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Groningen Institute of Archaeology (GIA) Annual Report 2017



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GIA ANNUAL REPORT 2017

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FOREWORD

The contributions to this year's annual report reflect engagement of GIA staff members with the scientific and societal relevance of their archeological work ranging from the sustainability of (past) ecological systems in the Arctic to modern identities in relation to heritage in Greece and the role and position of archaeology in relation to the turmoil in the Near East. Closer at base, GIA researchers are engaged with the local pasts of agriculture in the Northern provinces and shipfaring (and wrecking) in the former Zuyderzee, employing multidisciplinary approaches. The challenge to work with large bodies of so-called legacy data (reuse and evaluation of data from past research) is met by the new GIA-led project 'Integrating Archaeological Field Surveys - Rome and Beyond' with partners at Durham, Köln, Melbourne, Rome and St. Andrews funded by NWO. As to academic relevance, GIA staff is increasingly able to reach high-profile publication podia. In due time two Supplements to Quaternary International will appear as part of GIA research interests, one on the factors that drive fragility and resilience in Arctic societies and the other on the effects of volcanic eruptions on past societies. This year saw books published by GIA staff with Cambridge University Press and Routledge and a good many papers was published, subjected to review or accepted by peer reviewed journals. While two PhD students defended their PhD theses, one on the social significance of material culture in pre-Roman cult places in Central Italy and the other on the clothing of Dutch whaling crews, two new PhD students found their way to the GIA to start researching respectively cross-cultural human-cattle relations and variability in the timing of initial crop cultivation in Frisia. This report will update you on these and many more topics, such as the application of 3D in archaeological recording and visualization techniques and the world's largest seed bank. Check for facts and figures over 2017 the GIA website.

I. ABOUT GIA

The Groningen Institute of Archaeology is based in the Faculty of Arts of the University of Groningen, and is responsible for all archaeological research within the university. It contributes to research agendas within the humanities by integrating research perspectives

from both the natural and social sciences, and by developing and incorporating novel methodologies and theories. GIA investigates the development of human societies from a uniquely long-term perspective. GIA staff is convinced that insights from the past also have relevance to present-day debates and the resolution of future challenges. GIA strives to add to the regional, national and international recognition of University of Groningen as a leading research university.

I.1 GIA's Mission

The core purpose of GIA is to:

- conduct innovative, ethically-informed research that has high visibility and impact;
- provide a supportive environment in which researchers perform at their full potential;
- effectively disseminate research results to diverse audiences in appropriate formats;

To fulfill this mission GIA organizes its research so that it can focus critical mass on:

- understanding specific periods and processes of transition within well-defined geographical regions, specifically the Mediterranean (Italy, Greece, Near East), NW Europe and the Circumpolar North;
- applying an integrated field- and laboratory-based approach to research, underpinned by engagement with diverse theoretical perspectives, and a commitment to methodological innovation.

I.2 Who are we?

The Groningen Institute of Archaeology consists of five Research Groups; Arctic and Antarctic Studies, Bioarchaeology, Classical and Mediterranean Archaeology, Greek Archaeology and Prehistory and Protohistory of Northwest Europe. These link into the University of Groningen's educational departments of Archaeology and the Arctic Centre. GIA operates as an integrated research community engaging with common research themes. The coordinators of the research groups are professors and form the GIA Management Team. The Management Team is supported by an Advisory Board composed of a representative selection of GIA personnel. Members of the technical staff support GIAs research activities and



fieldwork projects. GIA also maintains laboratories in Zooarchaeology, Archaeobotany and Conservation and Material Culture Studies (LCM).

Within RUG, GIA participates in the Graduate School for the Humanities of the Faculty of Arts, providing the institutional setting for GIA's PhD training programme and the two year Research Master in Archaeology. GIA is also a member of ARCHON, the national Dutch institute for Research Master and PhD training programmes in Archaeology.

Director of GIA

Prof Dr P.A.J. Attema

Chair groups

- Arctic and Antarctic Studies (Prof Dr P.D. Jordan)
- Classical and Mediterranean Archaeology (Prof Dr P.A.J. Attema)
- Greek Archaeology (Prof Dr S. Voutsaki)
- Prehistory and Protohistory of Northwest Europe (Prof Dr D.C.M. Raemaekers)

