Profile description with samples for the geoarchaeology in Oberstammheim (ZH) – Geeren.
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Who still has a clue?

Whether it's mass market or niches – specializations in archaeology everywhere

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A long time ago archaeology was seen almost exclusively as a discipline of the arts. In the meantime, we archaeologists share the sovereignty of interpretation of our research object – archaeological sites and finds – with scientific institutes, universities and specialized laboratories. This is a good thing, because it provides us with illuminating insights into the past. However, where there is light, there is also shadow.

The world used to be a simpler place for the archaeologist: he or she was the indisputable boss on the excavation site, in the laboratory or during the evaluation process. Knowledge of typology, methodology and bibliography acquired at university – bolstered with a little understanding of materials and natural sciences – provided the archaeologist with enough know-how to maintain a credible presence at the find spots with all their confusing layers and fragile finds, and in the evaluation offices with their extensive excavation logs, hundreds of plans and thousands of photos.

And today? Archaeogeneticists are currently refuting several models of mobility and migration hitherto cherished by archaeologists. As if that were not enough, we archaeologists have recently been kept away from our own excavations, because without face masks, gloves and white overalls we are merely perceived as a potential contamination risk. This is how far things have come!

It all started quite harmlessly, when the first non-archaeological disciplines found their way into the field and strange specialists began examining «our» bones, teeth, stones, wood and seeds. Initially they were granted – if in a somewhat patronizing manner – the status accorded those in «auxiliary science». This gradually evolved in barely perceptible steps until at some point things came to a head. I clearly remember one particular excavation of a lakeside settlement: One day the archaeobotanists insisted on their needs being met and demanded a staggeringly high number of sediment samples, which we archaeologists were not allowed to break up ourselves but had to deliver to our colleagues for examination. And the archaeogeologists at the site would stare at us critically when we wanted to touch our (their?) layers. Although the archaeologists were allowed to take measurements and samples from the numerous piles, the analysis of growth rings was carried out exclusively in the laboratories of growth ring specialists, the dendrochronologists.

… for they know what they do. But do we?

No one today disputes that specialization and quality in archaeometry is at a very high level and that the benefits have been impres-

sive. To be honest, however, we archaeologists have been unable for some time to comprehensively grasp or critically analyse the results arrived at by our scientific colleagues. To a large extent, we have said goodbye to the most important scientific principles – verifiability and accountability – and have to trust in the correctness of our scientific colleagues' work. While we are fully capable of scrutinizing and evaluating our own work, we struggle to do likewise with the endeavours of the scientists. Dendrochronological dating? Climate models? Genetic analysis? Calibration of carbon-14 dates?

What exactly is the problem?

The Swiss Archaeological Services employ mainly archaeologists, excavators and documentalists. If specific know-how is required in other areas, it is bought externally from university institutes, small specialized companies or individual experts. This archaeological services market has developed and become firmly established over the last few decades due to various major excavations that have triggered big-budget projects funded by the Swiss National Science Foundation. We now have professional competence centres such as the Institute for Prehistory and Archaeological Science (IPAS) at the University of Basel, and the laboratories for radiocarbon dating at the ETH Zürich and the University of Berne. There are niche providers that can determine the origin of silex, analyse bast and charcoal, evaluate textile fragments, or carry out mineralogical analysis of ceramic shards. There are only a handful of people capable of conducting such analysis in Switzerland – some have a home laboratory, others work with a reference collection in their garage and information on the PC.

Sampling for dendrochronological analysis of roof truss.
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A concrete example: dendrochronology

The possibility of dating to the year wood from historical buildings and archaeological sites led to a lot of hype in the archaeological scene. Dendrochronology was held up as a showcase discipline for archaeology and monument preservation. It was practically seen as a saviour, creating order out of chaos and allowing the Department for the Preservation of Monuments – in particular – to advance weighty arguments for measures aimed at protecting threatened buildings. In recent years, however, some cracks have appeared in this development: some cantonal institutes have reported problems with the long-term storage of samples. Due to a lack of appropriate storage space, wood samples began to get mouldy or were discarded; and worse still, it was proved that several projects had made use of erroneous dating. The reasons for this do not concern us here – far more interesting is to know what conclusions should be drawn. Limited financial resources preclude the precautionary measure of always sending each and every sample to two laboratories.

A few years ago, as a reaction to this somewhat unfortunate state of affairs and at the invitation of the conferences of Swiss cantonal archaeologists and monument conservators (i.e. the commissioning authorities), the first open and self-critical discussion on the situation took place with the heads of state-run and private laboratories (i.e. the contractors). These talks produced a long to-do list of how things should proceed in future:

- Develop standards for processes and procedures such as sampling, measuring, data collection (using which software programs?), and documentation of analysis (textualization of mathematical and optical analysis). Here, it is worth considering links to the European Committee for Standardization CEN / TC 346 (Conservation of Cultural Heritage).
- Ensure the long-term and secure storage of data from all laboratories in a central (!) location. Keywords here are: common data pool, standardized (meta-) data, ongoing and automatic quality control.
- Find technical and financial solutions for the long-term storage of original samples (moist samples from lakeside settlements are a particular concern).
- Establish common communication platforms and training programmes, and foster transfer of knowledge (best practice) and an open error culture.
- Develop standardized instruction and training courses for future generations. Many of the pioneers are currently entering well-deserved retirement (it is astonishing that students are not pursuing these rewarding niche fields).
- Clarify various legal questions. For example, who owns a dendrochronological sample taken from a medieval house? The dendrochronology laboratory, the institute that commissioned the analysis or the owner of the house? And what exactly is the institute paying for – the dating plus the middle curve, all the individual curves, each measured value, the mathematical values and the notes on optical agreement? Are the rights of use pertaining to the analysis exclusive or shared?

