



McDONALD INSTITUTE CONVERSATIONS

Inspired geoarchaeologies: past landscapes and social change

Essays in honour of Professor Charles A. I. French

Edited by Federica Sulas, Helen Lewis & Manuel Arroyo-Kalin



Inspired geoarchaeologies



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Edited by Federica Sulas, Helen Lewis
& Manuel Arroyo-Kalin

with contributions from

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Published by:
McDonald Institute for Archaeological Research
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Downing Street
Cambridge, UK
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(0)(1223) 339327
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McDonald Institute for Archaeological Research, 2022

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ISBN: 978-1-913344-09-2

On the cover: *Hand drawn illustration by Charly French, aged around 10 years old.*
Courtesy of Kasia Gdaniec.

Cover design by Dora Kemp and Ben Plumridge.
Typesetting and layout by Ben Plumridge.

Edited for the Institute by Matthew Davies (*Series Editor*).

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Appendix to Chapter 15

Helen Lewis & Ann-Maria Hart

Table A15.1. Soil micromorphology descriptions of buried topsoil profiles compared to the modern soil profile (percentages are estimates of visual area).

	Structure	Porosity	Mineral components	C:f ratio	Organic components	Groundmass	Pedofeatures	Interpretation
Modern A (X587)	Single grain, intergrain microaggregate	10–15% packing pores, channels, vughs	Quartz, feldspar, amphibole, granite, chert, basalts, chert, gravels (<1.5cm)	60:40 Sandy loam	5–10% occasional charcoal; fine roots & other residues	Gefuric: very dark brown (PPL); undifferentiated (XPL)	Strong organic staining on fine fabric; occasional Fe & Mn nodules	Ap (Ah), very dark brown (10YR 2/2) fine-medium sandy loam; gravel size-sorted by soil fauna
bL/A (X561, X567)	Single grain	10–15% packing pores		70:30 Sand	10% roots	Chitonic; brown; undifferentiated; (7.5YR 4/2 or 4/4)	Fe-replaced roots	Turf rooting zone – L/Ah (mull)
bA (X561)	Single grain	5–10% packing pores		65:35 Loamy sand	15% as above	Gefuric & chitonic; very dark brown; undifferentiated; (Munsell as above & layers of 7.5YR 2.5/1)	‘Dusty’ clay coatings; iron replaced roots; organic staining	Turf rooting zone – Ah (mull)
Infilling layer	Apedal	<5% packing pores; 0.02 cm thick linear void		20:80 Sandy clay loam	<5%, amorphous fragments, ‘punctuations’	Close porphyric; very dark reddish brown; undifferentiated (5YR 3/2)	Organic staining	Infilled feature cut or surface; boundary with bAp
bAp (X567-8; X569B)	Single grain, intergrain microaggregate	10–15% packing pores, channels		65:35 Sand; 55:25 Loamy sand	10–15%, as above, charcoal, roots	Gefuric & chitonic; very dark brown to dark reddish brown; undifferentiated	‘Dusty’ & silty clay coatings & infillings; organic staining, iron stained clay coatings; X569 had Fe/Mn mottles in a rooting zone, and zones of leached coarse-medium sand	Buried ploughsoil (Ap); ard mark fills & cuts – dense infillings with low porosity (mostly micro-cracks in clay)
Ard mark cut in bAp (X561, X569A)	Apedal crack	<5% crack, 500–1000 µm wide, strongly accommodated		10:90 Clay (X561); 50:50 Loam (Fe pan at X569A cut)	<5%, amorphous fragments	Close porphyric; very dark brown (X561) to strong red (X569A); undifferentiated	Strong organic staining (X61); X569A had Fe pan at feature cut, underlain by leached zone (echoing cut)	Infilled ard mark cut
bAp-B (X562-3)	Single grain	5–10% packing pores, rare large cracks	As above, + rare chalcedonic quartz	55:45 Sandy loam	15%, as above, charcoal	Gefuric & chitonic; very dark brown; undifferentiated	Linear discontinuous infills of silty clay, possibly feature cut; ‘dusty’ clay coatings; organic & Fe staining	Lower A of buried ploughsoil, with possible ard mark feature; very dark grey sand, slightly loamy
Tobøl 1 A Barrow sods; upper buried A horizon (Tob A-B)	Massive (apedal channel) to crumb and vugh	20% vughs, channels	As above, some clean clay.	As above	5% as above	Mixed gefuric and chitonic; reddish brown groundmass; some clean clay inclusions.	Fe-oxide replaced root pseudomorphs; frequent Fe & Mn nodules; rare clean, reticulate striated clay fragments. Boundary between upper & lower buried A: dense 1 mm-thick Fe oxide & clay panning layer surrounded by 1–3 mm-thick zones of soil with strong Fe-oxide staining & Fe impregnation features	Barrow sods, ploughed out in modern times, possibly originating from a location with an alluvial parent material. Boundary (base of mound)

