Belated Measures - the Reality of Digital Archaeological Archiving in Poland

Agnieszka Oniszczuk and Agnieszka Makowska

Summary

Archaeology in Poland, as in any other corner of the world, thrives on the application of digital technologies in fieldwork and subsequent analysis. Unfortunately, legal and administrative solutions have not been responsive enough to keep up with these changes.

This article summarises the reality of archaeological digital archiving in Poland, shaped by a legally determined focus on paper documentation and the decentralisation of the state heritage service. The practice of digital archaeological archiving is illustrated by the results of a survey carried out among archaeologists from provincial heritage offices. It has revealed that, while they struggle with a lack of adequate technical measures and skills, they also opt for increasing the significance and proportion of digital archaeological archives and realise what should be done for this Digital Dark Age to end.

On a more general level, the existence of digital documentation has already been recognised in laws on archiving and implementation of IT solutions. This article describes the actions taken at a national level to tackle these issues; namely, two state repositories: one for electronic documents and the other for digital resources of science and culture. It also presents current initiatives of the National Institute of Cultural Heritage in this regard.

1. The Archaeological Sector in Poland

Each year provincial heritage services in Poland, namely the Voivodeship Monuments Preservation Officers, issue *c.* 10,500 decisions regarding archaeological heritage and, based on the archives of the National Institute of Cultural Heritage, the number has been gradually increasing since at least 2009 (Oniszczuk 2018, 4a). About 90% of these decisions are first permits for carrying out archaeological fieldwork, most often issued for one season. (The remaining *c.* 10% are documents changing previously issued decisions. They have been excluded from the count because they do not affect the general character of the research.)

Around 97-98% of all the projects are development-led. Archaeological contractors in Poland compete, usually by the lowest price, and the market is dominated by private companies. In 2018 they carried out 95% of all the field research, compared to 3% done by museums and 1% by universities and the Institute of Archaeology and Ethnology of Polish Academy of Sciences. During the Covid-19 pandemic the situation has become even more extreme, because large developments preceded by excavations have continued as planned, whereas scientific university research, employing students as the workforce, have ceased completely.

According to data from 2013 collected within the DISCO project (Discovering Archaeologists of Europe), the number of professionally active archaeologists in Poland was estimated at 1004 (Liibert *et al.* 2014, 13). Of these, 78% were employed in various public institutions, i.e. academia (41%), museums, scientific foundations and state heritage institutions (Liibert *et al.* 2014, 20-21).

2. Legal Regulations

According to the law, the permanent storage place for the documentary and material archive is specified individually for each project in the permit to carry out archaeological research. Within three years of completing the fieldwork, the finds (after inventory and conservation) are transferred to the appointed museum or storage facility, based on the decision of the state heritage service. The documentation is archived by the respective Voivodeship Monuments Preservation Office (Oniszczuk 2019, 3). Obligatory elements of the documentary archive are listed in the regulation of the Minister of Culture, National Heritage and Sport regarding various works at monuments, including archaeological research (MKiDN 2018, appendix II). However, neither their content nor the required form, physical or digital, is specified.

A survey on the practice of archaeological archiving carried out for the purpose of this article in Voivodeship Monuments Preservation Offices has revealed that less than 40% of the respondents specify the required form of the documentary archive to archaeological contractors. Further results of the survey are discussed below (see Section 4).

3. Digital Archiving in Poland

Heritage law and related regulations in Poland (MKiDN 2018; MKiDN 2019; Poland 2003) fail to keep up with the application of more and more advanced technologies in archaeological fieldwork and subsequent analysis, but the existence of digital documentation has already been recognised in laws on archiving and implementation of IT solutions (Czerniak and Orszulak 2017, 13-19). Regulation of the National Framework for Interoperability lists 45 formats accepted by institutions carrying out public tasks (and eventually state archives) for: text, graphic, sound or audio-visual files as well as websites and metadata (Prezes Rady Ministrów 2017, załącznik no. 2). Another regulation determines required features of systems for electronic document management, but only with regard to public institutions, mostly administration. After ten years such documents have to be transferred to an appointed state archive (Czerniak and Orszulak 2017, 47-48). An appropriate system (Archiwum Dokumentów Elektronicznych, https://www.ade.gov.pl), enabling upload, searching and sharing files, has been launched.

