacial, dorsal more close even mix mostly feather very small slight polish exceeds retouch	bifacial, dorsal more uneven even mix mostly step very small slight polish exceeds retouch	bifacial, dorsal more uneven even mix mostly feather small slight polish exceeds retouch
POLISH LOCATION POLISH DIRECTIONALITY POLISH DISTRIBUTION POLISH TEXTURE POLISH BRIGHTNESS POLISH TOPOGRAPHY POLISH WIDTH STRIATIONS	bifacial equal parallel spread smooth & matt very bright flat class g absent	bifacial, dorsal more parallel band away from the edge smooth & matt very bright domed/pitted class g absent	bifacial, ventral more absent melting snow field rough & greasy bright flat/cratered class d absent	bifacial, ventral more perpendicular spread smooth & matt bright not distinctive class f absent	bifacial, dorsal more absent reticulated smooth & matt bright domed class g absent
GRAINSIZE EDGE ANGLE EDGE SHAPE	medium class b straight	medium class b convex	medium class b convex	fine class b straight	medium class a straight

experiment 2 butchering (15 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION RETOUCH DISTRIBUTION RETOUCH ORIENTATION RETOUCH TERMINATION RETOUCH WIDTH EDGE ROUNDING INVASIVENESS	bifacial, dorsal more close even mix mostly step very small slight retouch exceeds polish	bifacial, dorsal more uneven perpendicular mostly hinge very small absent polish equals retouch	bifacial, dorsal more overlapping perpendicular mostly feather very small absent retouch exceeds polish	bifacial equal, not alternating uneven even mix mostly step very small absent polish exceeds retouch	bifacial, alternating multi-generation even mix mostly feather medium slight retouch exceeds polish
POLISH LOCATION POLISH DIRECTIONALITY POLISH DISTRIBUTION POLISH TEXTURE POLISH BRIGHTNESS POLISH TOPOGRAPHY POLISH WIDTH STRIATIONS	bifacial equal random greasy lustre rough & greasy dull not distinctive class b absent	bifacial equal parallel isolated spots smooth & matt bright domed class a a few	bifacial equal absent isolated spots rough & greasy dull not distinctive class a absent	bifacial, dorsal more parallel greasy lustre rough & matt dull corrugated/not distinctive class b absent	bifacial equal parallel isolated spots rough & matt dull not distinctive class c a few
GRAINSIZE EDGE ANGLE EDGE SHAPE	medium class b straight	medium class b straight	medium class b concave	medium class b straight	fine class a straight

experiment 3 scraping antler (15 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION	—	—	—	dorsal only	—
RETOUCH DISTRIBUTION	—	—	—	multi generation	—
RETOUCH ORIENTATION	—	—	—	even mix	—
RETOUCH TERMINATION	—	—	—	mostly feather	—
RETOUCH WIDTH	—	—	—	class c	—
EDGE ROUNDING	slight	slight	slight	absent	slight
INVASIVENESS	—	—	—	polish exceeds retouch	—
POLISH LOCATION	bifacial, ventral more	bifacial, dorsal more	ventral only	bifacial, ventral more	ventral only
POLISH DIRECTIONALITY	perpendicular	perpendicular	perpendicular	absent	perpendicular
POLISH DISTRIBUTION	isolated spots	thin line along the edge	thin line along the edge	greasy lustre	band along the edge
POLISH TEXTURE	smooth & matt	smooth & matt	rough & greasy	rough & greasy	smooth & matt
POLISH BRIGHTNESS	very bright	bright	bright	bright	bright
POLISH TOPOGRAPHY	not distinctive	domed	domed/flat	cratered/pitted	domed
POLISH WIDTH	class a	class b	class a	class c	class b
STRIATIONS	absent	moderate	absent	absent	a few
GRAINSIZE	medium	medium	medium	fine	medium
EDGE ANGLE	class c	class c	class c	class c	class c
EDGE SHAPE	convex	convex	convex	convex	convex