Table A15.2. Soil micromorphology descriptions of buried B/C horizon characteristics compared to the modern soil profile (percentages are estimates of visual area).

	Structure	Porosity	Mineral components	C:f ratio	Organic components	Groundmass	Pedofeatures	Interpretation
Modern B (X588)	Single grain	20% packing pores, channels	As modern A; gravel <5cm	70:30 Sandy loam	5–10% charcoal & roots	Chitonic; light reddish brown; undifferentiated	Fe staining; zones of A horizon mixed in; lens of single grain sand with stipple speckled, Fe-stained groundmass, frequent Fe nodules, 'punctuations'	Dark yellowish brown (10YR 4/6) B or Bs; medium-coarse sand with gravel; frequent Fe nodules; coatings of illuviated iron-stained 'dusty' clay.
Tobøl I B (Tob B-C)	Crumb (upper); single grain (lower)	10–20% packing pores	As modern A + limestone	55:45 Sandy loam	5% charcoal & amorphous fragments, 'punctuations'	Upper: mixed types; chitonic. Lower: chitonic; light reddish brown; undifferentiated	'Agric' infills; 'dusty' clay; rare clean clay fragments.	Lower A to upper B horizons; impacted by disturbance; indicators of a clay-rich parent material
Skelhøj B (X563)	Single grain & intergrain microaggregate	5–15% packing pores	As modern A; occasional gravel (<1.5 cm)	65:35 Loamy sand	5% charcoal & roots	Enaulic & gefuric; light reddish brown; undifferentiated & stipple speckled	Fe staining; 'dusty' clay' coatings in pores	Yellowish brown (10YR 5/6) sand B horizon with occasional gravel
Skelhøj B (X568) 'wetting'	Single grain & intergrain microaggregate	5–10% packing pores	As modern A	55:45 Sandy loam	5–10% charcoal, amorphous fragments	Gefuric & close porphyric; light reddish to yellow brown; stipple speckled & undifferentiated	Fe staining, 'dusty' clay; patches of whole soil coating	Bs (or weakly developed Bt/fe)

Table A15.3. Micromorphology descriptions of profiles of turves and 'wetting' layers in lower construction sequence at Skelthorpe (percentages are estimates of visual area).