Research coordinator

Dr S.L. Willemsen

Coordinator of GIA PhDs

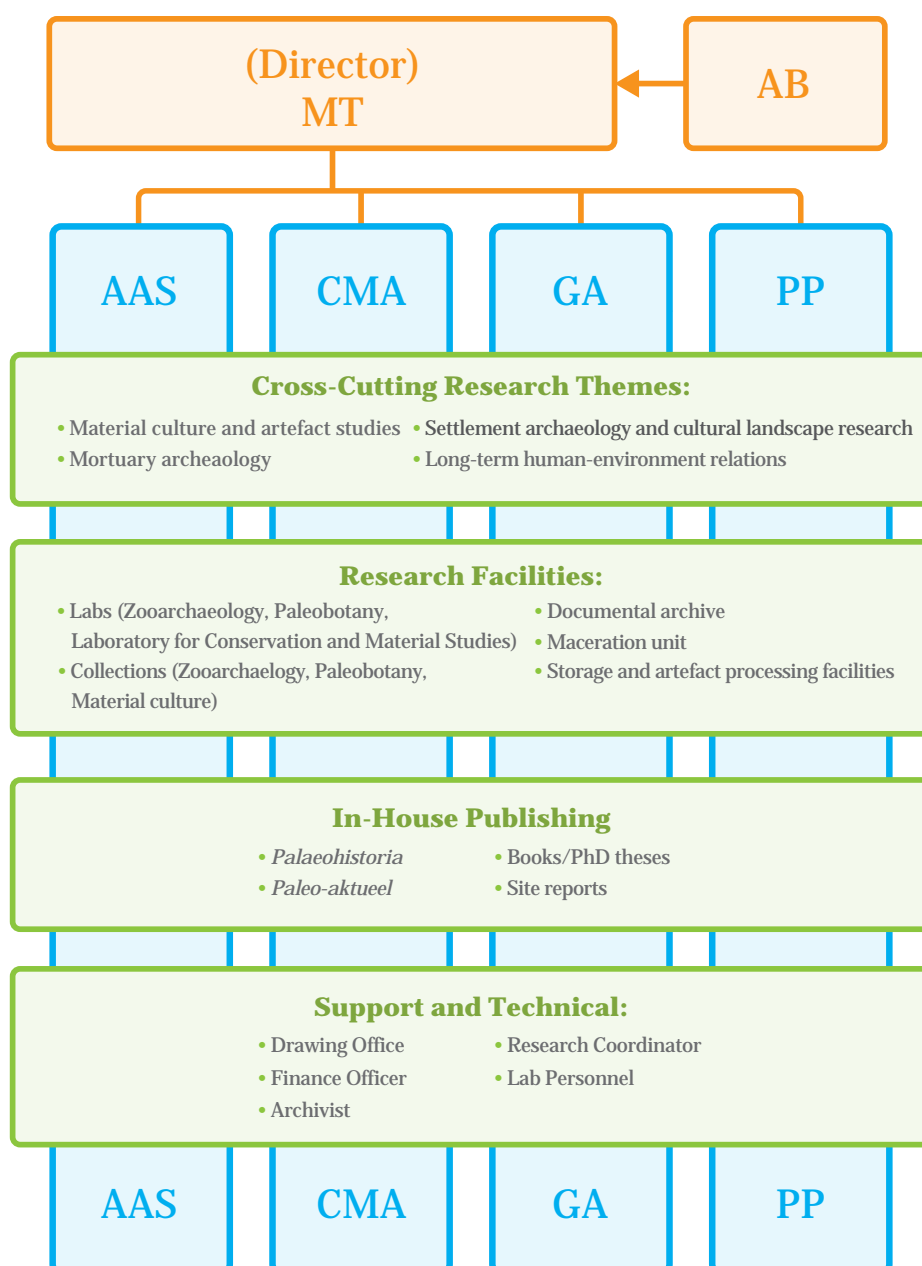
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Management Team

Prof Dr P.A.J. Attema (chair),
 Prof Dr R.T.J. Cappers,
 Prof Dr P.D. Jordan,
 Dr J.H.M. Peeters,
 Prof Dr S. Voutsaki

Advisory Board

Prof Dr P.D. Jordan (chair),
 Dr C. Çakırlar,
 Dr L. de Jong,
 Dr P.M. van Leusen,
 Dr M.M.J.E. Loonen,
 M.A. Los-Weijns





Ethnoarchaeological research into traditional Inuit walrus hunting and butchering practices, Foxe Basin, Canadian Arctic (Photo: Sean Desjardins).

1.3 Arctic and Antarctic Studies

The AAS Research Group is headquartered at the Arctic Centre, which was established in 1970, and researches long-term human-environment interactions in the Polar Regions. The work of the Arctic Centre aligns closely with the university's 'Sustainable Society' theme. The overarching concern is to understand what drives long-term fragility and resilience – and ultimately sustainability - in Arctic social and ecological systems. The Arctic Centre investigates these issues at three inter-locking timescales: paleo, contemporary and future/predictive. In addition to conducting fundamental inter-disciplinary research, Arctic Centre staff contribute to policy-driven debates in the Netherlands and internationally. Staff serve as expert advisors in all the main Polar Science organisations, including the Scientific Working Groups of the Arctic Council (Conservation of Arctic Flora and Fauna (CAFF); Arctic Monitoring and Assessment Programme (AMAP) and the Sustainable Development Working Group (SDWG)). They also represent the Netherlands in the Council of the International Arctic Science Committee (IASC) and its Social and Human Working Group. The Arctic Centre runs a thriving programme of fieldwork in archaeology, historical ecology, biology and pollution studies, and also manages the Netherlands Arctic Station on Svalbard. It participates in three large Horizon2020 projects (ArchSci2020, EU-PolarNet, INTERACT), and hosts a large community of PhDs, PostDocs and Visiting Research Fellows.



Excursion 2017 with 2nd year students: visit to the archaeological site of Tusculum in the Alban Hills near Rome.



Group photo of the équipe that worked at the Crustumerium excavations in the summer of 2017.

1.4 Classical and Mediterranean Archaeology

CMA has a longstanding and firmly established tradition in Italian field archaeology. Its interdisciplinary projects in Central and South Italy combine excavations with landscape archaeological approaches to study the dynamics of Italy's urban and rural past in a long-term perspective. Covering the period from the Bronze Age to Late Antiquity, its researchers integrate geoarchaeological, palaeoecological and material culture studies to contribute to current understanding of the formation of early complex indigenous societies, interactions with the colonial Greek and Roman world, and Roman Republican and Imperial urbanization. The group conducts internationally renowned landscape archaeological projects, such as the Pontine Region and Raganello Archaeological projects, and works on the integration of large survey datasets to compare regional settlement



The survey area around Ayios Vasilios.



