On Research History and Neanderthal Occupation at its Northern Margins

**Trine Kellberg Nielsen and Felix Riede**

Department of Archaeology and Heritage Studies, Aarhus University, Denmark

**Supplementary Information**

**1. The Villestrup controversy**

A newspaper-based debate between autodidact archaeologist Eli Jepsen and P.V. Glob, professor of archaeology, on the status of the Villestrup implement took place in late 1963. Eli Jepsen announced his interpretation of the Villestrup implement as a Neanderthal handaxe on 6 October 1963 in a number of national newspapers. This started a highly personal debate between him and P.V. Glob, which continued to attract headlines for months (Table I), primarily on account of Eli Jepsen who responded to P.V. Globs verbal and written critique (‘*Archaeology’s flying saucers*’) in a series of letters to the editors of various Danish newspapers.

***Table I.*** *Timeline and list of newspaper articles debating the Villestrup controversy in 1963.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1963** | **Originator** | **Original headline** | **Translated headline (TKN)** | **Newspaper** |
| 6 October | Eli Jepsen | *Dansk Neanderthal fund* | *Danish Neanderthal find* | Jyllands-Posten |
| 6 October | Eli Jepsen | *Der var mennesker i Danmark for 120.000 år siden* | *There were people in Denmark 120.000 years ago* | Berlingske Tidende |
| 8 October | Eli Jepsen | *De første danskere* | *The first Danes* | Berlingske Tidende |
| *12 October* | *PV. Glob visits Eli Jepsen, views the collection, and concludes that the Villestrup implement is Mesolithic and not Palaeolithic* | | | |
| 13 October | Eli Jepsen | *Herningmanden mener at P.V. Glob har uret* | *The man from Herning thinks P.V. Glob is wrong* | Berlingske Tidende |
| 13 October | Eli Jepsen | *Eli Jepsen kæmper for sit bevismateriale* | *Eli Jepsen is fighting for his evidence* | Jyllands-Posten |
| 27 October | P.V. Glob | *Arkæologiens flyvende tallerkner* | *Archaeology’s flying saucers* | Berlingske Tidende |
| 1 November | Eli Jepsen | *Tallerkenernes flugt* | *The flight of the flying saucers* | Jyllands-Posten |
| 5 November | Eli Jepsen | *Fagarkæolog og amatør* | *Professional archaeologist and amateur* | Berlingske Tidende |
| 28 November | Eli Jepsen | *Det sidste Vildskud på Istidsmandens Livstræ* | *The latest excrescences on the lifetree of Ice Age Man* | Herning Folkeblad |
| 29 November | Eli Jepsen | *Præsenterede først sine fund for Danske Museumsfolk* | *Presented his theory to Danish museum staff first* | Herning Folkeblad |

**2. Data collection**

The criteria for text selection vary slightly between the various publication types, most significantly in the case of newspaper articles. Among these, only texts considered to add new empirical information have been included (Table II). Further, when the same text with a similar outline and citation list appears in both a newspaper and a formal publication, only the latter was included here. This is in reality rarely an issue, given that most newspaper texts are free of citations. Publications dealing indirectly with the topic, such as the Quaternary geology of Scandinavia, were only included if they specifically mention or discuss relevant Scandinavian archaeological sites or artefacts (e.g. Hartz, 1909; Nordmann, 1936). In cases of language barriers, i.e. where it has not been possible to evaluate the content, articles were excluded as primary literature. This issue fortunately only applies to a small number of publications written in Finnish as the Susiluola Cave discussion shifted to English at a relatively early stage.