	Structure	Porosity	Mineral components	C:f ratio	Organic components	Groundmass	Pedofeatures	Interpretation
X74 Sod Ah(p)	Single grain, intergrain microaggregate	10–20%, packing pores, channels	As modern A	50:50 sandy clay loam	5–10% charcoal, black fragments	Brown, organic-stained, mixed enaulic, gefuric, chitonic, undifferentiated	Fragments of B horizon; 'dusty' clay infillings	Ah (old Ap) in laid turf
X74 Sod B					<5% charcoal, black fragments, roots	Light reddish brown, mixed enaulic, gefuric, chitonic, stipple speckled & undifferentiated	Fe coatings on grains; iron staining	B in laid turf
X412 A	Single grain, intergrain microaggregate	10% packing pores, channels	As modern A	50:50 sandy loam	20% charcoal, black fragments	Very dark brown; undifferentiated; close porphyric, gefuric	Coatings & infillings of fine fraction; organic staining	Disrupted A horizon (possible Ap) in laid turf
X412 boundary		5% packing pores, vughs		45:55 sandy clay loam	5% charcoal, black fragments	Orange; undifferentiated; close porphyric, gefuric	Iron coatings & staining	Compaction zone; B(e) horizon development in laid turf
X412 lower A/A-B		As X412 A		50:50 sandy loam	20% charcoal, black fragments	Very dark reddish brown; undifferentiated; close porphyric, gefuric	Coatings & infillings of fine fraction; organic staining	Lower A or A-B horizon in laid turf
X569A Sand layer (4 mm)	Single grain	15% packing pores	As modern A	75:25 sand	<5% tiny angular black fragments	Chitonic & gefuric; fine fabric only as coatings; brown, organic-stained, undifferentiated	Fe coatings on some grains	Sorted sand/water-lain ('wash'/puddling/crusting)
X569A Sod (2 cm)	Single grain, intergrain microaggregate (densely packed)	5% packing pores		65:35 sand (loamy)	15–20% angular black fragments	Very dark reddish brown, undifferentiated; close porphyric	Reddish brown 'dusty' clay coatings & infillings; Fe/Mn nodules (rooting)	Ah(p?) sod with grass rooting zone
X569A Sand layer (1 cm)	Single grain	10–20% packing pores		75:25 sand	<5% tiny angular black fragments	Monic, chitonic & gefuric; fine fabric only as coatings; brown, organic-stained, undifferentiated	Fe coatings on some grains	Sorted sand/water-lain ('wash'/puddling/crusting)
See Table A15.1 for 569A/B and mark feature and buried soil (tilled Ap, and marks, charcoal)								
X570A sod A horizon	Subangular blocky	15%, complex packing pores, channels	As modern A	65:35 sand	5–10% black fragments, charcoal, possible insect ovum	Very dark reddish brown, granostriated, undifferentiated	Fe coatings; main groundmass coatings, cappings, pendants	Wetting & trampling sequence: disturbed A horizon in laid sod
X570A leached sand (Ea?) 1	Single grain	20–25%, simple packing pores		85:15 sand	5%, black fragments, charcoal, root tissue	Fine groundmass only as coatings of Fe & organic matter; undifferentiated; monic, chitonic & gefuric	Iron coatings, amorphous organic coatings, rare silty clay coatings; Mn/Fe nodules	Leached horizon
X570A Panning lens, 1000 µm thick	Apedal to single grain	<5%, simple packing pores		40:50 sandy loam to loamy sand	5%, as above	Mixed: a layer of chitonic, reddish brown (placic); a layer of gefuric, black (spodic). Both: undifferentiated, granostriated	Frequent Fe coatings, occasional clay coatings in placic layer; microaggregate coatings in spodic layer	Fe-stained clay, complex panning (spodic & placic) in microlayers; incipient micro-?Bs horizon
X570A Sod A horizon	Apedal channel	5–10%, channels, complex packing pores	As modern A; occasional rock fragments up to 1 cm, with chert	50:50 sandy loam		Very dark brown, mixed undifferentiated & granostriated	Fragments of Fe-rich clay fabric (intrusive), iron staining; linear infilling of groundmass fabric	Wetting & trampling sequence: disturbed A horizon in laid sod

Table A15.3 (cont.).