experiment 4 carving bone (26 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION RETOUCH DISTRIBUTION RETOUCH ORIENTATION RETOUCH TERMINATION RETOUCH WIDTH EDGE ROUNDING INVASIVENESS	bifacial, alternating uneven diagonal mostly hinge small slight polish exceeds retouch	bifacial, not alternating close diagonal mostly step very small absent polish exceeds retouch	bifacial, not alternating close even mix snaps very small absent retouch exceeds polish	bifacial, dorsal more uneven perpendicular mostly feather very small absent retouch exceeds polish	bifacial, dorsal more uneven perpendicular mostly feather very small slight polish exceeds retouch
POLISH LOCATION POLISH DIRECTIONALITY POLISH DISTRIBUTION POLISH TEXTURE POLISH BRIGHTNESS POLISH TOPOGRAPHY POLISH WIDTH STRIATIONS	bifacial equal parallel band along the edge smooth & matt very bright pitted/comet tails class d absent	bifacial equal parallel thin line along the edge smooth & matt bright domed class a a few	bifacial equal absent isolated spots rough & greasy dull not distinctive class a absent	bifacial equal parallel greasy lustre smooth & matt bright pitted/domed class b absent	bifacial, ventral more parallel greasy lustre rough & greasy dull cratered class d a few
GRAINSIZE EDGE ANGLE EDGE SHAPE	medium class b straight	medium class b straight	medium class a straight	fine class a straight	fine class a straight

experiment 5 reaping cereals (30 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION	—	bifacial equal	ventral only	bifacial, dorsal more	bifacial, dorsal more
RETOUCH DISTRIBUTION	—	close	uneven	uneven	close
RETOUCH ORIENTATION	—	diagonal	perpendicular	even mix	even mix
RETOUCH TERMINATION	—	mostly feather	mostly feather	mostly feather	mostly feather
RETOUCH WIDTH	—	very small	very small	very small	very small
EDGE ROUNDING	slight	slight	heavy	slight	slight
INVASIVENESS	—	polish exceeds retouch	polish exceeds retouch	polish exceeds retouch	polish exceeds retouch
POLISH LOCATION	bifacial equal	bifacial, ventral more	bifacial, ventral more	bifacial, ventral more	bifacial, ventral more
POLISH DIRECTIONALITY	parallel	parallel	parallel	diagonal	parallel
POLISH DISTRIBUTION	spread	spread	spread	band along the edge	reticulated
POLISH TEXTURE	smooth & matt	smooth & matt	smooth & matt	smooth & matt	smooth & matt
POLISH BRIGHTNESS	very bright	very bright	bright	bright	very bright
POLISH TOPOGRAPHY	flat	domed/flat	flat	domed/not distinctive	domed / pitted
POLISH WIDTH	class f	class a	class e	class d	class e
STRIATIONS	a lot	absent	a few	a few	a few
GRAINSIZE	medium	fine	fine	fine	fine
EDGE ANGLE	class b	class a	class b	class a	class b
EDGE SHAPE	straight	straight	straight	straight	straight

experiment 6 cutting grass (30 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION RETOUCH DISTRIBUTION RETOUCH ORIENTATION RETOUCH TERMINATION RETOUCH WIDTH EDGE ROUNDING INVASIVENESS	bifacial, alternating uneven diagonal mostly feather very small slight polish exceeds retouch	bifacial, ventral more uneven perpendicular mostly feather very small heavy polish exceeds retouch	bifacial, ventral more uneven perpendicular mostly feather very small heavy polish exceeds retouch	bifacial, alternating uneven even mix mostly feather very small heavy polish exceeds retouch	bifacial, ventral more uneven even mix mostly feather very small slight polish exceeds retouch
POLISH LOCATION POLISH DIRECTIONALITY POLISH DISTRIBUTION POLISH TEXTURE POLISH BRIGHTNESS POLISH TOPOGRAPHY POLISH WIDTH STRIATIONS	bifacial equal parallel band along the edge smooth & matt very bright domed class b absent	bifacial, dorsal more parallel band along the edge smooth & matt very bright domed class d absent	bifacial equal absent band along the edge rough & matt bright flat/domed class a absent	bifacial equal parallel band along the edge smooth & matt bright flat/pitted class b absent	bifacial equal parallel reticulated smooth & matt very bright domed/pitted class d a few
GRAINSIZE EDGE ANGLE EDGE SHAPE	medium class b convex	fine class b straight	fine class b convex	fine class b straight	fine class b straight