The former island of Schokland: the reclaimed seafloor of the Zuiderzee has lots to reveal about a long and varied occupation history of land before inundation.

and land use dynamics over the Mediterranean to facilitate long-term demographic and economic analyses. Its members publish widely on protohistoric Latin, Etruscan and Roman archaeology. CMA is leading partner in the international excavations at the ancient Latin site of Crustumerium, near Rome and former partner in the Timpone Motta (Calabria) and Satricum excavations (South Lazio). Its members have a strong track record in obtaining research funding and attract good numbers of bachelor and master students, PhDs and postdoctoral researchers, all of whom play a central role in its research and valorization activities.

1.5 Greek Archaeology

The research chair of Greek Archaeology covers the archaeology of the Greek world in the broader sense, but focuses on Aegean prehistory and the Hellenistic and Roman periods in the eastern Mediterranean and the Near East. Members of the chair group lead international field projects in Greece, Turkey and the Middle East. They maintain an explicitly theoretical and inter-disciplinary approach, combining archaeological, bioarchaeological, historical, iconographic and epigraphic data. Mortuary studies form a central theme in the chair group, as well as household and landscape archaeology. Questions of social change (the emergence of complex societies, but also periods of crisis and decline) and the redefinition of identities in increasingly connected worlds occupy a central position in research activities. In terms of teaching, research, and outreach we are developing a strong

focus on archaeology and heritage management in areas affected by warfare, political instability and financial crisis. Members of the chair collaborate with the Departments of Ancient History and Classics, the Faculty of Religious Studies, the Centre for Isotope Research, as well as institutions in Greece, Turkey and the Middle East. Greek Archaeology at the GIA is quickly establishing a reputation as a centre of international excellence for methodologically innovative, theoretically sophisticated and socially engaged research.

1.6 Prehistory and Protohistory of Northwest Europe

Research of the chair group of Prehistory and Protohistory of Northwest Europe focusses on socio-cultural dynamics, and long-term dynamics of human-environment relations from Late Palaeolithic to early historic times. One line of research is that of prehistoric cultural landscapes, with a focus on economic and social/cosmological use and meaning of the environment. Projects include: long-term use and perceptions of landscapes by postglacial hunter-gatherers, the socio-economic role of crop cultivation within the Swifterbant Culture and the early agriculture of 'Celtic fields'. Another context is that of the late prehistoric and historic coastal and maritime cultural landscape. Research is focused on the occupation history of the terp-mounds and peat districts, and their embedding in wider regional and international spheres of interaction. Research is also concerned with the social and ideological role of material



culture. Even though the study of material culture is the bread and butter of archaeology, the study of 'old' collections permits new interpretations when considered in the context of new interpretive frameworks. The chair group believes that it not only has a duty to conduct research of international interest, but also that it has an important role to play in the debate about how archaeological research can make a contribution to contemporary society, regionally, nationally, and internationally.

1.7 Archaeobotany

Archaeobotany is central to many projects of the chair group of Prehistory and Protohistory of Northwest Europe. However, it also contributes to projects of other chair groups and conducts research in collaboration with a wide range of external partners. In cooperation with Kiel University it publishes the book series *Advances in Archaeobotany*, which intends to provide a platform for the publication of research results of international interest. Importantly, GIA's archaeobotanical laboratory houses internationally significant reference collections. Increasing use is made of these collections by colleagues from other countries, including Greece, Turkey and Italy. The collection is continuously expanded through the addition of new specimens, and linked to an updated taxonomy. Samples of traditional food made of cereals and/or milk with a long shelf life continue to be added to the collection. Laboratory staff has conducted ethno-archaeological fieldwork in Morocco, Turkey, and Senegal, not only to examine how traditional crop and food processing can be identified in subfossil food remains, but also how wear patterns can be linked with technology and implements. This work is augmenting the corpus of reference materials.

1.8 Zooarchaeology

The zooarchaeological research group investigates a large variety of past phenomena that involve interactions between humans and animals by means of diverse methods, including comparative osteomorphology, aDNA, ZooMS, and stable isotopic analyses. Present research foci include secondary neolithisation (western Anatolia, Bulgaria, Turkey), origins of super-animals (e.g. hybrid camels), exploitation of

marine species in the ancient Mediterranean with specific focus on threatened species (e.g. groupers and turtles), and changes in animal exploitation in situations of rapid acculturation. Current projects involve: the introduction of animal husbandry to areas west of Çatalhöyük; the introduction of domestic animals to the prehistoric Netherlands; and economic systems of early urban centres. The group also conducts research on data literacy and reuse in zooarchaeology, and the use of 3D technologies in developing zooarchaeological tools. Collaborations in fieldwork and data analysis exist within a large international network of research groups, notably those based at Boston University, the American University of Beirut, Manchester University, the Istanbul Archaeology Museums, and Mainz University. The unit also manages GIA's extensive skeletal reference collection; these responsibilities include curation work, development and expansion of the collection, and the provision of access and support to researchers, students, and the general public.

1.9 PhD programme

Chair groups of the Groningen Institute of Archaeology regularly have new openings for PhDs. These result from annual allocations from the Faculty, as well as national competitions and externally funded projects and international collaborations. Apart from research, PhD students at the Groningen Institute of Archaeology follow training programmes up to 30 ECTS. These programmes are typically a combination of modules offered by the Faculty's Graduate School for the Humanities, National Research Schools, and training modules tailored to the individual PhD student's needs. GIA offers excellent supervision, research facilities, technical support and maintains a dynamic yet supportive academic culture. It also facilitates and supervises self-funded PhD researchers.

