Exploring the composition of lithic assemblages in Mesolithic south-eastern Norway

Isak Roalkvam1,✉

27 March, 2021

1 University of Oslo

✉ Correspondence: [Isak Roalkvam <[isak.roalkvam@iakh.uio.no](mailto:isak.roalkvam@iakh.uio.no)>](mailto:isak.roalkvam@iakh.uio.no)

# 1 Plots

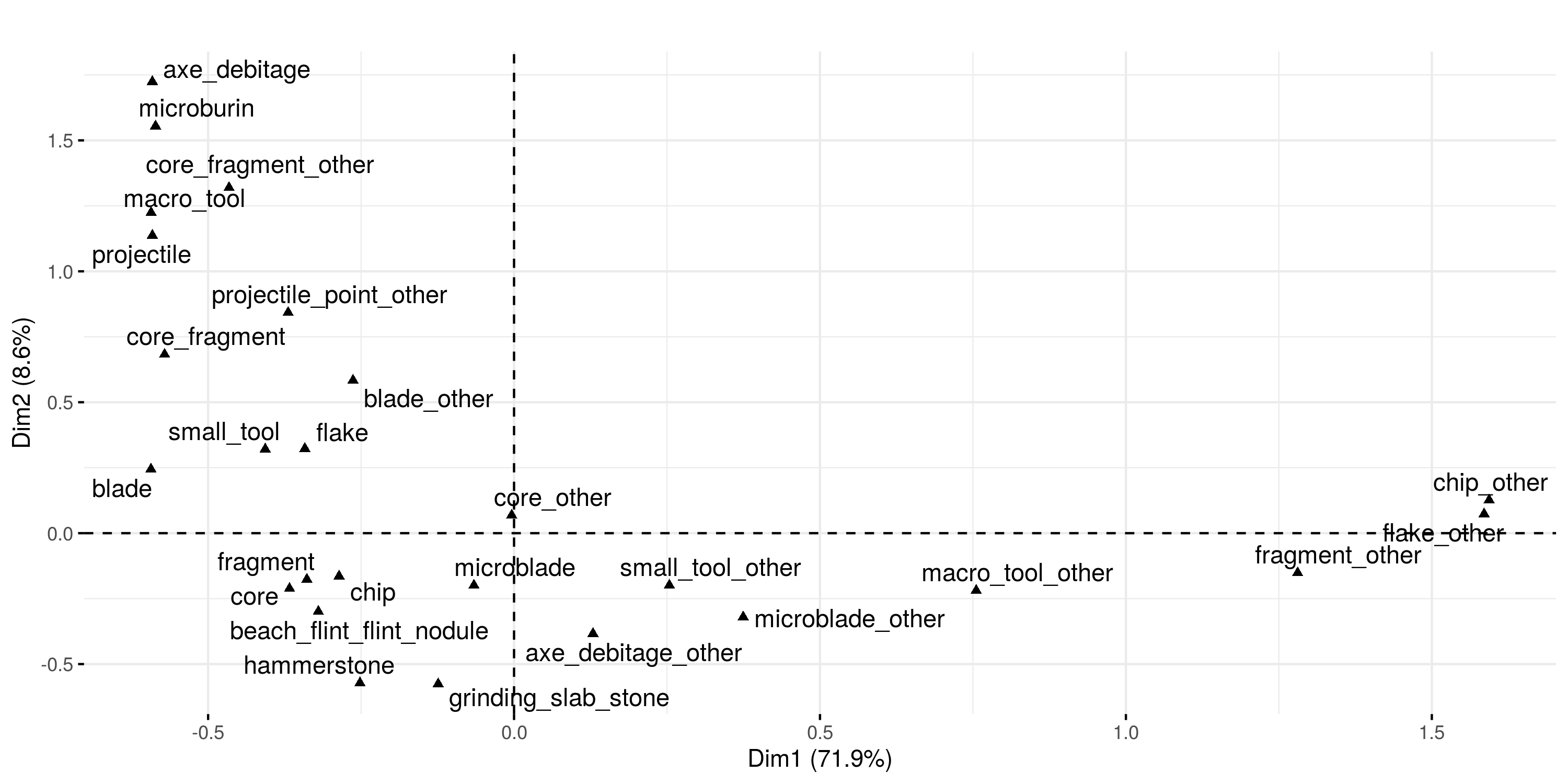
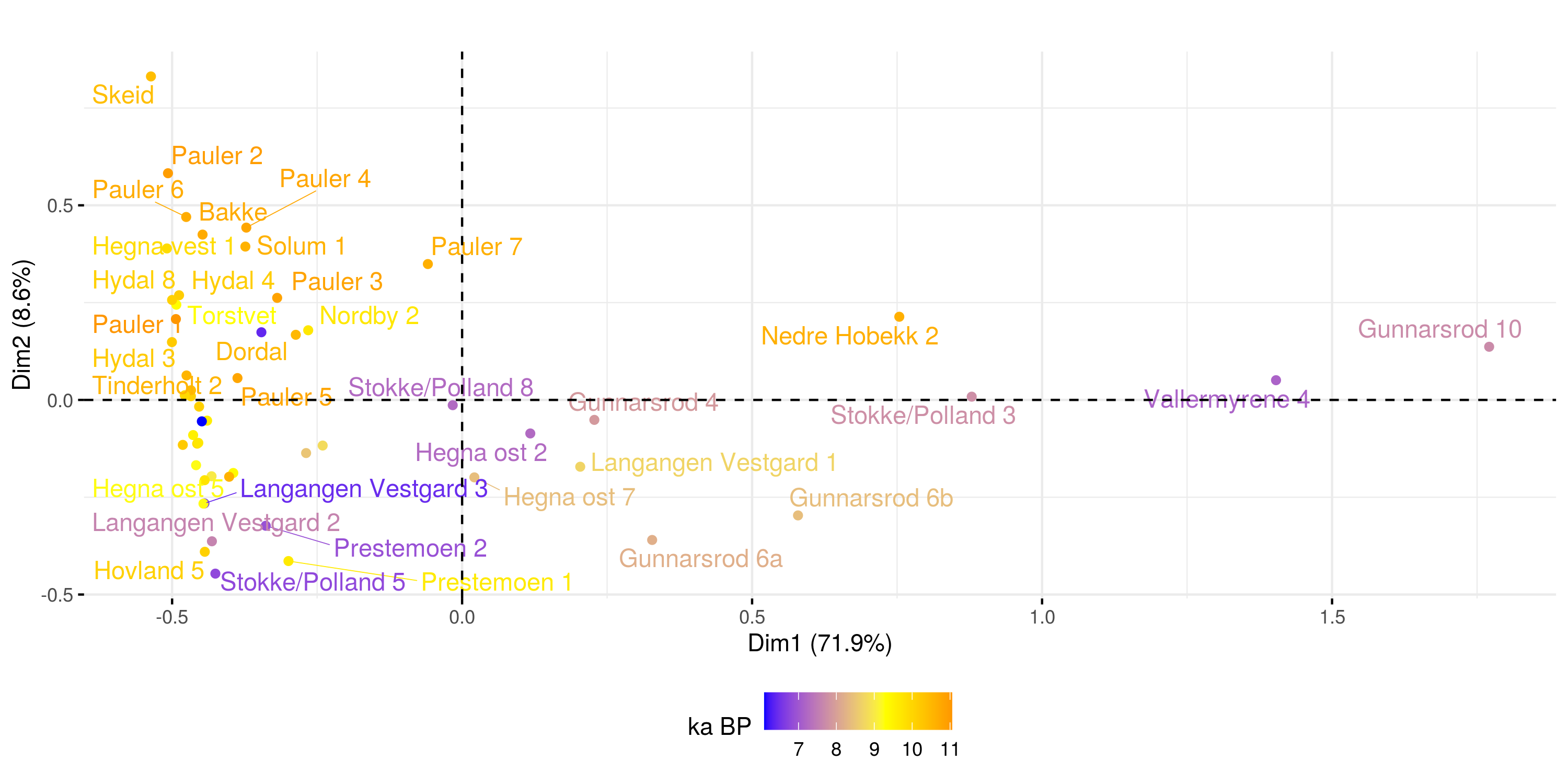


Figure ?? displays a correspondence analysis using the lithic count data. While there is a considerable degree of mixing, and no clear-cut boundaries can be readily drawn, the general impression from the plots is still that a chronological dimension is associated with a relatively large amount of the patterning associated with the data. This follows from the fact that the two dimensions are separating the sites where This is combined with the fact that these two dimensions account for as much as 80.54 % of the inertia in the data, which is fairly high. The earliest sites tend to be located in the upper right corner of plot A, with increasingly younger sites being pulled towards the bottom, along the second dimension. The sites from the later parts of the Mesolithic are drawn out along the first dimension of the plot.