	Structure	Porosity	Mineral components	C:f ratio	Organic components	Groundmass	Pedofeatures	Interpretation
X570A Leached sand Ea? 2	Single grain	40% simple packing pores	As modern A	80:20 sand	As X570 leached horizon			
X570A Panning Bs?	Single grain, intergrain microaggregate	20% packing pores		75:25 sand	5%, as above	Gefuric & enaulic, very dark brown, undifferentiated	Microaggregates as cappings & coatings	Incipient micro-Bs? horizon
X570A Leached sand		20% simple packing pores		80:20 sand		Enaulic, some chitonic, very dark reddish brown, undifferentiated	Occasional Fe coatings	Similar to the above, but much less fine groundmass
X570B Leached (4 cm)	Single grain			75:25 sand	5–10%, as above, but with a lens of 100% organics	Monic, chitonic, gefuric; only as coatings; very dark reddish brown, undifferentiated	<1mm thick lenses of 1) Fe-replaced plant remains & charcoal; 2) very fine sand, silt & clay infillings	Sorted sand/water-lain ('wash'/puddling/crusting)
X570B (3.5 cm)	Apedal	10–15% packing pores		70:30 sand	10%, charcoal, fine angular black inclusions	Very dark brown, undifferentiated to stipple speckled & granostriated; close porphyric	Fe & 'dusty' clay coatings and cappings	A (?laid sod)
X571 Sod Ah/p (4.5 cm)	Single grain	10% packing pores, channels	As modern A	65:35 sand	10%, charcoal	Very dark brown, strongly organic stained, undifferentiated; gefuric to chitonic	Infillings of fine fraction	Sod Ah/p at base of mound; wetting & trampling sequence
X571 Sod turf line (2 cm)	As in 573B turf	As in 573B turf		As in 573B turf	15% charcoal, tissue remains (roots)	Very dark brown, gefuric to chitonic	Fe staining & root pseudomorphs	Sod L/H turf line
X571 Leached lens (3–4 mm)	Single grain	30%, packing pores		60:40 sand	5% 'punctuations, charcoal	Dark reddish brown, granostriated; monic, chitonic & gefuric	Thin Fe/clay/amorphous organic coatings	Sorted sand/water-lain ('wash'/puddling/crusting)
X571 Sorted infilling (1–2 mm)	Apedal	Horizontal linear void, 2000 µm thick, infilled		15:85	10% black fragments, 'punctuations'	Very dark brown, undifferentiated, close porphyric	Infilling of fine fraction	Boundary; dense fine fraction infilling; disturbance indicator
X571 Leached lenses (0.2–0.4 mm, alternating)	As X571 leached lens above			80:20 sand	As X571 leached lens above			Sorted sand/water-lain ('wash'/puddling/crusting)
X571 Brown lenses (1 mm, alternating)	Apedal	5–10%, packing pores	As modern A	50:50 loam	10% black fragments, charcoal	Very dark brown to dark reddish brown, undifferentiated, close porphyric to granostriated	'silty' clay coatings, Fe-oxide coatings	Dense infilling; disturbance indicator. ('wash'/puddling/crusting)
X572 Sod Ap	Single grain, intergrain microaggregate	10–30% packing pores	As modern A; possible pottery fragment	70:30 sand; 60:40 loamy sand	10–15% black fragments, charcoal	Very dark reddish brown, undifferentiated, enaulic & gefuric, some close porphyric	Fe coatings, infillings with fine fabric in zones	Wetting & trampling sequence; very mixed sod, disturbance & 'wash' indicators

Table A15.4. Skellhoj core micromorphology: upper (from Hart 2006); blocks equate to frequency (rare, occasional, common, frequent, very frequent, ubiquitous).

