Cohomology of the idèles I: the "First Inequality"

Hereditary inequality dates back to the Stone Age

Press release issued: 28 May 2012

Hereditary inequality began over 7,000 years ago in the early Neolithic era, with new evidence showing that farmers buried with tools had access to better land than those buried without.

The research, carried out by archaeologists from the Universities of Bristol, Cardiff, Oxford and Durham, is published in <u>PNAS</u> today [28 May].

By studying more than 300 human skeletons from sites across central Europe, Professor Alex Bentley and an international team of colleagues funded by the <u>Arts and Humanities Research Council</u> uncovered evidence of differential land access among the first Neolithic farmers – the earliest such evidence yet found.

Strontium isotope analysis of the skeletons, which provides indications of place of origin, indicated that men buried with distinctive Neolithic stone adzes (tools used for smoothing or carving wood) had less variable isotope signatures than men buried without adzes. This suggests those buried with adzes had access to closer – and probably better – land than those buried without.

Professor Bentley, Professor of Archaeology and Anthropology at the University of Bristol, said: "The men buried with adzes appear to have lived on food grown in areas of loess, the fertile and productive soil favoured by early farmers. This indicates they had consistent access to preferred farming areas."



https://www.bristol.ac.uk/news/2012/8537.html

Reminder: the class field axiom

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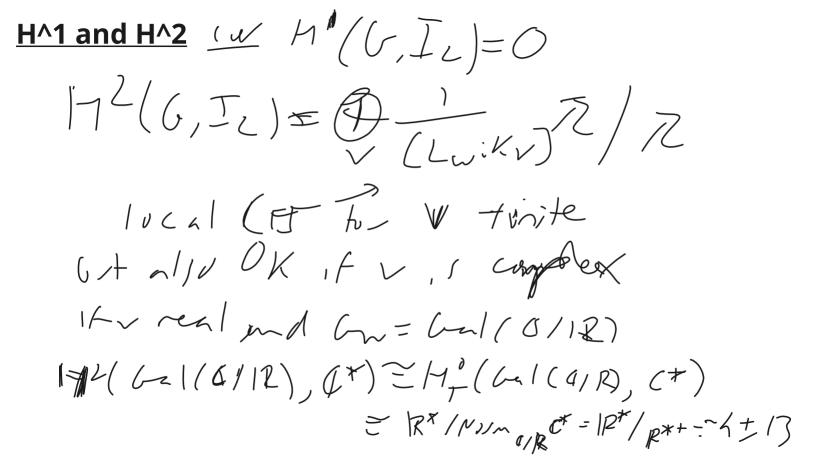
The Herbrand quotient and the First Inequality

Today: conteth (C) = $\frac{\# M_{+}^{2}(G_{n}(UK), C)}{\# M_{+}^{2}(G_{n}(UK), C)}$ = (:k)

=>+H-(G-//LIK!(L))/CL:K) "Fight Inry-LIK"

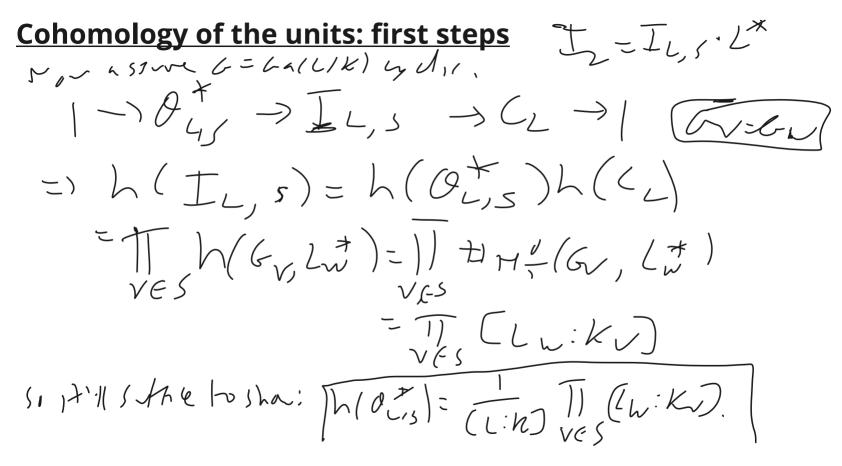
A direct sum decomposition for cohomology LIK FING GENERALING GELALIK S=KNIK LEF of PLACES of K contraining all in hante $\perp_{L,s} = \perp_{L,\overline{T}}$ T= { w/v: ves) TIL * TTO L Funs Minutly last I,= VII,S IZ=IL, SL*