experiment 7 scraping hide (60 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION	—	—	—	bifacial, dorsal more	ventral only
RETOUCH DISTRIBUTION	—	—	—	uneven	uneven
RETOUCH ORIENTATION	—	—	—	perpendicular	perpendicular
RETOUCH TERMINATION	—	—	—	mostly feather	mostly step
RETOUCH WIDTH	—	—	—	very small	small
EDGE ROUNDING	slight	slight	slight	slight	slight
INVASIVENESS	—	—	—	polish exceeds retouch	polish exceeds retouch
POLISH LOCATION	bifacial equal	bifacial equal	ventral only	bifacial, ventral more	ventral only
POLISH DIRECTIONALITY	absent	perpendicular	absent	perpendicular	absent
POLISH DISTRIBUTION	thin line along the edge	reticulated	band along the edge	band away from the edge	band away from the edge
POLISH TEXTURE	rough & greasy	rough & greasy	rough & greasy	rough & greasy	rough & greasy
POLISH BRIGHTNESS	bright	bright	bright	bright	bright
POLISH TOPOGRAPHY	cratered	cratered	cratered	not distinctive	cratered/hot distinctive
POLISH WIDTH	class a	class d	class a	class b	class c
STRIATIONS	absent	a few	absent	absent	absent
GRAINSIZE	medium	fine	fine	fine	fine
EDGE ANGLE	class c	class b	class c	class b	class c
EDGE SHAPE	convex	convex	convex	convex	convex

experiment 8 scraping hide (60 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION	—	—	—	bifacial, dorsal more	—
RETOUCH DISTRIBUTION	—	—	—	close	—
RETOUCH ORIENTATION	—	—	—	perpendicular	—
RETOUCH TERMINATION	—	—	—	mostly feather	—
RETOUCH WIDTH	—	—	—	very small	—
EDGE ROUNDING	heavy	heavy	heavy	slight	heavy
INVASIVENESS	—	—	—	retouch exceeds polish	—
POLISH LOCATION	ventral only	bifacial equal	ventral only	bifacial, ventral more	bifacial equal
POLISH DIRECTIONALITY	perpendicular	perpendicular	absent	perpendicular	perpendicular
POLISH DISTRIBUTION	band along the edge	band along the edge	band along the edge	thin line along the edge	bevel ?
POLISH TEXTURE	rough & greasy	rough & greasy	rough & greasy	smooth & matt	rough & greasy
POLISH BRIGHTNESS	dull	bright	bright	bright	bright
POLISH TOPOGRAPHY	cratered	cratered	cratered/pitted	pitted/not distinctive	cratered
POLISH WIDTH	class a	class c	class a	class a	class b
STRIATIONS	absent	moderate	absent	a few	a few
GRAINSIZE	medium	fine	fine	fine	fine
EDGE ANGLE	class c	class c	class c	class b	class c
EDGE SHAPE	convex	convex	convex	convex	convex

experiment 9 butchering fish (35 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION RETOUCH DISTRIBUTION RETOUCH ORIENTATION RETOUCH TERMINATION RETOUCH WIDTH EDGE ROUNDING INVASIVENESS	bifacial, dorsal more uneven diagonal mostly hinge very small slight retouch exceeds polish	bifacial, dorsal more uneven even mix mostly feather very small absent polish exceeds retouch	bifacial, dorsal more close perpendicular snaps very small slight retouch exceeds polish	bifacial equal, not alternating close even mix mostly feather very small slight retouch exceeds polish	bifacial, dorsal more close even mix mostly feather very small slight retouch exceeds polish
POLISH LOCATION POLISH DIRECTIONALITY POLISH DISTRIBUTION POLISH TEXTURE POLISH BRIGHTNESS POLISH TOPOGRAPHY POLISH WIDTH STRIATIONS	bifacial, dorsal more parallel isolated spots rough & matt bright comet tails class a absent	bifacial, dorsal more parallel greasy lustre rough & greasy bright corrugated class a a few	bifacial, dorsal more parallel thin line along the edge rough & greasy bright flat/domed class a absent	bifacial, dorsal more parallel thin line along the edge smooth & matt bright domed/pitted class a absent	bifacial, dorsal more absent thin line along the edge rough & greasy dull not distinctive class a absent
GRAINSIZE EDGE ANGLE EDGE SHAPE	medium class a straight	fine class a straight	fine class a convex	fine class a straight	fine class a straight