***Table II.*** *Alphabetically ordered list of primary publications included in the citation network analysis and the publication/author attributes discussed in the study. Gephi does not accept special characters such as ø, æ, å and ö, and for this reason these have been replaced by oe, ae, aa and o in the Node ID labels on the graphs. Where the authors’ names include characters with accents such as ñ and é, these have been left out for the same reason.*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Node ID** | **Reference** | **Publication medium** | **Publication language** | **National relationship of first author** | **Time of publication (50 year interval)** | **Position in the debate** | **Regional focus** | **Status of first author** |
| AGD, 1963 | A.G.D, 1963. Enestående i Nordeuropa. Unknown newspaper. | Newspaper | Danish | DK | 1951–2000 | Critical | DK | Unknown |
| Andersen, 1955 | Andersen, S.A. 1955. De første spor af Neandertal-manden i Jylland. Unknown newspaper. | Newspaper | Danish | DK | 1951–2000 | Pro | DK | Professional |
| Andersen, 1957 | Andersen, H. 1957. Istidsmandens redskaber? *Skalk*, 2: 14–16. | Popular science | Danish | DK | 1951–2000 | Critical | DK | Unknown |
| Barsoe Hansen, 1991 | Barsøe Hansen, O. 1991. Arkæolog eller tøsedreng. *Folkeblad Sydjylland*, 1 February1991. | Newspaper | Danish | DK | 1951–2000 | Critical | DK | Autodidact |
| Baudet & Jepsen, 1968 | Baudet, J.L.P. & Jepsen, E. 1968. Industries lithiques de la baie de Jammerland, Sjaelland. *Revue Anthropologique, Organe de l'Institut international d'Anthropologie*, 1968: 26–34. | Scientific paper | French | FR | 1951–2000 | Pro | DK | Professional |
| Baudet, 1970 | Baudet, J.L.P. 1970. Contributions à l'étude du Paléolithique ancien d'Europe septentrionale. In: K. von Gripp & R. Schütrumpf, eds. *Schwabedissen, frühe Menschheit und Umwelt. Teil 1: Archäeologische Beiträge.* Köln & Wien: Böhlau, pp. 34–51. | Scientific paper | French | FR | 1951–2000 | Critical | DK | Professional |
| Becker, 1971 | Becker, C.J. 1971. Istidsmandens Redskaber. *Skalk*, 4: 3–7. | Popular science | Danish | DK | 1951–2000 | Pro | DK | Professional |
| Becker, 1983 | Becker, C.J. 1983. Danmarkshistoriens allerførste kapitel. *Berlingske Tidende*, 16 January 1983. | Newspaper | Danish | DK | 1951–2000 | Review | DK | Professional |
| Becker, 1985 | Becker, C.J. 1985. Danske fund af istids-menneskets redskaber i Nationalmuseet. In: P.O. Nielsen, ed. *De Ældste fund*. København: Nationalmuseets, pp. 7–10. | Museum dissemination | Danish | DK | 1951–2000 | Pro | DK | Professional |
| Berthelsen, 1938 | Berthelsen, W. 1938. *Stenalderbopladser langs Vejleaa. Vejle Amts årbog*, 1938: 80–122. | DK yearbook | Danish | DK | 1901–1950 | Critical | DK | Professional |
| Bjoern, 1928 | Bjørn, A., 1928. Nogen norkse stenalderproblemer. *Norsk geologisk tidsskrift*, 10: 53–75. | Scientific paper | Danish | NO | 1901–1950 | Critical | NO | Professional |
| Bjorck et al., 2000 | Björck, S., Noe-Nygaard, N., Wolin, J., Houmark-Nielsen, M., Hansen, H.J. & Snowball, I. 2000. Eemian Lake Development, Hydrology and Climate: A Multi-Stratigraphic Study of the Hollerup Site in Denmark. *Quaternary Science Reviews*, 19: 509–36. | Scientific paper | English | DK | 1951–2000 | Critical | DK | Professional |
| Boe & Nummedal, 1936 | Bøe, J. & Nummedal, A. 1936*. Le Finnmarkien, les origines de la civilisation dans l'extrême-nord de l'Europe*. Oslo: Aschenhoug. | Book | French | NO | 1901–1950 | Pro | NO | Professional |
| Broendsted, 1956 | Brøndsted, J. 1956. Neandertalmand i Østjylland? Under og før istiden i forskningens nyeste lys. *Politiken*, 14 March 1956. | Newspaper | Danish | DK | 1951–2000 | Critical | DK | Professional |