SKELHØJ CORE		X950/1						
Context		Border upper Fe pan from core						
Unit		Upper sod	Fe/Mn lenses	Leached lenses	Fe-replacement zone	Fe pan	Core	
Microstructure		Crumb to granular	Massive	Granular	Massive to crumb	Massive	Massive to crumb	
Porosity		Vughs/channels		Channels/ packing pores	Vughs		Vughs	
Groundmass	C:f ratio 20µm	4:1	3:1	5:1	3:1			
	C:f related distribution	Concave gefuric to chitonic	Single-spaced porphyritic	Chitonic	Single-spaced porphyritic to concave gefuric	Single-spaced porphyritic		
Particle size frequency	Very coarse sand							
	Coarse sand	■ ■	■	■ ■ ■ ■ ■	■ ■ ■	■ ■	■ ■	
	Medium sand	■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	
	Fine sand	■ ■ ■ ■ ■	■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	
	Very fine sand	■ ■ ■ ■ ■ ■ ■	■ ■ ■	■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■ ■	
	Silt	■ ■ ■	■ ■ ■ ■ ■	■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	
Clay								
Fine material	Nature	Fe-rich silty clay w/ 'punctuations'	Fe-rich clay	Silty clay	Organic and Fe-rich clay	Fe-rich clay	Silty clay w/ punctuations	
	b-fabric	Stipple speckled/grano-striated		Granostriated/stipple speckled	Stipple speckled/ poro-/ granostriated	Granostriated/stipple speckled	Stipple speckled	
Organic material	Amorphous punctuations	■ ■ ■ ■	■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■	■ ■ ■ ■ ■	
	Fine material brown	■ ■ ■ ■	■ ■	■ ■ ■ ■ ■	■ ■ ■ ■	■ ■	■ ■ ■ ■ ■	
	Fine material reddish brown	■	■ ■ ■ ■	■ ■	■ ■ ■ ■ ■ ■ ■	■ ■	■ ■	
	Tissue residue	■ ■ ■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■		■ ■ ■ ■ ■	
	Tissue organ	■ ■ ■	■ ■ ■	■ ■ ■ ■	■ ■ ■ ■		■ ■ ■ ■ ■	
	Phlobaphene-containing tissue	■ ■ ■	■ ■	■ ■ ■	■ ■ ■ ■		■ ■ ■ ■ ■	
	Fresh plant material				■ ■ ■ ■		■ ■ ■ ■	
Pedofeatures	Fungal spores	■					■ ■ ■ ■	
	Charred plant residues	■ ■ ■					■ ■	
	Charred wood residues	■			■ ■		■ ■ ■ ■	
	Fe nodules	■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■	
	Mn nodules	■ ■ ■	■ ■ ■ ■ ■	■ ■	■ ■ ■	■ ■ ■ ■ ■	■ ■	

Table A15.5. *Skelthøj* core micromorphology: central (from Hart 2006); blocks equate to frequency (rare, occasional, common, frequent, very frequent, ubiquitous).

X952	Core w/ organics preserved									
	Fe-rich organic 1	Silty clay 1	Fe-clay lense	Fe-rich organic 2	Silty clay 2	Fe-rich organic 3	Fe pan	'Brown earth'		
Microstructure	Massive/crumb	Crumb	Crumb	Crumb	Crumb	Crumb	Massive	Massive		
Porosity	Vughs	Vughs	Vughs	Vughs	Vughs	Vughs				
C:f ratio 20µm	3:1	4:1	4:1	4:1	4:1	4:1	3:1	3:1		
C:f related distribution	Single-spaced porphyric	Single-spaced porphyric to concave gefuric		Concave gefuric	Single-spaced porphyric to concave gefuric		Single spaced porphyric			
Very coarse sand										
Coarse sand	■ ■ ■	■ ■ ■		■ ■ ■			■ ■ ■ ■		■ ■	
Medium sand	■ ■ ■	■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■
Fine sand	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■ ■	■ ■ ■ ■
Very fine sand	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■
Silt	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■
Clay										
Nature	Fe- & organic-rich clay	Silty clay w/ organic punctuations	Fe-rich clay w/ organic punctuations	Fe- & organic-rich clay	Fe-rich silty clay w/ organic punctuations	Organic & Fe-rich silty clay	Fe-rich clay w/ organic punctuations	Silty clay w/ organic punctuations		
b-fabric	Stipple speckled/ granostratified	Stipple speckled/ porostratified	grano-/	Stipple speckled/ granostratified	Stipple speckled/ poro-/ granostratified	Stipple speckled, grano-/porostratiation	Stipple speckled/ granostratified	Stipple speckled, little grano- & porostratiation		
Amorphous punctuation	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■		
Fine material brown	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■		
Fine material reddish brown	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■		
Tissue residue	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■		
Tissue organ	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■		
Phlobaphene- containing tissue	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■		
Fresh plant material		■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■		■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■		
Fungal spores				■				■ ■		
Charred plant residues	■ ■ ■ ■	■ ■ ■ ■	■	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■		■ ■ ■ ■		
Charred wood residues	■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■	■ ■ ■ ■	■ ■	■ ■ ■ ■	■ ■ ■ ■		
Fe nodules	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■		
Mn nodules	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■		