experiment 10 splitting wood (20 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION RETOUCH DISTRIBUTION RETOUCH ORIENTATION RETOUCH TERMINATION RETOUCH WIDTH EDGE ROUNDING INVASIVENESS	dorsal only single break perpendicular mostly step very small slight retouch equals polish	— — — — absent —	ventral only uneven perpendicular mostly feather very small slight retouch exceeds polish	bifacial, ventral more uneven perpendicular mostly feather very small slight retouch equals polish	one facet of a point clumped perpendicular mostly step very small slight retouch exceeds polish
POLISH LOCATION POLISH DIRECTIONALITY POLISH DISTRIBUTION POLISH TEXTURE POLISH BRIGHTNESS POLISH TOPOGRAPHY POLISH WIDTH STRIATIONS	multiple facets of a point parallel thin line along the edge smooth & matt very bright domed/pitted class a absent	multiple facets of a point diagonal reticulated rough & matt bright domed class b a few	ventral only absent isolated spots smooth & matt very bright flat/domed class a absent	multiple facets of a point random thin line along the edge smooth & matt bright pitted class a absent	one facet of a point absent band along the edge smooth & matt very bright domed class a absent
GRAIN SIZE EDGE ANGLE EDGE SHAPE	medium class b pointed	coarse class c pointed	coarse class c pointed	coarse class c pointed	medium class c pointed

experiment 11 scraping hide (115 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION RETOUCH DISTRIBUTION RETOUCH ORIENTATION RETOUCH TERMINATION RETOUCH WIDTH EDGE ROUNDING INVASIVENESS	bifacial equal, alternating overlapping perpendicular mostly feather small heavy polish exceeds retouch	bifacial, ventral more overlapping even mix feather & hinge equal small heavy polish exceeds retouch	— — — — — heavy —	ventral only uneven perpendicular mostly feather very small slight polish exceeds retouch	ventral only close perpendicular mostly feather small heavy retouch exceeds polish
POLISH LOCATION POLISH DIRECTIONALITY POLISH DISTRIBUTION POLISH TEXTURE POLISH BRIGHTNESS POLISH TOPOGRAPHY POLISH WIDTH STRIATIONS	bifacial equal perpendicular band along the edge rough & greasy bright cratered class a moderate	bifacial, dorsal more perpendicular band along the edge rough & greasy bright cratered class e moderate	bifacial, ventral more absent band along the edge rough & greasy bright cratered class b absent	ventral only perpendicular band along the edge smooth & matt bright domed/not distinctive class c absent	bifacial, ventral more perpendicular band along the edge rough & greasy bright cratered class b a few
GRAINSIZE EDGE ANGLE EDGE SHAPE	medium class c convex	class c convex	medium class c convex	medium class b convex	medium class c convex

experiment 12 carving dry clay (20 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION	—	—	one facet of a point	multiple facets of a point	—
RETOUCH DISTRIBUTION	—	—	overlapping	uneven	—
RETOUCH ORIENTATION	—	—	perpendicular	perpendicular	—
RETOUCH TERMINATION	—	—	mostly feather	mostly feather	—
RETOUCH WIDTH	—	—	small	very small	—
EDGE ROUNDING	heavy	heavy	slight	absent	heavy
INVASIVENESS	—	—	retouch exceeds polish	polish exceeds retouch	—
POLISH LOCATION	one facet of a point	multiple facets of a point	multiple facets of a point	multiple facets of a point	one facet of a point
POLISH DIRECTIONALITY	parallel	diagonal	diagonal	absent	parallel
POLISH DISTRIBUTION	band along the edge	spots & streaks	spots & streaks	thin line along the edge	band along the edge
POLISH TEXTURE	rough & matt	smooth & matt	rough & greasy	smooth & matt	rough & greasy
POLISH BRIGHTNESS	very bright	bright	bright	bright	bright
POLISH TOPOGRAPHY	not distinctive/flat	cratered	flat/domed	comet tails/not distinctive	cratered/not distinctive
POLISH WIDTH	class b	class e	class a	class a	class e
STRIATIONS	a lot	moderate	a few	absent	a lot
GRAINSIZE	medium	medium	medium	medium	fine
EDGE ANGLE	class c	class c	class c	class c	class c
EDGE SHAPE	pointed	pointed	pointed	pointed	pointed