1.10 Research Integrity

The quality of research conducted at the Groningen Institute of Archaeology is assessed in light of the highest international standards. GIA complies with the professional rules drawn up by the Association of Universities in the Netherlands (VSNU: *Vereniging*

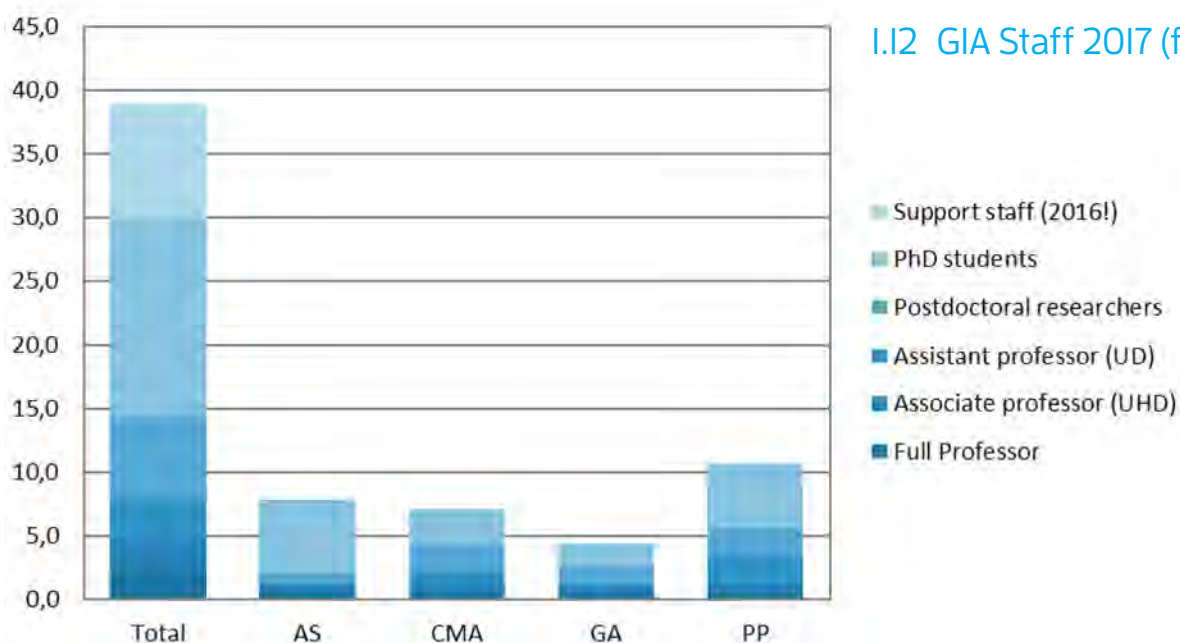


van Universiteiten), which can be found in the Dutch Code of Conduct for Scientific Practice. The primary values and principles enshrined in this code of conduct include a duty of care to colleagues and students, and also reliability, verifiability and independence in research. As part of appointment procedures at GIA new staff and researchers are required to declare that they are familiar with the Dutch Code of Conduct for Academic Practice and will follow it during their professional activities.

I.II Our aims and ambitions

GIA's primary aim is to carry out interdisciplinary problem-oriented research projects in which students, PhDs, postdoctoral researchers and staff cooperate

and which evolve in a spirit of collaboration with other partners, both within and outside academia. The main domains of study are within landscape, settlement, ecological and social archaeology. Currently GIA accommodates over 30 fte researchers who maintain a high output of peer-reviewed papers and books; it also organises major international conferences and is active in the valorisation of its research results. GIA research spans much of the globe, and extends over considerable time depths. Projects are typically based on primary data collected by fieldwork or analysis of collections, but also include elaboration and critical synthesis of existing datasets. As only a small part of GIA's activities can be funded by the institute, GIA staff is very active - and successful - in attracting external funding.





I.13 GIA Funding

Project funding

Title	Financing organisation	Amount (k€)
Intergrating Archaeological Field Surveys - Rome and Beyond	NWO	44
Palynological research PhD Talebi	Province of Friesland (NL)	80
Palynological research PhD Talebi - pingo scar Burgum	Municipality of Tytsjsteradeel (NL)	20
Palynological research PhD Talebi - pingo scar Tjongerdal	Province of Friesland (NL)	20
Survey Wijnaldum	Province of Friesland (NL)	9,7
Research agenda peat district Friesland	Province of Friesland (NL)	10,2
Field survey PhD Kaspers	Province of Groningen (NL)	60
Rome database project	British Academy (UK)	21
Van Giffen's dogs	DANS KNAW - Small Data Projects (NL)	10
Hidden Hybrid Camels	Wenner-Gren Foundation (US)	18,6
	Total project funding	293,5

Direct funding

Title	Financing organisation	Amount (k€)
Fieldwork subsidy	Dutch Museum Anthropology and Prehistory SNMAP	3
Research subsidy	LVR Office for Heritage Management in the Rhineland	2
Subsidy for data collection	Norwegian Polar Institute	4,7
Vegetable ingredients in early modern recipes	Foundation Gastronomic Library (NL)	1
Digital Humanities Exploration Project	Faculty of Arts UG-Centre for Digital Humanities	15
3D symposium GIA	ARCHON Research School (NL)	0,5
Excavation Torp	Province of Noord-Holland (NL)	1,1
Advice on PARK21	Ministry of Infrastructure (NL)	2,1
Advice on Schiphol	Ministry of Infrastructure (NL)	2,1
ARCHON conference subsidy	ARCHON Research School (NL)	0,4
Subsidy on photographic equipment	Dutch Museum Anthropology and Prehistory SNMAP	1,6
	Total direct funding	33,5