Table A15.6. *Skellhoj core micromorphology: lower (after Hart 2006); blocks equate to frequency (rare, occasional, common, frequent, very frequent, ubiquitous).*

	X953												
	Lower border Fe pan, upper buried A												
	Sod 1? A	Turf line	Sod 2? A	A	Fe pan	Mn lens	Fe-rich clay lens	Fe pan	Fe-rich clay lens	Irregular Mn lens	Fe-rich clay lens	Irregular Mn lens	bA
Microstructure	Massive	Massive/crumb	crumb / massive		Massive		Massive/crumb	Massive	Massive/crumb	Massive/crumb	Crumb	Massive/crumb	
Porosity		Vughs					Vughs		Vughs				
Cf ratio 20µm	3:1	4:1	3:1			4:1	3:1	4:1	3:1	4:1			
Cf	Porphyric		Porphyric/gefutic		Porphyric		Porphyric/gefutic	Porphyric	Porphyric/gefutic	Porphyric	Gefutic	Porphyric/gefutic	
Very coarse sand													
Coarse sand													
Medium sand													
Fine sand													
Very fine sand													
Silt													
Clay													
Nature	Silty clay, punctuations, v. organic	Silty organic rich clay, mostly organic l	Silty clay, punctuations, v. organic	Organic w/ silty clay, punctuations	Silty clay, punctuations	Mn/Fe rich clay	Fe rich silty clay	Fe rich clay w/ few punctuations	Fe/Mn rich clay w/ punctuations	Fe rich clay w/ punctuations	Mn/Fe rich clay	Mn/Fe rich clay	Silty Fe rich clay w/ punctuations
b-fabric	Stipple speckled												
Amorph. punct													
Fine brown													
Fine reddish brown													
Tissue residue													
Tissue organ													
Phlobaphene tissue													
Fresh organic													
Fungal spores													
Charred plant													
Charred wood													
Fe nodules													
Mn nodules													

Table A15.7. Thin section descriptions of sods from Skelhej mound. Mineral components are all as modern A, except where noted.