experiment 13 scraping wood (20 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION RETOUCH DISTRIBUTION RETOUCH ORIENTATION RETOUCH TERMINATION RETOUCH WIDTH EDGE ROUNDING INVASIVENESS	bifacial, dorsal more uneven diagonal feather & step equal small absent retouch equals polish	bifacial, ventral more close perpendicular mostly feather small absent polish exceeds retouch	bifacial equal, not alternating overlapping perpendicular mostly feather very small slight polish exceeds retouch	bifacial equal, not alternating uneven even mix mostly feather very small slight polish exceeds retouch	bifacial, ventral more clumped perpendicular snaps (& feather) very small slight polish exceeds retouch
POLISH LOCATION POLISH DIRECTIONALITY POLISH DISTRIBUTION POLISH TEXTURE POLISH BRIGHTNESS POLISH TOPOGRAPHY POLISH WIDTH STRIATIONS	bifacial, dorsal more absent thin line along the edge smooth & matt bright domed class a absent	bifacial, dorsal more diagonal band along the edge rough & greasy bright corrugated class a absent	bifacial equal parallel band along the edge rough & matt dull domed/cratered class b absent	bifacial equal parallel band along the edge smooth & matt bright not distinctive class b absent	bifacial equal absent greasy lustre rough & greasy dull not distinctive class a absent
GRAINSIZE EDGE ANGLE EDGE SHAPE	medium class b straight	medium class b straight	medium class a straight	medium class b straight	fine class b straight

experiment 14 carving bone (45 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION	—	multiple facets of a point	—	ventral only	bifacial equal, not alternating
RETOUCH DISTRIBUTION	—	multi generation	—	uneven	multi-generation
RETOUCH ORIENTATION	—	even mix	—	perpendicular	perpendicular
RETOUCH TERMINATION	—	comminution	—	feather & step equal	mostly step
RETOUCH WIDTH	—	large	—	very small	small
EDGE ROUNDING	slight	slight	heavy	slight	slight
INVASIVENESS	—	retouch exceeds polish	—	retouch exceeds polish	retouch exceeds polish
POLISH LOCATION	one facet of a point	multiple facets of a point	bifacial equal	ventral only	one facet of a point
POLISH DIRECTIONALITY	perpendicular	perpendicular	perpendicular	perpendicular	perpendicular
POLISH DISTRIBUTION	thin line along the edge	bevel	bevel	thin line along the edge	band along the edge
POLISH TEXTURE	smooth & matt	smooth & matt	smooth & matt	smooth & matt	rough & matt
POLISH BRIGHTNESS	very bright	bright	bright	very bright	bright
POLISH TOPOGRAPHY	flat/comet tails	domed	flat	comet tails	domed/comet tails
POLISH WIDTH	class a	class a	class a	class a	class a
STRIATIONS	absent	moderate	a few	moderate	a few
GRAINSIZE	medium	medium	medium	medium	fine
EDGE ANGLE	class b	class d	class c	class c	class c
EDGE SHAPE	pointed	pointed	pointed	pointed	pointed

experiment 15 sawing shell (10 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH LOCATION RETOUCH DISTRIBUTION RETOUCH ORIENTATION RETOUCH TERMINATION RETOUCH WIDTH EDGE ROUNDING INVASIVENESS	— — — — — absent —	— — — — — slight —	ventral only overlapping even mix mostly feather small absent retouch exceeds polish	ventral only close even mix mostly feather very small absent polish exceeds retouch	bifacial, ventral more uneven diagonal comminution very small slight retouch exceeds polish
POLISH LOCATION POLISH DIRECTIONALITY POLISH DISTRIBUTION POLISH TEXTURE POLISH BRIGHTNESS POLISH TOPOGRAPHY POLISH WIDTH STRIATIONS	bifacial equal absent thin line along the edge smooth & matt bright flat/corrugated class a absent	bifacial, dorsal more parallel isolated spots smooth & matt bright domed class a a few	bifacial equal parallel isolated spots rough & matt dull domed/pitted class a a few	bifacial, ventral more absent isolated spots smooth & matt very bright flat/not distinctive class d absent	bifacial, ventral more absent band along the edge rough & greasy bright not distinctive class a absent
GRAINSIZE EDGE ANGLE EDGE SHAPE	medium class b straight	coarse class b straight	medium class b convex	medium class b straight	medium class b straight