| Degerboel, 1956 | Degerbøl, M. 1956. Heidelbergmandens redskaber fundet? *Berlingske Tidende*, 10 February 1956. | Newspaper | Danish | DK | 1951–2000 | Critical | DK | Professional |
| Donner, 2007 | Donner, J. 2007. On the Lack of evidence of Artifacts in the Susiluola Cave in Finland. *Fennoscandia archaeologica*, 24: 53–56. | Scientific paper | English | FIN | 2001–2015 | Critical | FIN | Professional |
| Donner, 2008 | Donner, J. 2008. Some Comments on the Contribution by Hans-Peter Schulz and Tapani Rostedt on Susiluola. *Fennoscandia archaeologica*, 25: 83. | Scientific paper | English | FIN | 2001–2015 | Critical | FIN | Professional |
| Duedahl, 2005 | Duedahl, P. 2005. Nordfynske neandertaler. *Lokalhistorisk forening for Sønderskov Kommune Årsskrift*: 2–5. | Museum dissemination | Danish | DK | 2001–2015 | Critical | DK | Professional |
| Egeland et al., 2014 | Egeland, C.P., Nielsen, T.K, Byø, M., Kjærgaard, P.C., Larsen, N.K. & Riede, F. 2013. The Taphonomy of Fallow Deer (*Dama dama*) Skeletons from Denmark and its Bearing on the Pre-Weichselian Occupation of Northern Europe by Humans. *Archaeological and Anthropological Sciences*, 6: 31–61. | Scientific paper | English | USA | 2001–2015 | Critical | DK | Professional |
| Ekholm, 1925 | Ekholm, G. 1925. Människor i Skandinavien under sista interglacialen? *Ymer*, 3: 416–22. | Scientific paper | Norwegian | NO | 1901–1950 | Critical | NO | Professional |
| Ekholm, 1929 | Ekholm, G. 1929. Ett nordskandinaviskt paleoliticum? *Forvännen*, 24: 193–221. | Scientific paper | Norwegian | NO | 1901–1950 | Critical | NO | Professional |
| Glob, 1963 | Glob, P.V. 1963. Arkæologiens flyvende tallerkener, Danmarks rigdom på flint vildleder amatørarkæologerne. *Berlingske Tidende*, 27 October1963. | Newspaper | Danish | DK | 1951–2000 | Critical | DK | Professional |
| Glob, 1972 | Glob, P.V. 1972. Farlig flint. *Skalk*, 1: 18–20. | Popular science | Danish | DK | 1951–2000 | Critical | DK | Professional |
| Grote & Jacobsen, 1982 | Grote, K. & Jacobsen, E.M. 1982. Der Faustkeil vom Karskov-Kliff auf Langeland (Dänemark). *Archäologisches Korrespondenzblatt*, 12: 281–85. | Scientific paper | German | DE | 1951–2000 | Pro | DK | Professional |
| Hartz, 1909 | Hartz, N. 1909. Bidrag til Danmarks tertiære og diluviale flora. *Danmarks Geologiske Undersøgelse II 22*: 1–292. | Scientific paper | Danish | DK | 1901–1950 | Pro | DK | Professional |
| Heimdahl, 2006 | Heimdahl, J. 2006. Spår av en mellanpaleolitisk befolkning i Sverige? Förnyad granskning av Mårtensöfynden 1938 och 1964. *Fornvännen*, 101: 1–8. | Scientific paper | Swedish | SE | 2001–2015 | Critical | SE | Professional |
| Hjort, 1973 | Hjort, Ø., 1973. På sporet af den første dansker. *Information*, 21 September 1973. | Newspaper | Danish | DK | 1951–2000 | Critical | DK | Unknown |
| Hoejrup, 1947 | Højrup, O. 1947. Bopladser med håndkiler fra Roskilde fjord. *Aarbøger for nordisk Oldkyndighed og Historie*, 1946: 95–102. | DK yearbook | Danish | DK | 1901–1950 | Critical | DK | Professional |
| Holm & Larsson, 1995 | Holm, J. & Larsson, L., 1995. The Earliest Occupation of Europe: Scandinavia. In: W. Roebroeks & T. von Kolfschoten, eds. *The Earliest Occupation of Europe*. Leiden: Leiden University Press, pp. 193–205. | Scientific paper | English | DK | 1951–2000 | Critical | DK | Professional |
| Holm, 1981 | Holm, J., 1981. De første Danskere. *Vestkysten*, 28 September 1981. | Newspaper | Danish | DK | 1951–2000 | Pro | DK | Professional |