Another repository, KRONIK@, is being created for digital resources of science and culture. The project, which was initiated in 2018, will end in 2021. The aim is to integrate all existing domain repositories by aggregating only metadata or metadata and files and provide a single access point to all the resources (https://www.gov.pl/web/cyfryzacja/kronik-krajowe-repozytorium-obiektow-nauki-i-kultury). In the context of existing recommendations for archaeological archiving (e.g. Perrin *et al.* 2014), it should be noted that so far there are no trusted, internationally certified, digital repositories in Poland. As a result, a large part of archaeological digital resources, especially source files, are permanently kept in repositories of individual institutions or by their creators. Needless to say, the latter means a lack of proper preservation, accessibility and reuse.

4. The Practice of Digital Archaeological Archiving

Current practice in digital archaeological archiving in Poland was surveyed on the basis of a short questionnaire distributed by the authors in the summer of 2020 among archaeologists - inspectors from the provincial heritage service (main offices and regional branches, 46 out of 49). The response was 43% and the following analysis is based on data from 14 out of 16 voivodeships (Polish provinces), see Figure 1.
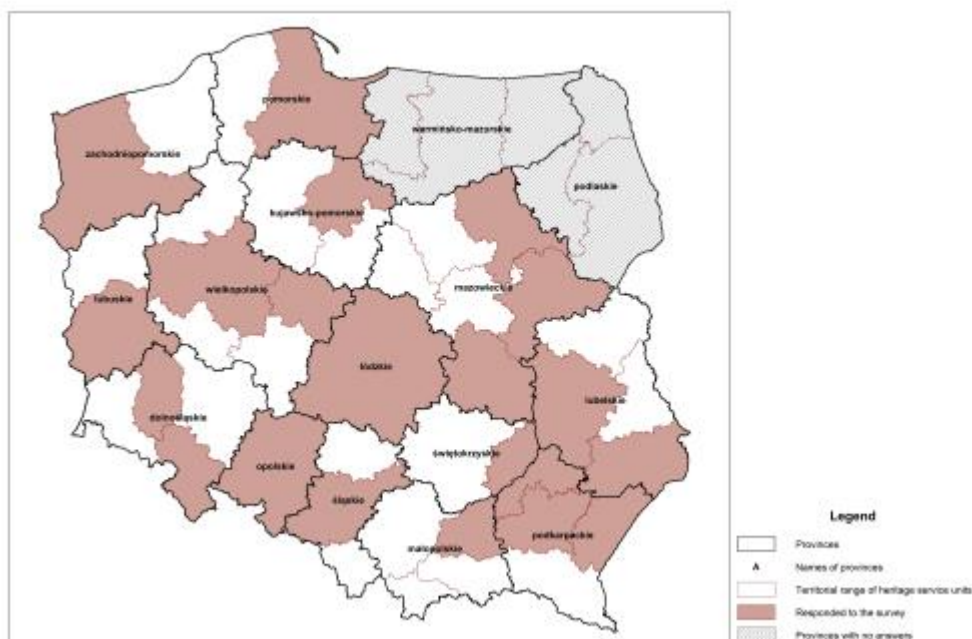
Figure 1: Territorial division of provincial heritage service in Poland, i.e. Voivodeship Monuments Preservation Offices and their regional branches, and responses to the survey carried by the authors in 2020 (by A. Oniszczuk, ©National Institute of Cultural Heritage)

We have already mentioned that the required form of archaeological documentation is not specified by about two-thirds of the respondents. One office (4.5%) accepts archaeological paper documentation only, because they have neither a repository nor the appropriate software. The respondent also mentioned binding legal provisions. The latter may result from the obligatory form of the register and inventory of monuments still being paper, or the fact that digital solutions in archiving are only being implemented now. No office accepts only digital documentation, and almost every one receives both forms of archaeological documentary archives (95.5%, 21 offices), even if four of them would rather stick solely to paper.