Appendix V

Interpretations of the blind test

experiment 1 cutting roots (20 min.)		control set	analyst I	analyst II	analyst III	analyst IV
MATERIAL	RETOUCH	medium soft	soft medium	medium soft	medium	soft medium
	POLISH	200 180	200 160	200 200	100	180 160
		cereals non silic. plants silicious plants	—	—	non silic. plants cereals silicious plants soft wood	soft wood 160
MOTION	RETOUCH	longitudinal diagonal	transverse	longitudinal diagonal	longitudinal carving	longitudinal carving
	POLISH	140 80	160	80 60	100 60	100 60
		longitudinal diagonal	longitudinal	transverse longitudinal	longitudinal carving	transverse longitudinal carving piercing
		100 60	180	100 20	100 60	60 40 20 20
INTERPRETATION ANALYST	—	—	sawing hard wood	sawing antler	—	silicious plants longitudinal

experiment 2 butchering deer (15 min.)		control set	analyst I	analyst II	analyst III	analyst IV
MATERIAL	RETOUCH	medium	140	140	100	180
			110	120	120	60
	POLISH	leather	270	150	80	100
		meat or fish	190	meat or fish	80	meat or fish
		hide	170	hide	70	soft wood
			130		50	hide
			70		30	
			40		30	
			40			
MOTION	RETOUCH	longitudinal	160	140	160	—
		carving	60		80	
	POLISH	longitudinal	100	20	100	100
		carving	60		40	60
		piercing	60			
INTERPRETATION ANALYST	—	—	—	bone transverse	—	wood or butchering with bone contact longitudinal

experiment 3 scraping antler (15 min.)		control set		analyst I		analyst II		analyst III		analyst IV	
MATERIAL	RETOUCH	medium	60	medium	60	medium	60	medium	160	medium	60
		soft	40	soft	40	soft	40			soft	40
	POLISH	bone	210	hard wood	200	soaked antler	120	hide	170	hard wood	190
		soaked antler	180	soft wood	160					soft wood	170
MOTION	RETOUCH	no indications		silicious plants	160					silicious plants	150
				soaked antler	110					soaked antler	110
	POLISH	non silic. plants	80	dry antler	40					cereals	90
		stone	40		40						
	RETOUCH	no indications		no indications		no indications		longitudinal carving	40	no indications	
									20		
	POLISH	transverse carving	200	transverse	220	transverse	240	transverse	140	transverse	240
			40					longitudinal	20		
INTERPRETATION ANALYST		—		bone or antler transverse		antler scraping		—		soft wood or hide? transverse	

experiment 4 carving bone (26 min.)		control set	analyst I	analyst II	analyst III	analyst IV
MATERIAL	RETOUCH	medium soft	soft medium	medium soft	medium soft	soft medium
	POLISH	bone silicious plants	hard wood soft wood silicious plants soaked antler non silic. plants dry antler stone	leather meat or fish hide	hard wood soft wood soaked antler bone	hide
			180 160 220 180 140 130 80 40 40	120 80 150 130 120	160 140 160 160 90 80	200 160 120
MOTION	RETOUCH	longitudinal	longitudinal carving	longitudinal carving	transverse	transverse
	POLISH	longitudinal	longitudinal carving	longitudinal carving transverse	longitudinal carving	longitudinal carving
			220 100	140 80 40 40 20	160	160 80 40
INTERPRETATION ANALYST		—	wood longitudinal	butchering longitudinal	—	hide or butchering cutting/slicing

experiment 5 reaping cereals (30 min.)		control set	analyst I	analyst II	analyst III	analyst IV
MATERIAL	RETOUCH	medium soft	soft medium 200 200	medium 160	soft medium 200 160	soft medium 200 200
	POLISH	cereals non silic. plants silicious plants	260 240 210 180 90	cereals silicious plants soaked antler 80 80	soft wood silicious plants cereals non silic. plants bone meat or fish 170 150 90 90 50 40	soft wood 200
MOTION	RETOUCH	no indications	longitudinal carving 200 140	transverse 180	longitudinal carving 100 60	longitudinal carving 80 60
	POLISH	longitudinal carving	80 40	longitudinal carving transverse 40 20	carving transverse longitudinal piercing 100 80 60 40	longitudinal carving 80 40
INTERPRETATION ANALYST	—	—	silicious plants longitudinal	cereals longitudinal	—	silicious plants or soft wood longitudinal cutting/slicing