| Holm, 1983 | Holm, J. 1983. En kvarts milj år i Danmark. *Populär Arkeologi ,*1: 7–9. | Popular science | Norwegian | DK | 1951–2000 | Pro | DK | Professional |
| Holm, 1984 | Holm, J. 1984. Knogler og flint fra grusgravene ved Seest, Kolding. PalaeoWiki [accessed 21 February 2012]. | Self- published, web | Danish | DK | 1951–2000 | Pro | DK | Professional |
| Holm, 1986 | Holm, J. 1986. The Quaternary and the Early/Middle Palaeolithic of Denmark. In: A. Tuffreau & J Sommé, eds. *Chrono-stratigraphie et faciès culturels du Paléolithique inférieur et moyen dans l’Europe du Nord-Ouest* (Supplément au Bulletin de l’Association française pour l’Étude du Quaternaire, 7). Paris: Société Préhistorique Française, pp. 75–80. | Scientific paper | English | DK | 1951–2000 | Pro | DK | Professional |
| Holm, 1987 | Holm, J. 1987. Primitiv flint i Vejstrup Ådal – de første fynboer? *Årbog for Svendborg & Omegns Museum*, 1987: 8–16. | Museum dissemination | Danish | DK | 1951–2000 | Pro | DK | Professional |
| Holm, 2000 | Holm, J. 2000. Primitiv flint i Vejstrup Ådal – de første fynboer? *Arkæologi for alle*, 3: 34–42. | Popular science | Danish | DK | 1951–2000 | Pro | DK | Professional |
| Holm, 2001 | Holm, J. 2001. Arkæologisk sandsynlighedsregning – om fund af primitiv flint fra Ejby Klint, Isefjord. *Arkæologi for alle*,1: 35–37. | Popular science | Danish | DK | 2001–2015 | Pro | DK | Professional |
| Holm, 2002 | Holm, J. 2002. De første sønderjyder. *Sønderjysk månedskrift*, 5: 115–21. | Popular science | Danish | DK | 2001–2015 | Pro | DK | Professional |
| Jensen, 2001 | Jensen, J. 2001. *Danmarks Oldtid. Bind 1: Stenalder 13.000–2.000 f.Kr*. København: Gyldendal. | Book | Danish | DK | 2001–2015 | Review | DK | Professional |
| Jepsen, 1973 | Jepsen, E. 1973. *Dansk føristidskultur for amatører*. København: Rhodos. | Self -published book | Danish | DK | 1951–2000 | Pro | DK | Autodidact |
| Johansen & Stapert, 1996 | Johansen, L. & Stapert, D. 1996. Handaxes from Denmark: Neandertal Tools or 'Vicious Flints'? *Palaeohistoria*, 37/38: 1–28. | Scientific paper | English | NL | 1951–2000 | Critical | DK | Professional |
| Juel Jensen, 1980 | Juel Jensen, H. 1980. FHM 1689 Vejstrup Skov. Unpublished report, Moesgård Museum, Højbjerg. | Excavation report | Danish | DK | 1951–2000 | Critical | DK | Professional |
| Junno, 2007 | Junno, J.-A. 2007. Archaic Homo Sapiens in the Northernmost Region. *Fennoscandia archaeologica*, 24: 92–93. | Scientific paper | English | FIN | 2001–2015 | Critical | FIN | Professional |
| Kinnunen, 2007 | Kinnunen, K.A. 2007. Fractured Siltstones in Susivuori Esker Close to Susiluola Cave, Karijoki, Finland. *Fennoscandia archaeologica*, 24: 57–63. | Scientific paper | English | FIN | 2001–2015 | Critical | FIN | Professional |
| Kjaergaard, 1983 | Kjærgaard, J.J. 1983. Den uskrevene Danmarkshistorie. *Berlingske Tidende*, 9 January 1983. | Newspaper | Danish | DK | 1951–2000 | Critical | DK | Unknown |
| Larsson, 2000 | Larsson, L. 2000. Plenty of Mammoths but no Humans? Scandinavia during the Middle Weichselian. In: W. Roebroeks, M. Mussi, J. Svoboda & K. Fennenma, eds. *Hunters of the Golden Age. The Mid Upper Palaeolithic of Eurasia 30,000–20,000 BP*, Leiden: Leiden University Press, pp. 155–63. | Scientific paper | English | SE | 1951–2000 | Critical | DK | Professional |
| Madsen, 1959 | Madsen, E. 1959. Danske fund. *Naturens Verden*, Marts 1959: 95–96. | Popular science | Danish | DK | 1951–2000 | Pro | DK | Autodidact |
| Madsen, 1963 | Madsen, E. 1963. Primitiv flintkultur ved Isefjord. *Årbøger for nordisk Oldkyndighed og Historie*, 1962: 79–93. | DK yearbook | Danish | DK | 1951–2000 | Pro | DK | Autodidact |
