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Transition
from Swifterbant to Funnelbeaker – A chronological model

In the area of the northern Netherlands and northwestern Germany, the introduction of the Neolithic is delayed for about two millennia compared to the southern neighbour areas.

INTRODUCTION

The transition from the late Swifterbant culture to the first appearance of the Funnelbeaker Groups (TRB) in the eastern Netherlands, the western part of Lower Saxony to the northern Westphalia raises numerous questions, from cultural discontinuities to gradual transitions.
This process describes the transformation from the Subneolithic of hunter-gatherer societies to a fully neolithic society in north-western Europe, which can be understood here (delayed to the Middle and South German region) as the Early Neolithic. The Swifterbant phenomenon (approx. 5000–4000 BC) is proofed to perform a gradual integration of Neolithic features, like the introduction of ceramics, animal husbandry and horticulture. The Early Neolithic in this area marks a technological and socio-cultural transition zone, which we can identify around 4000–3500 BC. Although the first megalithic buildings of the TRB West Group were erected around 3600 BC, Swifterbant sites and findings can still be traced.

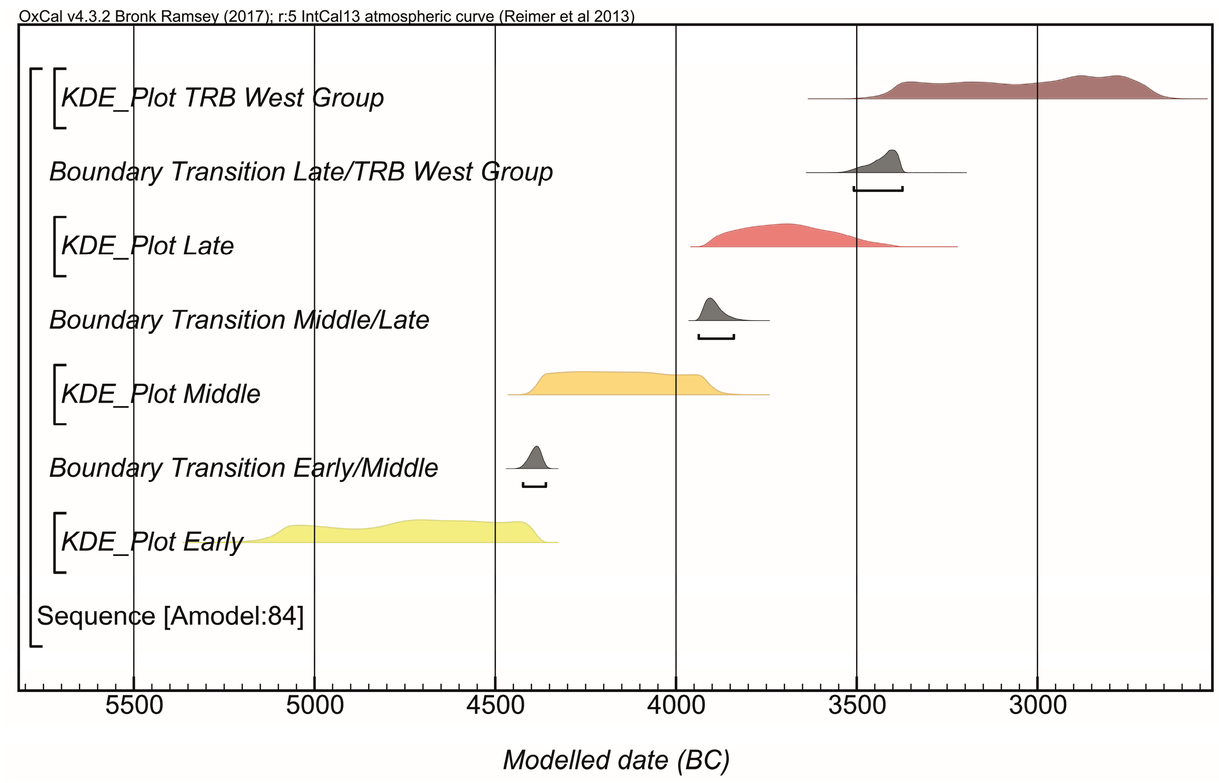
MAIN AIM

Many studies prove a hiatus between these sections, which is based on a research-historical but also a conservation-related problem. How this gap looks like, is to be checked in the following on the basis the absolute chronological data. Further questions and research fields can be raised on the basis of this dataset. With this contribution we attempt to generate a chronological model. The aim is to compare the numerous available radiocarbon data in one overview. It is a model to visualize discontinuities and overlaps of the currently available data:
1. What are the transitions of the C14 data in this study area?
2. How accurate is the model according to the calibration scheme in relation to the chronological scheme?
3. What are the outlook and possibilities for future models?