Asked about their preferences as to the content of the paper archives, the respondents mentioned most often text elements: preliminary reports (handed over usually three weeks after the fieldwork is completed), scientific studies of the results, inventory site sheets, inventories or just the entire text documentation (Figure 2, top). The two most popular answers (reports, plans and drawings) make up the most basic documentation that would probably be the easiest to flick through for quick reference. As to digital preferences, almost two-thirds of respondents mentioned graphic elements, i.e. photographs, maps, site plans and drawings (Figure 2, bottom).
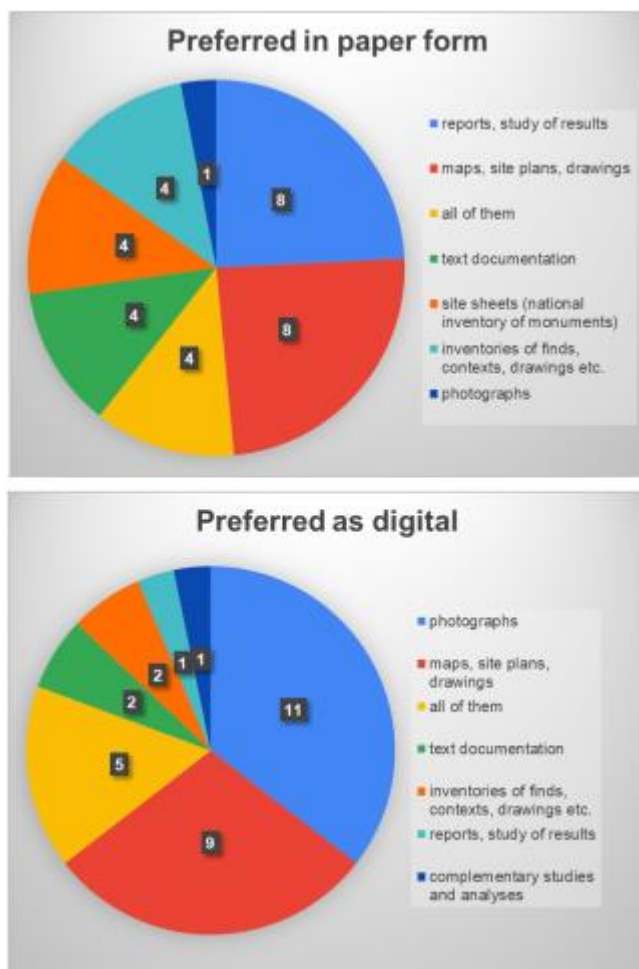
Figure 2: Preferences of archaeologists from the state heritage service as to the form of archaeological documentation in answers to the survey carried by the authors in 2020 (by A. Oniszczuk, ©National Institute of Cultural Heritage)

Hand drawings of plans and sections can be replaced by photogrammetry, laser scanning or vector graphic representations according to 11 inspectors, with which 8 respondents disagree. Heritage inspectors mostly do not specify accepted formats individually (84%), nor are there official lists thereof in Voivodeship Heritage Preservation Offices (95%). The only existing list includes the following formats: doc, pdf, jpg, tiff, xls, shp, dwg, dxf, cdr. Less than half of the offices collect source files. Almost all of them accept digital documentation in a processed form, e.g. results of geophysical surveys with interpretation, usually converted to easily accessible formats like pdf or png.

The state heritage service in Poland has not switched to digital thinking yet - 55% of the respondents ask for printed copies of digital documentation and only four surveyed offices have digital repositories. In 12 offices (63%) it is possible to transfer digital files online (e.g. via WeTransfer), but owing to the lack of proper facilities the files are kept on portable data carriers or the computers of individual inspectors. The reality is therefore far from the recommendations for digital archiving, and only 42% of the surveyed offices have a catalogue of digital documentation in their possession(!).

Quasi databases are created because Voivodeship Offices, where heritage services are placed, use systems for electronic document management. However, this mode of archiving was invented to facilitate administrative tasks and thus ignores the specific needs of archaeological heritage management as well as the characteristics of archaeological data. It is based on recording the course of actions and the documents with metadata. Unfortunately, it is also a digital reflection of a paper-based approach, as it entails scanning printed documents - sometimes only in part because of capacity limitations within these systems.

To illustrate the context, respondents were asked to evaluate their digital competencies on the scale 1-5, where 1 means: 'I use basic solutions, like text editors or web browsers' and 5 - 'I am comfortable with advanced software (e.g. CAD, GIS, ALS data processing)'. Some 41% (9 people) rated themselves 3, 27% (6 people) - 4, and 23% (5 people) - 2. One person chose 1 and another 5. Except for text editors and spreadsheets, in their everyday practice archaeological heritage inspectors use GIS software (namely QGIS), graphic software (mainly Corel Draw), and Microsoft Access. One person carries out ALS (aerial laser scanning) data analyses, *c.* 46% use only the basic software.

As for future changes, the vast majority of archaeologists from state heritage services opt for increasing the significance and proportion of digital archaeological archives (91%), slightly fewer want to switch completely to digital archiving (87%), but the latter is still very satisfactory and promising. For the change to happen, they need better equipment, appropriate CAD and GIS software - here, the respondents generally refer to open-source ones - and training. Legal changes that would enable keeping the register and inventory of monuments in a digital database is also indispensable, as well as the creation of such a central GIS solution.

Questions about digital archiving have also been asked of eight archaeologists specialising in remote sensing, representing four universities and the Polish Academy of Sciences. Their answers, although not representative, definitely coincide with those of the heritage inspectors.