| Madsen, 1965 | Madsen, E., 1965. An Interglacial Shoreline on Isefjord (Zealand, Denmark). *Videnskabelige meddelelser fra Dansk Naturhistorisk Forening i København*, 128: 233–44. | Scientific paper | English | DK | 1951–2000 | Pro | DK | Autodidact |
| Madsen, 1968a | Madsen, E. 1968. En arkæologisk-geologisk undersøgelse af klinten ved Ejby bro, Isefjord. *Særtryk af Meddelelser fra Dansk Geologisk Forening*, 18: 3–45. | Scientific paper | Danish | DK | 1951–2000 | Pro | DK | Autodidact |
| Madsen, 1968b | Madsen, E. 1968. Un site danois à silex préhistoriques primitifs. *Revue Anthropologique, Organe de l'Institut international d'Anthropologie*, 14–21. | Scientific paper | French | DK | 1951–2000 | Pro | DK | Autodidact |
| Maninnen, 2007 | Maninnen, M. A. 2007. Non-Flint Pseudo-Lithics: Some Considerations. *Fennoscandia archaeologica*, 24: 76–83. | Scientific paper | English | FIN | 2001–2015 | Critical | FIN | Professional |
| Mathiassen, 1935a | Mathiassen, T. 1935. Primitive flintredskaber fra Samsø. *Aarbøger for nordisk oldkyndighed og historie*, 1934: 39–54. | DK yearbook | Danish | DK | 1901–1950 | Critical | DK | Professional |
| Moehl Hansen, 1955 | Møhl-Hansen, U. 1955. Første sikre spor af mennesker fra interglacialtid i Denmark. Marvspaltede knogler fra diatoméjorden ved Hollerup. *Aarbøger for nordisk Oldkyndighed og Historie*, 1954: 101–26. | DK yearbook | Danish | DK | 1951–2000 | Pro | DK | Professional |
| Montelius, 1919 | Montelius, G.O.A. 1919. De mandelformiga flintverktygens ålder. *Antikvarisk Tidskrift för Sverige*, 20: 1–60. | Scientific paper | Swedish | SE | 1901–1950 | Critical | SE | Professional |
| Montelius, 1921 | Montelius, G.O.A. 1921. Palaeolithic Implements Found in Sweden. *Antiquaries Journal*, 1: 98–104. | Scientific paper | English | SE | 1901–1950 | Critical | SE | Professional |
| Nielsen, 1985 | Nielsen, P.O. 1985. Fortiden i grusgravene. In: P.O. Nielsen, ed. *De Ældste fund*. København: Nationalmuseets, pp. 17–20. | Museum dissemination | Danish | DK | 1951–2000 | Critical | DK | Professional |
| Noe Nygaard, 1982 | Noe-Nygaard, N. 1982. Mellemistidsdanskere. *Varv*, 2: 60–64. | Popular science | Danish | DK | 1951–2000 | Critical | DK | Professional |
| Nordmann, 1936 | Nordmann, V. 1936. Menneskets Indvandring til Norden. *Danmarks Geologiske Undersøgelse*, 111: 27. | Scientific paper | Danish | DK | 1901–1950 | Pro | DK | Professional |
| Nunez, 2007 | Núñez, M. 2007. My Problem with Susiluola. *Fennoscandia archaeologica*, 24: 84–91. | Scientific paper | English | FIN | 2001–2015 | Critical | FIN | Professional |
| Nunez, 2008 | Núñez, M., 2008. Susiluola – The Problem Persists. *Fennoscandia archaeologica*, 25: 84–85. | Scientific paper | English | FIN | 2001–2015 | Critical | FIN | Professional |
| Pettitt & Niskanen, 2005 | Pettitt, P. & Niskanen, M. 2005. Neanderthals in Susilulola Cave, Finland, during the Last Interglacial Period? *Fennoscandia archaeologica*, 22: 79–87. | Scientific paper | English | GB | 2001–2015 | Critical | FIN | Professional |
| Pielenz, 1970 | Pielenz, O. K. 1970. Herkunft und Stellung der Baltischen Gruppe innerhalb des nordeuropäischen Altpaläolithikums. In: J. Filip, ed. *Actes du XIIe congrès international des sciences préhistoriques et protohistoriques, Prague 21–27 août 1966*. Prague: Institut d'archéologie de l'Académie tchécoslovaque des sciences. | Scientific paper | German | DE | 1951–2000 | Critical | DK | Professional |
| Pierre, 1973 | Pierre, 1973. Vor fritsvævende fortid. *Århus Stiftstidende*, 19 September1973. | Newspaper | Danish | DK | 1951–2000 | Critical | DK | Professional |