	Structure	Porosity	C:f ratio	Organic components	Groundmass	Pedofeatures	Interpretation
X564 Sod Ah, B/C	Single grain, micrograin interaggregate	10% packing pores	55:45 Sandy loam	10–20% brown & black fragments, charcoal, roots, fungal sclerotia	Very dark brown, strong organic staining, undifferentiated, gefuric.	Mite excrement; 'dusty' & organic-stained clay coatings, silty clay in-fillings, including linear in-fillings	Sod from grassland, but disturbed. Organic A(p) turfline (10YR 4/1); rooting zone (10YR 5/1); gravelly B/C (10YR 6/1) present but not clearly seen (upside down sod).
X565 Sod, A, B/C	Granular to crumb (turf line); granular A, B/C	10% packing pores, channels (+vughs in turf line)	75:25 Sand (turf line: silty sand)	<15%, 'punctuations', brown & red tissues, charcoal, fungal spores	Grano-/porostriated, some stipple speckled; highly organic stained, Fe-rich clay; undifferentiated; gefuric to chitonic	'Dusty' clay, Fe-stained clay, organic nodules Fe & Mn nodules (increasing with depth)	Sod turf line (10YR 3/1) over leached sandy A/B material (10YR 4/1-5/1) over iron-rich B/C with gravel (10YR 7/4)
X573 Sod Ah, B/C, Fe pan	Single grain	10% packing pores	45:55 Loam (A, A/B); 70:30 Sand (B/C)	5–10% roots, charcoal; a lens of charcoal fragments & Fe/Mn-replaced roots at boundary of A-A/B	A-A/B very dark brown to dark reddish brown, undifferentiated, occasionally stipple speckled, gefuric, densely packed; B/C reddish brown, undifferentiated, chitonic & gefuric; Fe panning; placic & gefuric	A-A/B organic stained, 'dusty' clay & Fe coatings; Fe/Mn-replaced roots at boundary of A-A/B; B/C frequent Fe and clay coatings & in-fillings, cappings; some Fe-oxide replaced roots	Upside-down sod; Ah (10YR 5/1) over A(p)/B (10YR 6/1), over B(t/fe) (10YR 3/6); in-fillings suggestive of 'agric'; possibly Ah was Ap at some time; <i>in situ</i> burning of turf.
X581 Fe pan at border of 2 sods	Upper sod: crumb/granular; Fe pan: massive; leached layer: granular; lower sod: crumb/granular	Upper sod: vughs, some channels; Fe pan: vughs; leached layer: packing pores/channels; lower sod: vughs/channels;	85:15/80:20/75:25 Sand to silty sand (sods); clay loam (Fe pan around silt & sand); sand (leached layer)	<15%: all fabrics, but less in leached layer: 'punctuations', brown & red tissues, charcoal, fungal spores	Granostratified to stipple speckled (sods); granostratified (Fe pan & leached layer. Sods: dark brown to dark reddish brown, undifferentiated, gefuric to chitonic; Fe pan: as sods but porphyric to gefuric; leached layer: greyish brown, chitonic, fine groundmass as Fe pan.	Frequent Fe and Mn nodules; Fe-stained clay coatings; Fe coatings; organic staining on coatings; 'dusty' clay in sods.	Upper sod: A(p) (4 fabrics), Fe pan, leached layer; lower sod: A (1 fabric).
X585 Sod no turf; B only no gravel	Single grain, intergrain microaggregates; apedal where Fe panning	15–20% packing pores, channels (5–10% where Fe panning)	45:55; loamy sand; 70:30; sand, where Fe panning	10–15% (5% where Fe panning); charcoal, 'punctuations', roots	Very dark brown/reddish brown, undifferentiated, close porphyric related distribution (porostriated & gefuric where Fe panning)	Frequent Fe-oxide coatings (split) & in-fillings (segmented coatings where iron panning); 'dusty' clay in-fillings	(A/B) B with iron panning; includes gravels, angular, subrounded 0.5–1.5 cm
X586 Sod upper mound: L/H/A, Fe pan & mottles, B/C gravelly	As X585	As 585; 5% where Fe panning	All horizons sand, except Fe panning, where same as X585	As 585	As 585 except L/H/A layer grey in PPL.	As 585; Fe panning underlain by zone of Fe oxide nodules & root pseudomorphs; Fe oxide & organic staining	Thin surface turf directly on Fe pan and B/C with oxidation mottles at upper boundary. A horizon stripped/deturfed; later turf grown on B/C

Inspired geoarchaeologies

Geoarchaeological research captures dimensions of the past at an unprecedented level of detail and multiple spatial and temporal scales. The record of the past held by soils and sediments is an archive for past environments, climate change, resource use, settlement lifeways, and societal development and resilience over time. When the McDonald Institute was established at Cambridge, geoarchaeology was one of the priority fields for a new research and teaching environment. An opportunity to develop the legacy of Charles McBurney was bestowed upon Charles French, whose 'geoarchaeology in action' approach has had an enormous impact in advancing knowledge, principles and practices across academic, teaching and professional sectors. Many journeys that began at Cambridge have since proliferated into dozens of inspired geoarchaeologies worldwide. This volume presents research and reflection from across the globe by colleagues in tribute to Charly, under whose leadership the Charles McBurney Laboratory became a beacon of geoarchaeology.

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*Published by the McDonald Institute for Archaeological Research,
University of Cambridge, Downing Street, Cambridge, CB2 3ER, UK.*

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Cover design by Dora Kemp and Ben Plumridge.

ISBN: 978-1-913344-09-2