These considerations can be extended to other highly specialized providers of archaeological services. One can of course ask to what extent we as mandators are responsible for the long-term safeguarding of

The dolmen of Oberbipp (BE). Wearing face masks and gloves was compulsory while the skeleton was being unearthed.
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Material analysis of Neolithic ceramics using a portable X-ray fluorescence analysis device owned by the University of Berne. The aim is to distinguish between locally produced vessels and imitations.
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Decomposed wood samples from the lakeside settlement of Pfäffikon (ZH) – Burg.
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the archaeological-scientific service market. However, we cannot avoid quality control, even if we barely understand the process behind a dendrochronological sample being dated with «certainty», a «high probability» or «no certainty». We have a responsibility to get this right. ■

Literature:

Formation Continue NIKE / BAK / ICOMOS (Ed.). *Qualitätsmanagement am Baudenkmal: Turmbau zu Babel?* (series on cultural heritage preservation 3). Schwabe: Basel 2015. Contains contributions from the conference of the same name that was held on 24/25 October 2014 in Berne, in four areas: communication – mediation; interdisciplinary coordination; quality control in cultural heritage; preventative conservation.

Brigitte Müller. *Die Welt braucht Normen. Das Kulturgut auch?* In: NIKE-Bulletin 4/2017, pp. 56–58.

Swiss cantonal archaeologists retreat, 29 January 2018 in Augst (BL) focussing on «neighbouring subjects/disciplines – related sciences – scientific appendixes». Internal minutes.

Resümee

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Heutzutage ist in der Archäologie – nebst unseren eigenen Kernkompetenzen – sehr viel weiteres Disziplinenwissen gefragt. Verschiedene «artfremde» (meist naturwissenschaftlich ausgebildete) Fachpersonen begleiten unsere Projekte von der Ausgrabung bis hin zur Auswertung und Publikation. Der durch diese fruchtbare Zusammenarbeit generierte Erkenntniszuwachs ist unbestritten sehr gross. Allerdings wächst damit auch die Abhängigkeit von den verschiedenen Partnern. Deren Ergebnisse können durch die Archäologinnen und Archäologen angesichts des hohen Spezialisierungsgrades kaum mehr kritisch hinterfragt werden.

Einige Problemfelder lassen sich ausmachen: Es gibt individuelle Arbeitsweisen anstelle von standardisierten Prozessen – darunter leiden Überprüfbarkeit und Nachvollziehbarkeit; es fehlen Austauschgefässe für eine gelebte Fehlerkultur und einen kritischen Diskurs zwischen den Anbietern (Stichworte: «best practice», «lessons learned); Desinteresse oder schlicht fehlende Möglichkeiten verhindern Lösungen für freien Datentausch und die zentralisierte Langzeitlagerung von wichtigen Daten.

Als Auftraggebende stehen wir zweifelsohne mit in der Pflicht. Ohne eine funktionierende Qualitätssicherung entstehen Fehler, leidet die Glaubwürdigkeit, und die oft knappen Mittel können nicht effektiv eingesetzt werden.

Résumé

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En archéologie aujourd'hui, nous avons besoin, en plus de nos compétences clés, de nombreuses connaissances provenant d'autres disciplines. Divers spécialistes «étrangers au domaine» (la plupart venant des sciences physiques et naturelles) accompagnent nos projets, de la fouille à l'analyse et à la publication des résultats. Cette collaboration fructueuse est indéniablement très favorable au développement de la connaissance. De ce fait cependant, la dépendance de notre discipline vis-à-vis de ses différents partenaires augmente elle aussi. Les archéologues ne peuvent plus guère poser un regard critique sur les résultats de leurs partenaires, compte tenu de leur haut degré de spécialisation.

Des difficultés surgissent dans différents domaines. Les méthodes de travail personnelles se substituent aux procédures standard, compromettant ainsi la vérifiabilité et l'intelligibilité des résultats. On manque de lieux d'échange favorisant une véritable culture de l'erreur et un débat critique entre les différents partenaires qui permettrait de dégager des bonnes pratiques et des leçons à retenir. Les solutions permettant le libre échange des données et la centralisation du stockage à long terme des données importantes font défaut, que ce soit en raison d'un manque d'intérêt ou, simplement, de difficultés techniques.

En tant que donneurs d'ordre, nous avons naturellement notre part de responsabilité. En l'absence d'une assurance de la qualité qui fonctionne bien, des erreurs sont faites, notre crédibilité en souffre et les ressources, déjà souvent insuffisantes, ne peuvent être utilisées efficacement.