A direct sum decomposition for cohomology: proof $\frac{p_{mp}}{(in)} + \frac{1}{G} (G_{T_{L}}) = \bigoplus_{v} Hi(G_{v}, L_{v})$ $(in) \qquad (w_{mp}) = U (U_{mp}) = U (U_{mp}) = U (U_{mp}) = U (U_{mp})$ $P \neq M'(G, I_{L}) = i \rightarrow H'(G, I_{L}, g)$ all milied places =1. Phile, The Line x The Hile, The And all with the places is very with the states in the second shows when the second shows where the second shows we have the second shows where Shyp, ros una = H(Gw, Lw)



The norm subgroup is open Sentains 211, what place, all mited place, and it bis engine that I to Inder, silt NOIMLIK IL, S= TI UV XTI OK VES VES VES For line UV oper of An, te max in KT J MIMLIK LL IS Oper of Finter near in CX.

 $\rightarrow C_{K} \equiv I_{K/(K^{*}, N_{1/m} \cup K^{T}L)}$



 $\begin{array}{ccc} A \text{ computation with S-units} & V = \prod R & T = \langle u/v : \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ \end{array} \right)$ OLIS V X -> (10g 12/w) W , ~ge is a lattice M m M=2ma - 2ed Ga hypopolice MV. M:= $M \neq ((1, \dots, 1))$ is entire in V. $h(m_{i}) = h(m)h(R) = CL;K).$ he reed: h(M)= Mc(Clanik).

Comparison of lattices M2= TTZ 56 is differ m V Lith $h(G, M_{c}) = \overline{\prod}_{V \in C} h(G, Ind_{o_{v}} R)$ $= \prod_{v \in V} h(Gv, R)$ = TT # Gy = TT (Lui Ky) me 12-vector siee, then h (M,)=h (Mz)

Comparing Herbrand quotients of lattices $P_{1}(M, M_{2}) = (m_{es} - able (in))$ $M, M_{2} has Mite index in bital the$ $<math>M(M,) = h(M, M_{2}) = h(M_{2}).$ Joint Inscur, Mara ~ Mara ce de-liner qu' of anhich berme isomer hic Une IR = 1 already 13 varphil are the

FIE esterijion of (in Kn, te) lennai Gixa, te somp fields VI, V2 are frite-dim E-veulzispaces um E-Imer (right) Cachon, s.l. V, DEFEVZBEF as brogs. $T_{\mathcal{L}} V_{1} = V_{2}$.

 $\frac{P_{N}}{G} = H_{0} - \left(V_{1} V_{2} \right) = V_{1} = V_{1} + \left(\frac{a}{a} \right)^{3} + \left(\frac{a$ GEWEENOEFENDEFEVER) WE & F = WE [assmel this contains Theys: it I fix a death kickward -delying rector Scales V = V2 (not Grimmerphism!), Neterment Frichen is 1 d- identially zer on WF, bed not ventrally zero on war either (616 5 month).

<u>Corollary: splitting of primes</u> For LIKing him had a stergion of A fields, Binhnittly may provide the frat do not split completely in L. RE IFLIK is Galicot prome order. and all it knitely many processplits completely, pot the rest into J Set (K=NORMLIK (L, contradictors Fost inspecting: HCK/NUMLIK(L ZCL:K),

Gener Ease: let M/K be below dosme of L/K. P(K p) Its mp 4 kely m LE=) Splits comp letely m M So assime LIK is harding ninternal. (Gel (H1X) 2 minval cy clicegoup (maspindin, to (vulic, Lik Anjy paris use to 2/1/