experiment 6 cutting grass (30 min.)		control set	analyst I	analyst II	analyst III	analyst IV
MATERIAL	RETOUCH	soft 200	medium 120	medium 160	medium 160	soft 200
		medium 160				medium 160
	POLISH	silicious plants 220	silicious plants 220	non silic. plants 160	cereals 120	soft wood 200
		soft wood 200	soft wood 200	bone 120	soaked antler 100	soft wood 200
		hard wood 170	cereals 170		bone 100	
		cereals 170	non silic. plants 140		silicious plants 90	
MOTION	RETOUCH	longitudinal 200	transverse 160	transverse 160	longitudinal 160	longitudinal 100
						carving 60
	POLISH	longitudinal 100	longitudinal 100	longitudinal 40	longitudinal 140	longitudinal 100
			carving 40	transverse 20	carving 60	carving 60
INTERPRETATION ANALYST		—	soft wood longitudinal	silicious plants longitudinal	—	silicious plants or soft wood whittling/cutting

experiment 7 scraping hide (60 min.)		control set	analyst I	analyst II	analyst III	analyst IV
MATERIAL	RETOUCH	60 medium 40 soft	60 medium 40 soft	60 medium 40 soft	200 soft 160 medium	100 medium
	POLISH	200 hide	—	hide	fish scales meat or fish 90	80 meat or fish
MOTION	RETOUCH	no indications	no indications	no indications	transverse	transverse
	POLISH	100 transverse 40 longitudinal	transverse	transverse longitudinal	—	longitudinal
INTERPRETATION ANALYST		—	hide or leather scraping	hide scraping	—	skin? wood? transverse

experiment 8 scraping hide (60 min.)		control set	analyst I	analyst II	analyst III	analyst IV
MATERIAL	RETOUCH POLISH	medium hide	medium hide	medium hide soaked antler leather	medium soft bone soaked antler hard wood soft wood meat or fish silicious plants non silic. plants	medium —
		60 230	80 230	80 280 140 130	200 120 140 140 110 100 70 50	80
MOTION	RETOUCH POLISH	no indications transverse	no indications transverse	no indications transverse longitudinal	transverse transverse	no indications transverse
		200	160	180 20	180 160	260 240
INTERPRETATION ANALYST	—	—	hide scraping	hide scraping	—	skin scraping

experiment 9 butchering fish (35 min.)		control set	analyst I	analyst II	analyst III	analyst IV
MATERIAL	RETOUCH	medium soft	soft medium	medium soft	medium soft	medium soft
	POLISH	bone meat or fish	—	soaked antler	hard wood soft wood bone soaked antler silicious plants non silic. plants dry antler	leather hide meat or fish
		160 100	220 120	120 80	200 120	200 120
MOTION	RETOUCH	longitudinal carving	longitudinal carving	transverse	longitudinal carving	longitudinal carving
	POLISH	longitudinal carving	longitudinal carving	longitudinal	longitudinal carving	transverse longitudinal carving piercing
		160 120	100 60	180	140 80	80 60
INTERPRETATION ANALYST		—	fish butchering longitudinal	hide longitudinal	—	skin butchering longitudinal
		100 40	100 40	140	100 40	60 40 20 20

experiment 10 splitting wood (20 min.)	control set	analyst I	analyst II	analyst III	analyst IV
RETOUCH	medium 140	no indications	medium 160	medium 200	medium 100
POLISH	soft wood 210 silicious plants 210 hard wood 200 soaked antler 160 non silic. plants 130	—	hard wood 250 soft wood 220 bone 220 soaked antler 220 cereals 210 silicious plants 210	bone 140 soaked antler 120	silicious plants 240 soft wood 230 hard wood 210 soaked antler 190 cereals 180 non silic. plants 140
MOTION	no indications	no indications	—	—	—
POLISH	carving 60 boring 40	carving 120 piercing 60	piercing 20	carving 40 piercing 20	transverse 60 longitudinal 40 carving 20 piercing 20
INTERPRETATION ANALYST	—	hard vegetal material carving	hard wood boring	—	wood graving