	Total funding	327
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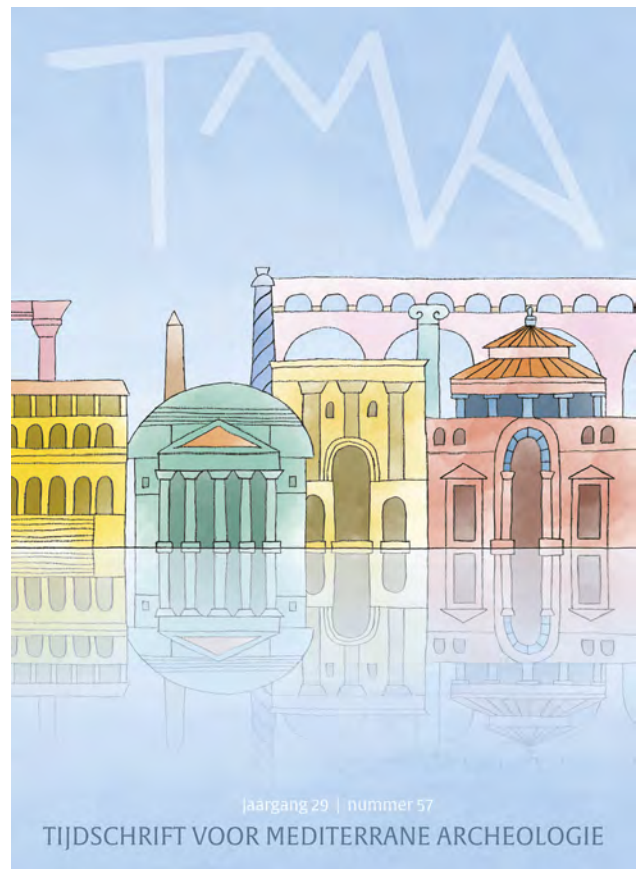


2. RESEARCH WITHIN GIA

GIA research output 2017	
Refereed article	21
Non-refereed article	9
Chapter	32
Book	2
Professional publication	42
Popular publication	4
Review	3
Edited journal	0
Edited book	5
Doctoral thesis	2
Total	120

2.1 Publications edited and issued by GIA

On GIA's annual Research Day in December 2017 we presented the annual issue of our popular outreach journal *Paleo-aktueel* (vol. 28). Also noteworthy in 2017 was the fact that issues of the *Tijdschrift voor Mediterrane Archeologie* (vol. 57 & 58) appeared; TMA is edited by students and reserachers of GIA and contains papers from early career researchers, with updates on new research projects across the Mediterranean (see: <http://tijdschrift.mediterrane-archeologie.nl>). TMA enjoys a substantial academic readership in the Netherlands and Belgium.





The 2017 scientific team at the Netherlands Arctic Station on Svalbard (photo; Maarten Loonen). For further details, see: www.arcticstation.nl.



Survey of Late Stone Age habitation sites in the outer islands of Arctic Norway using small boats (Photo: Peter Jordan).



Frits Steenhuisen and colleagues from Wageningen University sampling clams in the Kongsfjorden of Svalbard. They are studying the pollution legacies of abandoned coal mines that once operated in this area (photo: Frits Steenhuisen).



The Sørøya Survey (PIs: Charlotte Damm; Peter Jordan; Marianne Skandfer) is discovering scores of unrecorded habitation sites from the Late Stone Age. Targeted excavations are planned for 2018, and there is growing evidence that prehistoric coastal societies experienced a series of major population 'crashes'. The fieldwork forms a long-term collaboration between the Arctic Centre in Groningen and the University of Tromsø – the Arctic University of Norway – and is part of the larger Stone Age Demographics Project (Photo: Peter Jordan).

2.2 Arctic and Antarctic Studies

The Arctic Centre had a busy year. Sean Desjardins and Peter Jordan gained IASC funds to run a session at Arctic Science Summit Week, launching a new programme of cross-cutting research into 'Long-Term Perspectives on Arctic Social Ecological Systems'. This aims to better integrate archaeological, ethnographic and palaeoecological datasets and strengthen 'palaeo' insights into what drives fragility and resilience in Arctic societies. They have a publishing contract from Elsevier to combine contributions in *Quaternary International* as a special issue. Maarten Loonen played a leading role in the Svalbard Science Conference in his new role as Chairman of the Ny-Ålesund Science Managers Committee

(NySMAC). The ArchSci2020 PhD Training Network in Circumpolar Archaeology is in full operation: Ari Junno and Maddie Llewellyn started placements in Stockholm University and Jack Dury and Manon Bondetti were hosted by the Arctic Centre. A wide range of inter-disciplinary fieldwork was conducted: in Svalbard, Maarten Loonen and Margje de Jong ran the Netherlands Arctic station, hosting several visiting researchers, and studied the effects of climate change on the local ecosystem; Jouke Prop continued long-term polar bear research at Nordenskiöld; Frits Steenhuisen studied the pollution legacy of industrial



activities in Kongsfjorden; in Arctic Norway, Peter Jordan continued archaeological surveys with colleagues from Tromsø University. Finally, the year ended with Sandra Comis defending her PhD on the clothing of Dutch whaling crews who had been buried on Svalbard in the 17th C and were excavated by the Arctic Centre in the 1980s.

Key publications

Kevin Gibbs, Sven Isaksson, Oliver E.

Craig, Alexandre Lucquin, Vyacheslav A. Grishchenko, Tom F.G. Farrell, Anu Thompson, Hirofumi Kato, Alexander A. Vasilevski, Peter D. Jordan. Exploring the emergence of an 'Aquatic' Neolithic in the Russian Far East: organic residue analysis of early hunter-gatherer pottery from Sakhalin Island. *Antiquity*, 91(360), 1484-1500.