These researchers store documentation on their private computers, with copies also on private external drives. They use databases to organise the archives. Only one person has an opportunity to use the university cloud storage, but the space available is insufficient for advanced archaeological documentation. The others do not have any archiving system for digital or paper documentation in their organisations. Most often, the respondents hand the results of their non-intrusive research over to the heritage service on paper, as required by the respective offices. When they use CDs or DVDs, the files are archived on these carriers, which is not consistent with good archival practices.

Last but not least, the National Institute of Cultural Heritage archives data, including often large source files, from the projects it outsources, or from archaeological projects funded by the Minister of Culture, National Heritage and Sport. The files are stored on servers; unfortunately no archiving strategy has been developed in this regard.

5. Steps Forward

The above gloomy picture definitely shows that, as far as archaeological archiving is concerned, Poland is still in the Digital Dark Age. Being aware of this fact, the National Institute of Cultural Heritage has been currently carrying out two large projects that will initiate systemic changes. The first is about digitising the entire inventory of archaeological sites in the form of a GIS database. The other aims to expand the existing system of site recording with remote sensing methods, including geophysical research, by formulating a national mapping programme, advice and guidance publications as well as dedicated IT solutions. Both projects, which are briefly described below, are to enable proper long-term archiving and the transition towards a fully digital archaeological process.

The national inventory of archaeological monuments, called the Polish Archaeological Record (abbreviation in Polish: AZP) is the main archaeological heritage management resource in Poland. It includes *c.* 460,000 sites known through remains visible on the surface, terrain form, or earlier research. They have been identified thanks to a systematic fieldwalking project ongoing since 1978 (Oniszczuk 2018, section 4c). Each recorded site has a standardised sheet with data on location, chronology, function, accessibility, land use etc. that has to be printed and signed by the respective Voivodeship Monuments Preservation Officer in order to be included in the official inventory of monuments. The latest binding sheet templates for sites located on land, seabed, in lakes and rivers were provided by a relevant regulation amended in 2019 (MKiDN 2019). The ongoing GIS digitisation of this resource will enable large-scale analysis of archaeological heritage in Poland for the first time since the beginning of the AZP in the 1970s.

The workflow is as follows: individual site sheets are scanned in tiff and pdf formats, and described with metadata in a dedicated app (Scan Manager); from these scans, spatial and descriptive data are acquired for the database created in the Oracle environment (GeoMedia Professional). This huge task is co-funded by the European Regional Development Fund within Operational Program Digital Poland 2014-2020 (PL: Program Operacyjny Polska Cyfrowa 2014-2020, project no.: POPC.02.03.02-00-0017/18). It will be completed by August 2021. At the same time, the NICH's portal for popular presentation of monuments (www.zabytek.gov.pl) is being prepared for the publication of the new data. In the near future, we would like the database to become a tool for gathering new site records and generating site sheets until it gains the legal status of a state digital inventory.

The other project, called AZP+, is carried out within the National Program for the Preservation and Guardianship of Monuments 2019-2022. Led by one of the authors, Agnieszka Makowska, it entails formulating a national strategy for large-scale surveying of archaeological heritage with the use of all available data from non-intrusive research (aerial and satellite images, ALS, geophysical, chemical data etc.), as well as guidance for individual methods and recommendations for the Ministry of Culture and National Heritage. The key element will be a GIS database integrating new results with older resources, built for heritage managers but also researchers and other stakeholders, including planning specialists, local authorities and interested individuals. Its implementation, preceded with training for heritage inspectors and researchers, is planned for 2022. It should be mentioned that a similar initiative was undertaken in Poznan in one of the leading Polish universities in the first decade of the 2000s, but

never went beyond a pilot stage, nor has it been nationally recognised (Rączkowski 2011). The AZP+ project team comprises experts in remote sensing, databases and archaeological heritage management, working at the moment on the database prototype; this part of the work is coordinated by Agnieszka Oniszczuk. Crucial decisions are still being made; however, undoubtedly we will recommend archiving archaeological archives in a dedicated repository. We are also counting on future cooperation with a digital repository for digital resources of science and culture that is in the process of being created (KRONIK@, see Section 3).

6. For the Future

Summing up, national repositories and databases are still lacking but they are on the way. Archaeological archives are mostly born-digital, and dispersed on computers of individual researchers or their institutions. For the time being, the documentation is transformed into popular formats (like pdf), printed for administrative purposes, and sometimes re-digitised (scanned), although archaeological heritage inspectors seem ready for the digital change (see Section 4).

