

The period from the end of the 3<sup>rd</sup> century BC to the turn of the Era is a time of great cultural and development transformations in the lands of today's Poland (as well as in all of central and northern Europe), leading to the formation of new cultural groups (perhaps also ethnic groups). These transformations were closely bound with the influence of the Celtic world and the La Tène culture; in the 1<sup>st</sup> century BC, the influence of Rome became increasingly strong. The placement in time of all these phenomena, however, is based only on relative dating, within the framework of individual chronological phases and their correlation with the phases of relative chronology in the La Tène world. For the Polish lands, there are virtually no absolute dates. In the Celtic zone, especially in Gaul in the 2<sup>nd</sup> and 1<sup>st</sup> centuries BC, chronology is instead based on the stratigraphy of the various layers on open settlements and oppida, dated either by absolute methods or by the presence or absence of Mediterranean pottery (mainly amphorae) and coins. The earlier system of relative dating has been radically modified in recent decades, and its synchronization with the chronological scheme in central Europe has become increasingly problematic.

The aim of the project is to create effective tools for developing a new model for correlating these two chronological systems. It will be based on the absolute dating of artefacts from the territory of Poland (primarily brooches), distinctive for the different phases of relative chronology. The basis for this is to obtain as large a series of absolute dates as possible for grave sets from this cultural zone.

Modern methods of radiocarbon isotopic dating (<sup>14</sup>C AMS), supported by calibration curves, as well as advanced methods of statistical modeling (the Bayesian modeling), when analyzed large sample series, provide a high probability of obtaining precise dates with a small error interval. Cremated bones (human and animal) have been successfully used for such research for some time. For the project 130 grave complexes from Poland, from the zone of the Przeworsk culture, and from Pomerania were selected for study. They represent all the chronological phases of the analyzed period. Each of these graves contains at least two specimens (mainly brooches), well dated within the phases of relative periodization. Also included all inventories with imported brooches that meet the above conditions. The initial stage of the work will be correspondence analysis of inventories of selected cemeteries based on a more detailed classification than generally used. This will enable to separate chronological groups and create a chronological stratigraphy of the assemblages for analysis, which will already narrow the field of potential deviations in absolute dating. The materials for dating will be taken from cremated human bones; the baseline sample thus has a definite, short age, which again narrows the later results, and also avoids the so-called "old wood effect". For a large number of the cremated bones from the graves, two dates each will be made to verify reproducibility and accuracy; averaging the results will also make it possible to refine the dating of a particular grave.

The obtained series of dates will make it possible to correlate the system of relative chronology, functioning for the area of Poland, with the current system of periodization in the Celtic world, based on absolute dates. This will provide arguments for the discussion of whether the emergence of new cultural patterns, ideas, technological innovations, took place at the same rhythm as in the zone of the La Tène culture, or whether, however, one must reckon with a significant retardation in Central Europe. Using the chronological model used so far, in extreme cases the difference in dating of the same artefacts (for example, Nauheim-brooches, the key-form of the oppida horizon), and therefore cultural phenomena, is almost half a century. Relying on absolute dates will also be important in the context of the constantly undertaken and still debatable attempts to synchronize archaeological materials with historical occurrences known from written sources.