| Riede et al., 2012 | Riede, F., Egeland, C.P.. &, Nielsen, T.K. 2012. Nyt lys på gamle ben. *Skalk*, 5: 6–10. | Popular science | Danish | DK | 2001–2015 | Critical | DK | Professional |
| Riede et al., 2013 | Riede, F., Egeland, C.P., Nielsen, T.K., Larsen, N.K., Odgaard, B. & Kjærgaard, P.C. 2013. Dådyrknoglerne fra Hollerup. *Aarbøger for Nordisk oldkyndighed og Historie*, 2011–2012: 7–32. | DK yearbook | Danish | DK | 2001–2015 | Critical | DK | Professional |
| Rust, 1959 | Rust, A. 1959. Om den tidligste menneskelige bosættelse i Nordeuropa. *Naturens Verden*, Marts 1959: 88–95. | Popular science | Danish | DE | 1951–2000 | Pro | DK | Autodidact |
| Schroeder, 2000 | Schrøder, N. 2000. Spor af fladpander i Danmark eller arkæologiens flyvende tallerkner? *Arkæologi for alle*, 2: 18–20. | Popular science | Danish | DK | 1951–2000 | Critical | DK | Professional |
| Schulz & Rostedt, 2008 | Schulz, H.-P. & Rostedt, T. 2008. Debating Susiluola – Some Commentary. *Fennoscandia archaeologica,* 25: 73–82. | Scientific paper | English | FIN | 2001–2015 | Pro | FIN | Professional |
| Schulz, 2002 | Schulz, H.-P. 2002. The Lithic Industry from Layers IV–V, Susiluola Cave, Western Finland, Dated to the Eemian Interglacial. *Préhistoire Européenne*,16/17: 43–56. | Scientific paper | English | FIN | 2001–2015 | Pro | FIN | Professional |
| Schulz, 2007 | Schulz, H.-P. 2007. Artefact – Geofact Analysis of the Lithic Material from the Susiluala Cave. *Fennoscandia archaeologica*, 24: 64–75. | Scientific paper | English | FIN | 2001–2015 | Pro | FIN | Professional |
| Schulz, 2010 | Schulz, H.-P. 2010. The Susiluola Cave Site in Western Finland – Evidence of the Northernmost Middle Palaeolithic Settlement. Europe. In: J.M. Burdukiewicz & A. Wisniewski, eds. *Middle Palaeolithic Human Activity and Palaeoecology: New Discoveries and Ideas.* Wroclaw: University of Wroclaw, pp. 47–67. | Scientific paper | English | FIN | 2001–2015 | Pro | FIN | Professional |
| Schulz et al., 2002 | Schulz, H.-P., Eriksson, B., Hirvas, H., Huhta, P., Jungner, H., Purhonen, P., Ukkonen P. & Rankama, T. 2002. Excavations at Susiluola Cave. *Suomen Museo*, 2002, 5–45. | Scientific paper | English | FIN | 2001–2015 | Pro | FIN | Professional |
| Schulz et al., 2010 | Schulz, H.-P., Hirvas, H.; Huhta, P., Moisanen, M. & Rostedt, T. 2010. A New Contribution to the Neanderthal Discussion – Excavation Results from the Susiluola Cave Site in Western Finland. *Germania*, 88, 1–55. | Scientific paper | English | FIN | 2001–2015 | Pro | FIN | Professional |
| Silvanus, 1974 | Silvanus, 1973. Jubilæum for en milepæl angående vor fortid, en bog af konsul Eli Jepsen om hans fund fra danskere før istiderne. Jyllands-Posten, 7 October 1972. | Newspaper | Danish | DK | 1951–2000 | Critical | DK | Unknown |
| Stevnhoved, 1992 | Stevnhoved, S. 1992. Løsfunden palæolithisk flint – en varm kartoffel i dansk arkæologi. *Archäologie in Schleswig/Arkæologi i Slesvig*, 1991: 71–73. | Popular science | Danish | DK | 1951–2000 | Critical | DK | Unknown |
| Troels-Smith, 1995 | Troels-Smith, J. 1995. Claudi-kiler, østersbanker og tidevand. In: H.H. Hansen & B. Aaby, eds. *Stavns Fjord – et natur– og kulturhistorisk forskningsområde på Samsø*. København: Nationalmuseet, pp. 59 ff. | Museum dissemination | Danish | DK | 1951–2000 | Critical | DK | Professional |
| Westerby, 1956a | Westerby, E. 1956. Nyt fra min grusgrav I–II. *Jyllands-Posten*, 8 and 9 January 1956. | Newspaper | Danish | DK | 1951–2000 | Pro | DK | Autodidact |
| Westerby, 1956b | Westerby, E. 1956. Foraarsnyheder fra Heidelberg. *Jyllands-Posten*, 23 April 1956. | Newspaper | Danish | DK | 1951–2000 | Pro | DK | Autodidact |