For the situation to change, digital archaeological archives must, first of all, be recognised by heritage laws and regulations. The digital form of the documentation should become equal in status to the paper one. Moreover, a legally defined digital database should become an official way of managing the register and inventory of monuments. Following these changes, heritage service officers should get the necessary equipment and training in various aspects of digitisation, the tools and software (primarily GIS) as well as constant support or a help desk. Until then, all systems that are being created should be designed so as to be interoperable (if not integrated) in the future. They should be treated as steps towards full digitisation of the entire archaeological process.

Czerniak, S. and Orszulak, J. 2017 *Dokument elektroniczny. Przewodnik i katalog dobrych praktyk*, Warszawa: Naczelna Dyrekcja Archiwów Państwowych.

Liibert K., Malińska M., Wachowicz L., Marciniak A. 2014 *Discovering the Archaeologists of Poland 2012-14*, Poznań: Adam Mickiewicz University.

MKiDN 2018 *Rozporządzenie Ministra Kultury i Dziedzictwa Narodowego z dnia 2 sierpnia 2018 r. w sprawie prowadzenia prac konserwatorskich, prac restauratorskich i badań konserwatorskich przy zabytku wpisanym do rejestru zabytków albo na Listę Skarbów Dziedzictwa oraz robót budowlanych, badań architektonicznych i innych działań przy zabytku wpisanym do rejestru zabytków, a także badań archeologicznych i poszukiwań zabytków*, Dz. U. 2018, item 1609 as amended. http://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20180001609/O/D20181609.pdf [Last accessed: 25 November 2020].

MKiDN 2019 *Rozporządzenie Ministra Kultury i Dziedzictwa Narodowego z dnia 10 września 2019r. zmieniające rozporządzenie w sprawie prowadzenia rejestru zabytków, krajowej, wojewódzkiej i gminnej ewidencji zabytków oraz krajowego wykazu zabytków skradzionych lub wywiezionych za granicę niezgodnie z prawem*, Dz. U. 2019, item

1886 http://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20190001886/O/D20191886.pdf [Last accessed: 25 November 2020].

Oniszczuk, A. 2018 'Is question-driven fieldwork vital or not? An archaeological heritage manager's perspective', *Internet Archaeology* **49**. https://doi.org/10.11141/ia.49.9

Oniszczuk, A. 2019 'Report on archaeological selection procedures in Poland - a case study', appendix to D. Brown *Making Choices for Archaeological Archives*, EAC Working Group for Archaeological Archives. https://www.europae-archaeologiae-consilium.org/archaeological-archives [Last accessed: 25 November 2020].

Perrin, K., Brown, D.H., Lange, G., Bibby, D., Carlsson, A., Degraeve, A., Kuna, M., Larsson, Y., Pálsdóttir, S.U., Stoll-Tucker, B., Dunning, C. and Rogalla von Bieberstein, A. 2014 *The Standard and Guide to Best Practice in Archaeological Archiving in Europe*, Namur: Europae Archaeologiae Consilium (EAC Guidelines 1). https://archaeologydataservice.ac.uk/arches/

Poland 2003 *Ustawa z dnia 23 lipca 2003 roku o ochronie zabytków i opiece nad zabytkami*, Dz.U. 2003, no. 162, item 1568 as amended. http://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20031621568/U/D20031568Lj.pdf [Last accessed: 4 December 2020].

Prezes Rady Ministrów 2017 *Obwieszczenie Prezesa Rady Ministrów z dnia 9 listopada 2017 r. w sprawie ogłoszenia jednolitego tekstu rozporządzenia Rady Ministrów w sprawie Krajowych Ram Interoperacyjności, minimalnych wymagań dla rejestrów publicznych i wymiany informacji w postaci elektronicznej oraz minimalnych wymagań dla systemów teleinformatycznych*, Dz.U. 2017 item 2247. http://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20170002247/O/D20172247.pdf [Last accessed: 25 November 2020].

Rączkowski, W. 2011 'Integrating survey data - the Polish AZP and beyond, remote sensing for archaeological heritage Management' in D.C. Cowley (ed) *Remote Sensing for Archaeological Heritage Management. Proceedings of the 11th EAC Heritage Management Symposium, Reykjavík, Iceland, 25-27 March 2010*, EAC Occasional Paper No. 5, Occasional Publication of the Aerial Archaeology Research Group No. 3, Brussels: Europae Archaeologiae Consilium. 153-60. https://f64366e3-8f7d-4b63-9edf-5000e2bef85b.filesusr.com/ugd/881a59_2962e3d465f44c4785200d731b2f01f1.pdf [Last accessed: 25 November 2020].