

# A Data-Centric Archaeological Research Methodology: Opportunities and Risks

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It is nowadays commonplace to consider the use and re-use of digital data as one of the pillars of archaeological research. The deposit of research data and the creation of aggregators such as [ARIADNEplus](#) in Europe and [tDAR](#) in the USA make available and searchable online very large catalogues of archaeological datasets – the former has now reached about two million items. Large thematic databases, also available on-line, as [ROAD](#) on human evolution with its more than 10,000 records, provide rich information on specific domains. Nevertheless, the information provided by these sources is still human-readable only, after a machine-made selection based on criteria defined by humans. The temptation of using more sophisticated technology is strong, but it must be cautiously analyzed. Counting the data made available by such sources adds up to big numbers, but it is uncertain if they may be considered [Big Data](#). Some argue that the blind application of Big Data techniques such as artificial intelligence or deep learning, so effective in many other fields, may lead to unpredictable and possibly misleading results when applied to archaeological data. On this regard there are enthusiastic but uncritical supporters as well as scholars expressing doubts that are not completely unjustified.

The lecture will discuss with examples why analyzing the impact of digital data on the archaeological research methodology cannot be avoided or further postponed, and which are the concerns that at present still limit an effective use of advanced digital technology to automatically process, extract and combine them to produce new knowledge, mostly based on machine actions where humans intervene only to use the results. This will hopefully pave the way to a critical and informed use of technology which is the foundation for a data-centric archaeological research methodology.

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