**3. Network characteristics**

**3a. Evaluation**

An evaluation of the complete network using the Gephi statistics package is summarized below (Table III). The network has 1328 nodes and 1859 edges. The average path length is 3.1587, which measures the average distance between all pairs of nodes. The longest graph distance between any two nodes in the graph is 6. The graph density is 0.001, meaning that it is incomplete in the sense that it does not contain all possible edges within the potential of the network. The average degree is 1.400, which identifies the average number of edges connected to any node. The in-degree range is between 1 and 20 and measures the number of edges entering the node (here identifying how many times a publication is cited) and the out-degree ranges from 0 to 230 and measures the number of edges exiting the node (here it identifies how many times a publication cites other work).

***Table III.*** *Descriptions and results of the Gephi statistics used to evaluate the network.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Nodes = 1328, Edges = 1859, Directed graph | | | | | |
|  | **Average path length** | **Path diameter** | **Graph density** | **Degree** | **Modularity (resolution 5)** |
| **Description** | Average graph distance between all pairs of nodes | Longest graph distance between any two nodes in the network | This shows how close the network is to complete. A complete graph has all possible edges and density equal to 1 | The degree is the number of edges connected to any node. In 'directed' graphs the 'in-degree' is the number of edges entering the node and the 'out-degree' is the number of edges exiting the node | Measures the strength of division of the network and identifies inherent clusters. The modularity reflects the concentration of edges in each cluster compared to the random distribution of edges between any given nodes. The range of the modularity score is between -1 and 2, and is positive if the number of edges in a cluster exceeds that expected by mere chance. |
| **Values for the entire network** | 3.159 | 6 | 0.001 | Average degree: 1.400 | Modularity: 0.601 |
| In-degree range: 1 to 20 | Modularity w. resolution: 4.467 |
| Out-degree range: 1 to 230 | Number of clusters: 4 |

**3b. Clusters**

The Force Atlas layout algorithm allows for the identification of three meaningful author clusters in the complete network. These clusters are supported by the modularity function, which at a resolution of 5 (min. resolution = 1, max. resolution = 10) identifies four clusters which are identical to the results of the Force Atlas, including the separation of Hartz (1909) as an independent cluster (Table III). To better understand the nature of the clusters, we added information on the national relationship of the first author as an attribute to the primary nodes. This shows that the national relationship of the first author is in good agreement with the clusters, suggesting that this it is a factor shaping the clusters. In this context, national relationship reflects where the first author is based at the time of publication (e.g. university or employment), and is therefore not equivalent to the author nationality and regional focus (although they are highly similar in practice).

The Norwegian publications, although they are comparatively few, cluster in the top left of the graph (main article, Figure 3, cluster a) together with the review of the occupation of Denmark by Nordmann (1936). The Danish studies form the largest cluster (main article, Figure 3, cluster b) and group in the central part of the graph. The Finnish studies form a tight cluster at the bottom right of the graph (main article, Figure 3, cluster c).