The earliest sites are characterised by microburins, projectiles, macro tools and associated debitage in flint. It is also interesting that these sites to larger extent are characerised by core fragments, both in flint and non-flint materials, while complete cores appear to be a trait more defining of assemblages with later dates. The non-flint material on the earliest sites also appears to be centered around the production of projectiles, as both the projectiles themselves and non-flint blades appear to these sites.

The first dimension of the plot is mainly defined by macro tools and associated debitage in non-flint materials that stand in contrast to more flint dominated assemblages and non-flint projectiles. While the outer end of the first dimensions is dominated by later Mesolithic sites such as Stokke/Polland 3, Vallermyrene 4 and Gunnarsrød 10, which are all associated with axe production in non-flint materials, the later Mesolithic sites occur along the entire dimension, indicating that while these axe production sites are a feature of the later Mesolithic, there is marked variation among these later sites. In addition, Nedre Hobekk 2 represents a somewhat curious case in that its assemblage is dominated by axe production in metarhyolite. The use of metarhyolite is typically seen as a feature of the Middle Mesolithic, but is evidently not as prominent a part of the assemblages on the sites treated here, with the exception of for Nedre Hobekk 2. T

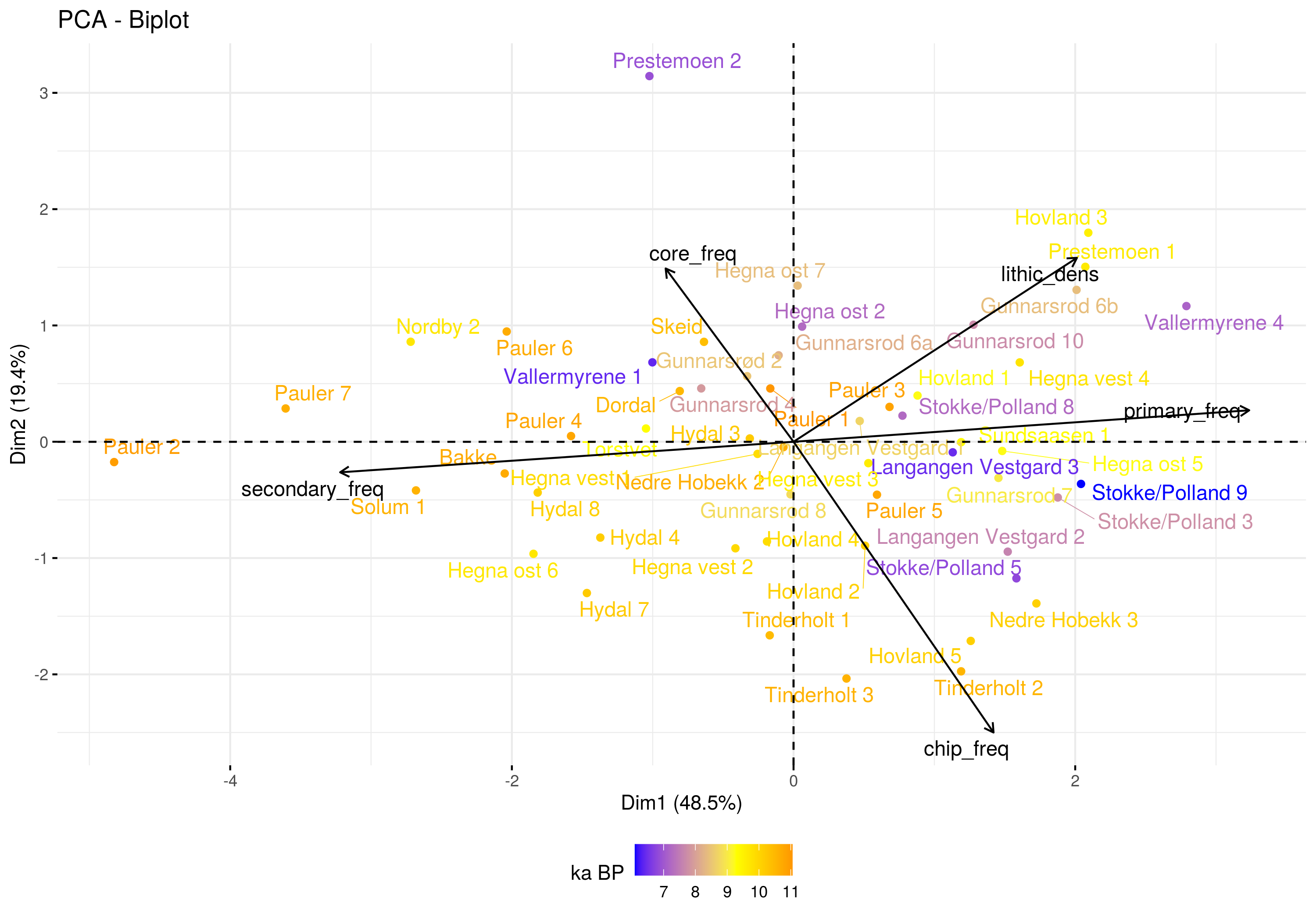


Figure 1.3: PCA.

Figure 1.3 displays a principle components analysis using variations of the continuous measures for degree of mobility as operationalised by Bicho and Cascalheira (2020). While the investigation performed by Bicho and Cascalheira (2020) indicates that the relative frequency of chips, cores, and blanks might be more sensitive to mobility patterns than the volumetric density of lithics, and the fequency of retouched artefacts, these last dimensions are capturing more variation in the dataset presented here. If frequency of secondarily worked artefacts is taken as a proxy for mobility, these findings would consequently be more in line with previous research into Mesolithic Norway, indicating that earlier sites are associated with higher degree of mobility that sites from later phases.

# 2 References

Bicho, N., Cascalheira, J., 2020. Use of lithic assemblages for the definition of short-term occupations in hunter-gatherer prehistory, in: Cascalheira, J., Picin, A. (Eds.),. Springer, Cham, p. 1938. <https://doi.org/10.1007/978-3-030-27403-0₂>

### 2.0.1 Colophon

This report was generated on 2021-03-27 15:03:46 using the following computational environment and dependencies:

#> ─ Session info ───────────────────────────────────────────────────────────────  
#> setting value   
#> version R version 4.0.4 (2021-02-15)  
#> os Linux Mint 19.3   
#> system x86\_64, linux-gnu   
#> ui X11   
#> language en\_US   
#> collate en\_US.UTF-8   
#> ctype en\_US.UTF-8   
#> tz Europe/Oslo   
#> date 2021-03-27   
#>   
#> ─ Packages ───────────────────────────────────────────────────────────────────  
#> package \* version date lib source   
#> abind 1.4-5 2016-07-21 [1] CRAN (R 4.0.3)  
#> assertthat 0.2.1 2019-03-21 [1] CRAN (R 4.0.3)  
#> backports 1.2.0 2020-11-02 [1] CRAN (R 4.0.3)  
#> bookdown 0.21 2020-10-13 [1] CRAN (R 4.0.3)  
#> broom 0.7.3 2020-12-16 [1] CRAN (R 4.0.3)  
#> callr 3.5.1 2020-10-13 [1] CRAN (R 4.0.3)  
#> car 3.0-10 2020-09-29 [1] CRAN (R 4.0.3)  
#> carData 3.0-4 2020-05-22 [1] CRAN (R 4.0.3)  
#> cellranger 1.1.0 2016-07-27 [1] CRAN (R 4.0.3)  
#> cli 2.2.0 2020-11-20 [1] CRAN (R 4.0.3)  
#> cluster 2.1.1 2021-02-14 [4] CRAN (R 4.0.3)  
#> colorspace 1.4-1 2019-03-18 [1] CRAN (R 4.0.3)  
#> crayon 1.3.4 2017-09-16 [1] CRAN (R 4.0.3)  
#> curl 4.3 2019-12-02 [1] CRAN (R 4.0.3)  
#> data.table 1.13.4 2020-12-08 [1] CRAN (R 4.0.3)  
#> DBI 1.1.0 2019-12-15 [1] CRAN (R 4.0.3)  
#> dbplyr 2.0.0 2020-11-03 [1] CRAN (R 4.0.3)  
#> desc 1.2.0 2018-05-01 [1] CRAN (R 4.0.3)  
#> devtools 2.3.2 2020-09-18 [1] CRAN (R 4.0.3)  
#> digest 0.6.27 2020-10-24 [1] CRAN (R 4.0.3)  
#> dplyr \* 1.0.2 2020-08-18 [1] CRAN (R 4.0.3)  
#> DT 0.16 2020-10-13 [1] CRAN (R 4.0.3)  
#> ellipsis 0.3.1 2020-05-15 [1] CRAN (R 4.0.3)  
#> evaluate 0.14 2019-05-28 [1] CRAN (R 4.0.3)  
#> factoextra \* 1.0.7 2020-04-01 [1] CRAN (R 4.0.3)  
#> FactoMineR \* 2.4 2020-12-11 [1] CRAN (R 4.0.3)  
#> fansi 0.4.1 2020-01-08 [1] CRAN (R 4.0.3)  
#> farver 2.0.3 2020-01-16 [1] CRAN (R 4.0.3)  
#> flashClust 1.01-2 2012-08-21 [1] CRAN (R 4.0.3)  
#> forcats \* 0.5.0 2020-03-01 [1] CRAN (R 4.0.3)  
#> foreign 0.8-81 2020-12-22 [4] CRAN (R 4.0.3)  
#> fs 1.5.0 2020-07-31 [1] CRAN (R 4.0.3)  
#> generics 0.1.0 2020-10-31 [1] CRAN (R 4.0.3)  
#> ggplot2 \* 3.3.2 2020-06-19 [1] CRAN (R 4.0.3)  
#> ggpubr 0.4.0 2020-06-27 [1] CRAN (R 4.0.3)  
#> ggrepel 0.9.1 2021-01-15 [1] CRAN (R 4.0.3)  
#> ggsignif 0.6.0 2019-08-08 [1] CRAN (R 4.0.3)  
#> glue 1.4.2 2020-08-27 [1] CRAN (R 4.0.3)  
#> gtable 0.3.0 2019-03-25 [1] CRAN (R 4.0.3)  
#> haven 2.3.1 2020-06-01 [1] CRAN (R 4.0.3)  
#> here 1.0.0 2020-11-15 [1] CRAN (R 4.0.3)  
#> highr 0.8 2019-03-20 [1] CRAN (R 4.0.3)  
#> hms 0.5.3 2020-01-08 [1] CRAN (R 4.0.3)  
#> htmltools 0.5.0 2020-06-16 [1] CRAN (R 4.0.3)  
#> htmlwidgets 1.5.2 2020-10-03 [1] CRAN (R 4.0.3)  
#> httr 1.4.2 2020-07-20 [1] CRAN (R 4.0.3)  
#> jsonlite 1.7.1 2020-09-07 [1] CRAN (R 4.0.3)  
#> knitr 1.30 2020-09-22 [1] CRAN (R 4.0.3)  