experiment II scraping hide (115 min.)		control set		analyst I		analyst II		analyst III		analyst IV	
MATERIAL	RETOUCH	medium	160	medium	140	medium	80	medium	80	medium	100
	POLISH	hide	280	hide	240	hide	230	hard wood soft wood bone meat or fish	170 160 40 40	hide	230
MOTION	RETOUCH	—	—	longitudinal carving	80 80	no indications	—	transverse	180	transverse	200
	POLISH	transverse	160	transverse perpendicular dynamic	200 120	transverse longitudinal	140 20	transverse	120	transverse perpendicular dynamic	200 100
INTERPRETATION ANALYST	—	—	—	hide or leather scraping	—	hide scraping	—	—	—	skin scraping	—

experiment 12 carving clay (20 min.)		control set	analyst I	analyst II	analyst III	analyst IV
MATERIAL	RETOUCH POLISH	medium dry clay hide leather soft wood	medium —	medium —	medium meat or fish bone hard wood soft wood soaked antler silicious plants non silic. plants	medium hide leather
MOTION	RETOUCH POLISH	no indications carving	no indications carving piercing	— carving piercing	160 120 60	120 150 140 140 110 90 80 70
INTERPRETATION ANALYST	—	clay or pottery carving	clay or pottery carving	bone carving	—	no indications carving hide graving

experiment 13 scraping wood (20 min.)		control set		analyst I		analyst II		analyst III		analyst IV	
MATERIAL	RETOUCH	medium	200	soft	200	soft	200	medium	100	soft	160
		soft	80	medium	160	medium	160			medium	80
	POLISH	hard wood	200	fish scales	140	hide	180	hard wood	100	leather	160
		soft wood	180			soft wood	150	soft wood	90	meat or fish	120
		silicious plants	140			soaked antler	80	silicious plants	80	hide	100
		soaked antler	110					soaked antler	70		
		non silic. plants	100					cereals	60		
	dry antler	40					bone	40			
MOTION	RETOUCH	longitudinal	140	transverse	180	transverse	120	longitudinal	160	transverse	120
								carving	80		
	POLISH	transverse	100	carving	100	longitudinal	100	longitudinal	100	longitudinal	40
		longitudinal	40	transverse	80	carving	60	carving	60	carving	40
		carving	20	longitudinal	80	piercing	40			piercing	40
		piercing	20							transverse	20
INTERPRETATION ANALYST		—	animal material transverse (fish scaling?)		unknown material longitudinal			—		skin butchering scraping/slicing	

experiment 14 carving bone (45 min.)		control set	analyst I	analyst II	analyst III	analyst IV
MATERIAL	RETOUCH	medium soft	hard	medium	medium	medium
	POLISH	bone soaked antler silicious plants non silic. plants hard wood	—	bone	bone silicious plants hard wood	bone meat or fish non silic. plants
MOTION	RETOUCH	no indications	—	no indications	—	boring
	POLISH	carving	transverse	transverse	piercing	carving piercing
INTERPRETATION ANALYST	—	—	bone carving	bone carving	—	bone scraping/graving

experiment 15 sawing shell (10 min.)		control set	analyst I	analyst II	analyst III	analyst IV
MATERIAL	RETOUCH	no indications	medium soft	medium soft	soft medium	—
	POLISH	soft wood soaked antler silicious plants non silic. plants bone	hard wood soft wood soaked antler silicious plants cereals dry antler stone	bone soaked antler soft wood leather hide	cereals bone soft wood silicious plants	hide fish scales soaked antler leather meat or fish
		120 110 90 120 100	60 40 270 190 170 130 70 40 40	120 120 220 190 170 140 120	220 160 170 160 120 120	190 120 110 110 90
MOTION	RETOUCH	no indications	no indications	longitudinal	longitudinal	—
	POLISH	longitudinal carving piercing transverse	longitudinal carving	longitudinal	transverse longitudinal carving piercing	transverse longitudinal carving piercing
		80 40 40 20	80 40	100	60 20 20 20	60 20 20 20
INTERPRETATION ANALYST		—	bone or antler sawing	bone sawing	—	bone/butchering? scraping/slicing