Interestingly, there are a few publications that are less integrated or even completely detached from the main network/clusters, for example Rust (1959), which is neither cited nor cites any publications. It was included as a primary article in the dataset because it discusses a proposed Eemian site in Denmark (Ejby Klint). However, it has not had any significant role in the field given its lack of citations.

**3c.Citation ranking**

The primary publications in the dataset (see Table II) are cited a different amount of times by the other articles in the dataset (the size of the node in Figure 3 in the main text also reflects this; larger = cited more often). The top ten most cited articles are listed below (Table IV). The most cited article is Møhl-Hansen (1955), which proposes that marrow was extracted by Neanderthals from fallow deer bones (*Dama dama*) at Hollerup in Denmark (in-degree = 18). The second-most cited is Becker (1971), arguing for the authenticity of two Middle Palaeolithic handaxes found in Denmark (in-degree = 15). The ten most cited articles deal with the Danish and Finnish areas respectively, and in the latter instance specifically with the Susiluola Cave. The publications concerning the Danish area are all older studies from between 1935 and 1982, whereas the Finnish publications are all recent and date to between 2002 and 2005. The fourth-most cited source is the ‘Reallexicon’ dictionary, but it is in fact the result of only four authors or articles (Ekholm, 1925, 1929; Bjørn, 1928; Bøe & Nummedal, 1936). Because various subsections of the dictionary were referred to with different subtitles, they were listed as separate citations in the database when they should have been registered as the same source, thus causing this bias. Except for the Reallexicon, all the most cited articles are included here as primary publications.

Concerning the impact of Steensby’s ‘noble Neanderthal ancestry’ hypothesis discussed in the article, note that his two publications of 1908 and 1911 have only received three and two citations in the current dataset respectively, indicating little overall impact of this work on subsequent archaeological research. This most probably reflects how these early national anthropometric agendas were largely abandoned in the second half of the twentieth century.

***Table IV****. List of the ten most cited publications in the network in descending order (in-degree) and the number of papers they cite (out-degree).*

|  |  |  |  |
| --- | --- | --- | --- |
| **Node** | **Article** | **In-degree (cited)** | **Out-degree (cited)** |
| Møhl-Hansen, 1955 | Første sikre spor af mennesker fra interglacialtid i Denmark. Marvspaltede knogler fra diatoméjorden ved Hollerup. *Aarbøger for nordisk Oldkyndighed og Historie 1954*: 101–26. | 18 | 6 |
| Becker, 1971 | Istidsmandens Redskaber. *Skalk,* 4: 3–7. | 15 | 4 |
| Schulz et al .,2002 | Excavations at Susiluola Cave. *Suomen Museo* 2002: 5–45. | 14 | 69 |
| Reallexicon | *Reallexikon der Vorgeschichte*. Berlin: Walter de Gruyter. | 11 | 0 |
| Madsen, 1963 | Primitiv flintkultur ved Isefjord. *Årbøger for nordisk Oldkyndighed og Historie,* 1962: 79–93. | 10 | 19 |
| Pettitt & Niskanen, 2005 | Neanderthals in Susilulola Cave, Finland, during the Last Interglacial Period? *Fennoscandia archaeologica,* 22: 79–87. | 10 | 27 |
| Schulz, 2002 | The Lithic Industry from Layers IV–V, Susiluola Cave, Western Finland, Dated to the Eemian Interglacial. *Préhistoire Européenne,* 16–17: 43–56. | 10 | 18 |
| Glob, 1972 | Farlig flint. *Skalk*: 18–20. | 9 | 3 |
| Grote & Jacobsen, 1982 | Der Faustkeil vom Karskov-Kliff auf Langeland (Dänemark). *Archäologisches Korrespondenzblatt,* 12: 281–85. | 9 | 26 |
| Mathiassen, 1935a | Primitive flintredskaber fra Samsø. *Aarbøger for nordisk oldkyndighed og historie,* 1934: 39–54. | 9 | 13 |
| Westerby, 1956 | Nyt fra min grusgrav I-II. *Jyllands-Posten,* 8 and 9 January. | 9 | 1 |