Jong, M. de, I.B.R. Scheiber, N.W. van den Brink, A. Braun, K. Matson, J. Komdeur & M.J.J.E. Loonen (2017). Indices of stress and immune function in Arctic barnacle goslings (*Branta leucopsis*) were impacted by social isolation but not a contaminated grazing environment. *Science of the Total Environment* 601–602: 132–141.

Kocman, D., Wilson, S. J., Amos, H. M., Telmer, K. H., Steenhuisen, F., Sunderland, E. M., Mason, R. P., Outridge, P. & Horvat, M. 1-Feb-2017. Toward an assessment of the global inventory of present-day mercury releases to freshwater environments. In: *International Journal of Environmental Research and Public Health*. 14, 2, 16 p., 138.

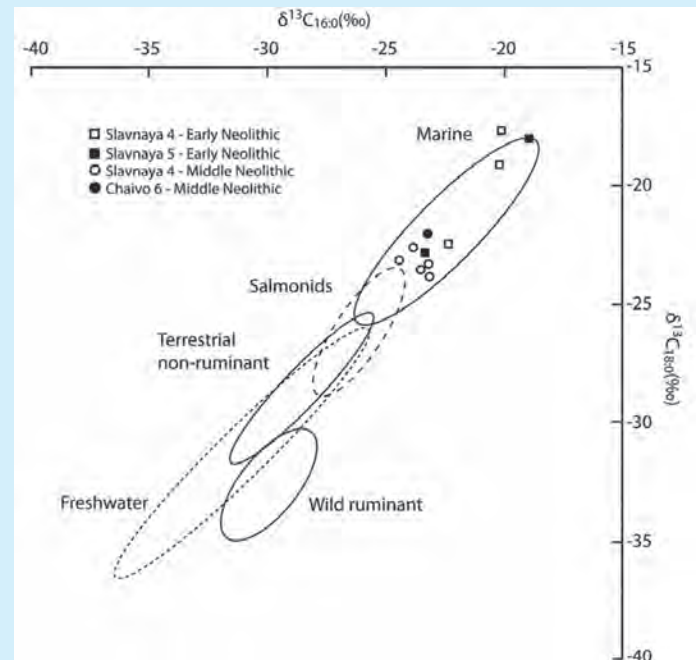
Kruse, F. (2017). Catching up: The state and potential of historical catch data from Svalbard in the European Arctic. *Polar Record*, 53(5), 520-533. doi:10.1017/S0032247417000481.

Comis, S. (2017). *Zeventiende- en achttiende-eeuwse kleding van walvisvaarders opgegraven op Spitsbergen. Thesis/dissertation RUG.*

Highlighted

Comparative Perspectives on the 'Western' and 'Eastern' Neolithics

The Neolithic was a fundamental new stage in human development. Archaeologists now acknowledge two contrasting Neolithization trajectories: the 'Western' Neolithic involved the transition to farming in Europe, but a fundamentally different pathway emerged in the rest of northern Eurasia. This 'Eastern' Neolithic is defined by the emergence of pottery among hunter-gatherers, and did not involve a transition to agriculture. Over the last few years members of the Arctic Centre have conducted interdisciplinary research to uncover the driving forces of Neolithization in Northeast Asia. This study in top archaeology journal *Antiquity* examined how increasing exploitation of aquatic resources was central to the Neolithization of Sakhalin Island.



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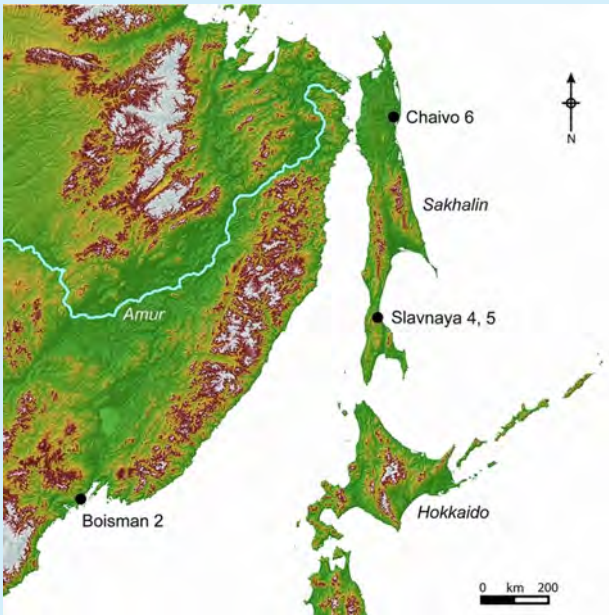


2.3 Classical and Mediterranean Archaeology

In 2017 the research group received an NWO internationalization subsidy of 44.000 € for the project 'Integrating Archaeological Field Surveys - Rome and Beyond' with Durham, Köln, Melbourne, Rome and St. Andrews. The project merges three large datasets on rural settlement patterns in Central Italy to study two millennia of socio-economic and demographic development in the hinterland of Rome (1000 BC-AD 1000). Groningen hosted the first workshop in a planned series of five. The partners in the project already submitted an European application.

The research group carried out excavations and environmental work at multiple locations in Italy. At Puntone on the Etruscan coast, saltworking during the late Bronze and early Iron age was explored through further excavation and pollenanalysis. Also a new saltworking site was discovered in South Lazio on the Tyrrhenean coast at Caprolace.

In the Pontine Region palaeogeographic reconstructions were carried out of the Pontine plain during the Bronze Age and excavations at the prehistoric cave site of La Sassa in the Monti Lepini.