METHOD

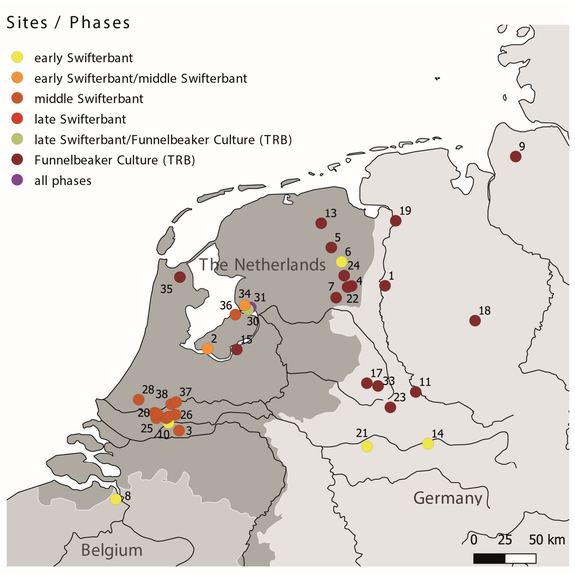
We adopted a Bayesian modeling approach, which is applied to a wide region, using the program OxCal 4.3 (Buck et al. 1996; Bronk Ramsey 2009a). We combined measurements with archaeological information relating to stratigraphical contexts, associated cultural material, and information on the burial rites, to narrow the time intervals for the calibrated ranges.
In a first important step, we reviewed critically the 177 samples to determine the quality and reliability of the sample contexts. For each site with available radiocarbon results and a suitable sequence, we constructed a multiphased model with phase boundaries. To calculate the duration of each Phase we used a *Sequence-Phase* model in OxCal. For separating the phases from each other *Transition boundaries* where take into the Model. To visualize each Phase within the model *Kernal Density Plots* where integrated.

Fig. 1 Modeled duration for each of the four subdivisions (n=177; main references: Hinz et al. 2012 (RADON: radon.ufg.uni-kiel.de); Lanting/van der Plicht 1999/2000; Raemaekers 2003; 2013; Menne 2018).



Model agreement is presented as an index to assess how well all measurements agree together within the specified parameters. An acceptable model should display an Amodel value of no less than 60 % (Bronk Ramsey 2009b). The model for Swifterbant/TRB has an Amodel of 83.8 % and Aoverall 90.9 %.

Fig. 2 Provenance of the modelled radiocarbon dates, sites colors after affiliation to the modelled phases.

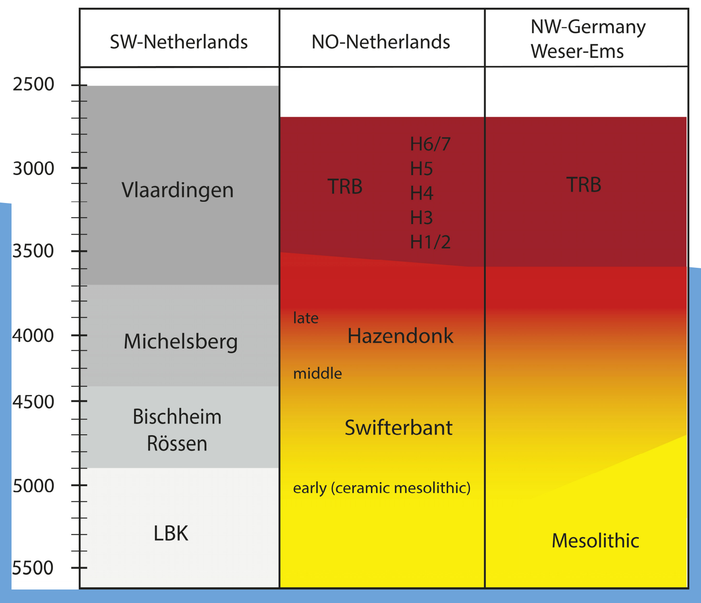


1. Emmeln 2, 2. Almere-Hoge Vaart, 3. Almkerk, 4. Emmen-Angelslo, 5. Anloo, 6. Bronneger, 7. Dalen-Huidsbergveld, 8. Doel-Deurganckdok, 9. Flögeln, 10. The Harinxveld sites: Giessendamm, Polderweg, de Bruin, 11. Gittrup, 12. Glimmen Glimmer Es, 13. Groningen Wischoterdiep, 14. Hamm, 15. Harderwijk, 16. Hazendonk, 17. The Heek sites: Ammerter Mark, Averbeck, 18. Hunte 1, 19. Leer-Westhammrich, 20. Lekkerkerk, 21. Marl-Sickmühle, 22. Noordbarge, 23. Nottuln, 24. Odoorn-D32, 25. Oud Alblas, 26. Polder Over-Slingeland, 27. Rommertsdonk, 28. Rotterdam-Berschenhoek, 29. Schaikse Donk, 30. Schokker-haven, 31. Schokland, 32. Schoonenburgse Heuvel, 33. Schöppingen-Haidberg, 34. Nagele J112, 35. Slootdorp-Kreukelhof, 36. The Swifterbant sites: S1, S2, S3, S5, S6, 37. Zijdeweg 2, 38. Zevender Hoogte

Fig. 3 Absolute period and transition duration after Fig. 1.

Period	cal BC 95.4%
TRB West Group	3491 – 2641
Transition Late Swifterbant / TRB	3509 – 3374
Late Swifterbant	3917 – 3402
Transition Middle / Late Swifterbant	3938 – 3841
Middle Swifterbant	4416 – 3851
Transition Early / Middle Swifterbant	4424 – 4361
Early Swifterbant	5183 – 4373

Fig. 4 New schematic chronological table of Swifterbant and TRB West Group development in Northwest Germany and Northeast Netherlands.



RESULTS

The result was to model the absolute dating of the different phases of the Swifterbant phenomenon with a Bayesian model for the first time. The new phases show remarkable differences in the traditional transitions of Swifterbant phases (Fig. 3). The transition from the ceramic Mesolithic Swifterbant to the fully Neolithic TRB is modelled between 3500–3370 cal BC. In the future, a broader database with stratigraphic classification of the finds is important for a more detailed modelling. Whether there is a similar homogeneity during the Swifterbant period and whether there is a hiatus or a continuity from Swifterbant to TRB West Group is not yet clear.

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