#> labeling 0.4.2 2020-10-20 [1] CRAN (R 4.0.3)  
#> lattice 0.20-41 2020-04-02 [1] CRAN (R 4.0.3)  
#> leaps 3.1 2020-01-16 [1] CRAN (R 4.0.3)  
#> lifecycle 0.2.0 2020-03-06 [1] CRAN (R 4.0.3)  
#> lubridate 1.7.9.2 2020-11-13 [1] CRAN (R 4.0.3)  
#> magrittr 2.0.1 2020-11-17 [1] CRAN (R 4.0.3)  
#> MASS 7.3-53.1 2021-02-12 [4] CRAN (R 4.0.3)  
#> memoise 1.1.0 2017-04-21 [1] CRAN (R 4.0.3)  
#> modelr 0.1.8 2020-05-19 [1] CRAN (R 4.0.3)  
#> munsell 0.5.0 2018-06-12 [1] CRAN (R 4.0.3)  
#> openxlsx 4.2.3 2020-10-27 [1] CRAN (R 4.0.3)  
#> pillar 1.4.7 2020-11-20 [1] CRAN (R 4.0.3)  
#> pkgbuild 1.1.0 2020-07-13 [1] CRAN (R 4.0.3)  
#> pkgconfig 2.0.3 2019-09-22 [1] CRAN (R 4.0.3)  
#> pkgload 1.1.0 2020-05-29 [1] CRAN (R 4.0.3)  
#> prettyunits 1.1.1 2020-01-24 [1] CRAN (R 4.0.3)  
#> processx 3.4.4 2020-09-03 [1] CRAN (R 4.0.3)  
#> ps 1.4.0 2020-10-07 [1] CRAN (R 4.0.3)  
#> purrr \* 0.3.4 2020-04-17 [1] CRAN (R 4.0.3)  
#> R6 2.5.0 2020-10-28 [1] CRAN (R 4.0.3)  
#> Rcpp 1.0.5 2020-07-06 [1] CRAN (R 4.0.3)  
#> readr \* 1.4.0 2020-10-05 [1] CRAN (R 4.0.3)  
#> readxl 1.3.1 2019-03-13 [1] CRAN (R 4.0.3)  
#> remotes 2.2.0 2020-07-21 [1] CRAN (R 4.0.3)  
#> reprex 0.3.0 2019-05-16 [1] CRAN (R 4.0.3)  
#> rio 0.5.26 2021-03-01 [1] CRAN (R 4.0.4)  
#> rlang 0.4.10 2020-12-30 [1] CRAN (R 4.0.4)  
#> rmarkdown 2.5 2020-10-21 [1] CRAN (R 4.0.3)  
#> rprojroot 2.0.2 2020-11-15 [1] CRAN (R 4.0.3)  
#> rstatix 0.6.0 2020-06-18 [1] CRAN (R 4.0.3)  
#> rstudioapi 0.13 2020-11-12 [1] CRAN (R 4.0.3)  
#> rvest 0.3.6 2020-07-25 [1] CRAN (R 4.0.3)  
#> scales 1.1.1 2020-05-11 [1] CRAN (R 4.0.3)  
#> scatterplot3d 0.3-41 2018-03-14 [1] CRAN (R 4.0.3)  
#> sessioninfo 1.1.1 2018-11-05 [1] CRAN (R 4.0.3)  
#> stringi 1.5.3 2020-09-09 [1] CRAN (R 4.0.3)  
#> stringr \* 1.4.0 2019-02-10 [1] CRAN (R 4.0.3)  
#> testthat 3.0.0 2020-10-31 [1] CRAN (R 4.0.3)  
#> tibble \* 3.0.4 2020-10-12 [1] CRAN (R 4.0.3)  
#> tidyr \* 1.1.2 2020-08-27 [1] CRAN (R 4.0.3)  
#> tidyselect 1.1.0 2020-05-11 [1] CRAN (R 4.0.3)  
#> tidyverse \* 1.3.0 2019-11-21 [1] CRAN (R 4.0.3)  
#> usethis 2.0.1 2021-02-10 [1] CRAN (R 4.0.4)  
#> vctrs 0.3.5 2020-11-17 [1] CRAN (R 4.0.3)  
#> withr 2.3.0 2020-09-22 [1] CRAN (R 4.0.3)  
#> xfun 0.19 2020-10-30 [1] CRAN (R 4.0.3)  
#> xml2 1.3.2 2020-04-23 [1] CRAN (R 4.0.3)  
#> yaml 2.2.1 2020-02-01 [1] CRAN (R 4.0.3)  
#> zip 2.1.1 2020-08-27 [1] CRAN (R 4.0.3)  
#>   
#> [1] /home/isak/R/x86\_64-pc-linux-gnu-library/4.0  
#> [2] /usr/local/lib/R/site-library  
#> [3] /usr/lib/R/site-library  
#> [4] /usr/lib/R/library

The current Git commit details are:

#> Local: master /home/isak/phd/dialpast\_r/dialpastrepository  
#> Remote: master @ origin (https://github.com/isakro/dialpastrepository.git)  
#> Head: [21b64f4] 2021-03-26: Removed sites with artefact count < 100 from the analysis