The research demonstrated that the earliest hunter-gatherer ceramics in this part of the Russian Far East had been used to process aquatic resources, most likely salmon, but possibly also marine mammals like seal. Intensification of fishing - within a broader hunter-gatherer adaptation - may be one of the main driving forces of the 'Eastern' Neolithic although this issue needs more research. (Source: Antiquity Journal).



GIA student Marcello de Vos and physical anthropologist Walter Pantano of the superintendency of Rome excavating human skeletal remains in the cemetery of Campo Grande at Crustumerium (summer 2017).



During the year, the research group continued the study of the paper and artefact archive of the Satricum late 1980s excavations aiming at full publication and worked on publication of the Raganello Archaeological Project surveys.

A new Open Access publishing project (with Copenhagen) was started entitled “Etruscans, Latins and others in image and text; an archaeological illustrated manual for the period 1000 to 400 BC in central Italy” supported by the Groningen University Library.

Key publications

Attema, P.A.J., *Landscape Archaeology in Italy, Past Questions, Current State and Future Directions*. In: *The Economic Integration of Roman Italy: Rural Communities in a Globalising World* (eds T. de Haas and Gijs Tol, Leiden, Brill, 2017, pp. 426 -453.

Haas, T.C.A. de, *Managing the marshes, An integrated study of the centuriated landscape of the Pontine plain*. In: *Journal of Archaeological Science: Reports*, Vol. 15, 2017, pp. 470-481.

de Neef, W., Armstrong, K., van Leusen, P. M., *Putting the Spotlight on Small Metal Age Pottery Scatters in Northern Calabria (Italy)*. In: *Journal of Field Archaeology*, Vol. 42, No. 4. 2017, pp. 283-297.

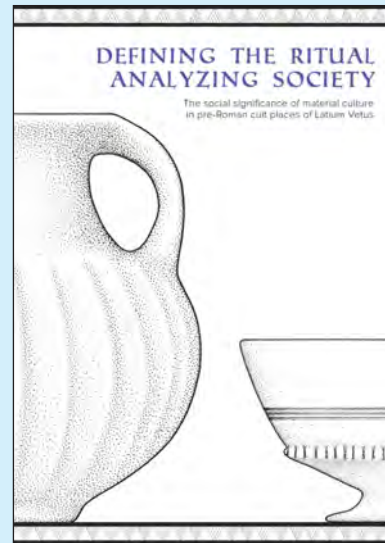
Nijboer, A. J. (2017). *Economy, 10th cent. - 730 BCE*. In A. Naso (Ed.), *Etruscology* (pp. 795-810). (De Gruyter reference). Boston/Berlin: De Gruyter. DOI: 10.1515/9781934078495-043

Nijboer, A. J. (2017). *Economy 730-580 BCE*. In A. Naso (Ed.), *Etruscology* (pp. 901-920). (De Gruyter reference). Boston/Berlin: De Gruyter. DOI: 10.1515/9781934078495-049

Lindenhout, E. van 't, *Looking for a Royal Residence: Architecture and Social Complexity in Archaic Rome. The Age of Tarquinius Superbus: Central Italy in the Late 6th c. BC: Proceedings of the Conference 'The Age of Tarquinius Superbus, A Paradigm Shift?', Rome, 7-9 November 2013* (eds. C. J. Smith, P.S. Lulof, Leuven, Peeters, Babesch Supplements, 2017. pp. 87-97.

Highlighted

On June 22nd, Tanja van Loon received her doctor's title for her thesis “Defining the Ritual, Analyzing Society: the social significance of material culture in pre-Roman cult places of Latium Vetus” which she defended for an international committee. Her study is based on the quantitative analysis and contextualization of thousands of votive gifts from a lake in Lazio.



A major publication was “The Economic Integration of Roman Italy: Rural Communities in a Globalizing World” with publishing house Brill, edited by Tymon de Haas and Gijs Tol. The book is one of the deliverables of their NWO project.

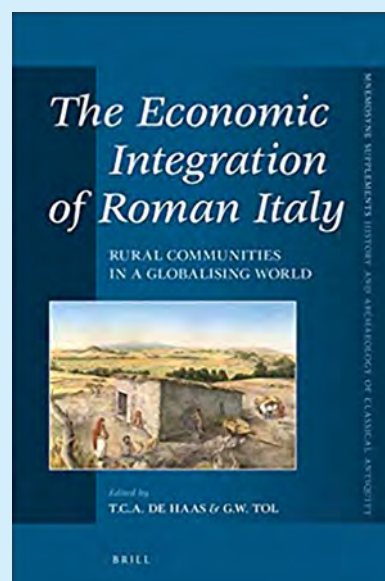




Fig. 1. The field-walking team, Ayios Vasilios survey, Greece.



Fig. 2. Geophysical prospectation in Ayios Vasilios by Wieke de Neef.

2.4 Greek Archaeology

The excavation of the North Cemetery and the Ayios Vasilios survey have been completed. The study of the finds and the scientific analyses are already producing exciting new results, while the integration of surface and geophysical data by Corien Wiersma and Wieke de Neef produce unexpected insights into the rise of Ayios Vasilios into the palatial centre of Laconia. Lidewijde de Jong's involvement in the Erbil Plain Survey, her excavation of a cemetery in Pisidia, Turkey and her *Digital Tombs* project throw light into the interplay between the forces of empire and local identities in the Hellenistic – Roman world. Rocco Palermo continued his research on Hellenistic Mesopotamia [fig. 4] as a visiting researcher in Harvard. New PhD students (Liz Lawton-Matthews and Iris Rom) with specifically mortuary interests joined the Research Group. Those about to finish move into new projects: Olivia Jones received funding for the anthropological study of Mycenaean material [fig. 5], while Eleni Panagiotopoulou participates in a new project on the isotopic analysis of cremations. The *Necropoleis Research Network* attracts a lot of interest from the international community, as new activities are organized (e.g. annual meeting in Isparta, Turkey; EAA session on *Mobility and Migration* co-organised by Vana Kalenderian [fig. 6] and Tamara Dijkstra).



Fig. 3. Gary Nobles and Nynke Bosma taking photos of funerary reliefs in Pisidia.



Fig. 4. Surveying in the Erbil Plain with Rocco Palermo.



Fig. 5. Olivia Jones, with the excavator Tini Aktypi and some Mycenaean skeletons.



Fig. 6. Vana Kalenderian studying Roman skeletons in Beirut.

Key publications

Jong, L. de (2017), *The Archaeology of Death in Roman Syria: Burial, Commemoration, and Empire*. Cambridge: Cambridge University Press,

Dijkstra, T., Kuin, I. N. I., Moser, M., & Weidgenannt, D. (eds.) (2017). *Strategies of Remembering in Greece under Rome (100 BC - 100 AD)*. (Publications of the Netherlands Institute at Athens; Vol. 6). Leiden: Sidestone press.

Palermo, R. (2017). Nineveh in the Graeco-Parthian Period. In L. P. Petit, & D. Morandi Bonacossi (eds.), *Nineveh, The Great City: Symbol of Beauty and Power* (pp. 256-259). (Papers on Archaeology of the Leiden Museum of Antiquities (PALMA); Vol. 13). Leiden: Sidestone press.

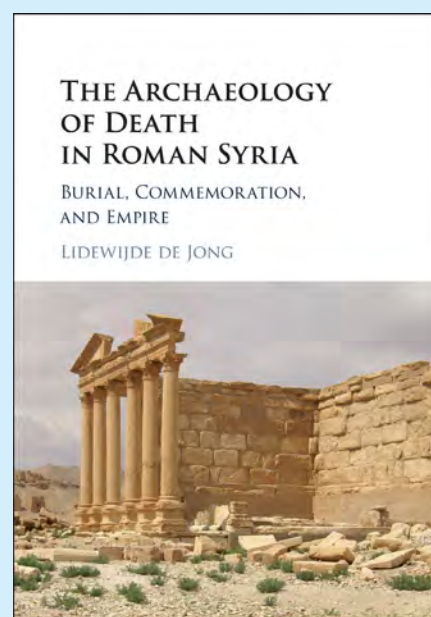
Jones, O. (2017). A Bioarchaeological Approach to the Human Remains and Burial Practices. In *The Mycenaean Cemetery at Agios Vasileios, Chalandritsa, in Achaea* (p. 189). Oxford: Archaeopress.

Rom, I.L., (2017). Een statement maken in tijden van crisis. Grafrituelen en de expressie van sociale relaties in West-Griekenland tijdens de Midden-Bronstijd (2000-1600 voor Christus). *TMA* 58, p. 56.

Highlighted

Jong, L. de 2017, *The Archaeology of Death in Roman Syria: Burial, Commemoration, and Empire*, Cambridge University Press, Cambridge.

In the first centuries of the Common Era, an eclectic collection of plain and embellished underground and aboveground tombs filled the cemeteries of the Roman province of Syria. Its inhabitants used rituals of commemoration to express messages about their local identity, family, and social position, while simultaneously ensuring that the deceased were given proper burial rites. In this book, Lidewijde de Jong investigates these customs and the belief systems that governed the choices made in the commemoration of Syrian men, women, and children. Presenting the first all-inclusive overview of the archaeology of death in Roman Syria, this book combines spatial analysis of cemeteries with the study of funerary architecture, decoration, and grave goods, as well as information about the deceased provided by sculptural, epigraphic, and osteological sources. It sheds a new light on life and death in Syria and offers a novel way of understanding provincial culture in the Roman Empire.





2.5 Prehistory and Protohistory of Northwest Europe

In 2017 research was conducted in close cooperation with the archaeobotany and zooarchaeology groups. The study of the transition to farming in NW-Europe received a boost through three PhD projects. Özge Demirci (in collaboration with the University of York) conducted mass spectrometry analysis of residue crusts on Swifterbant ceramics, demonstrating functional differences between Swifterbant and Ertebølle pots. Safoora Kamjan started her study on human-cattle relations in the Dutch Early Neolithic in comparison to Bulgaria and western Anatolia, while Taravat Talebi started her work on pollen cores from the province of Friesland in order to gain insight into variability in the timing of initial crop cultivation. Arnoldussen focussed on studying the origin of plant remains recovered from Celtic field layers and the build-up of field banks, and could show the latter to be the result of slow accumulation of field weeds tossed aside. Members of the Terp Centre continued their work within the project “Terpen- en Wierdenland: een verhaal in ontwikkeling” (Land of Terps: a story in development), which included the preparation of publications on ‘old research’ (excavations at Ezinge; pottery from Wijnaldum-Tjitsma) and the investigation of early medieval connections between the northern Netherlands and Scandinavia (Nieuwhof). Schepers conducted experiments with crop cultivation in salt marshes, which delivered evidence for the possibility of self-supporting agriculture in the period prior to diking. Van Popta concentrated on the landscape reconstruction of medieval Noordoostpolder in order to gain insight into its habitation dynamics, as well as the distribution of shipwrecks.



GIA's training excavation for first-year students at the monastery of Yesse (Groningen) delivered a lead papal bulla of Pope Gregory the 9th (13th century).



Geoarchaeological sampling of a section through a Celtic field bank.



Reconstruction of a Scandinavian Vendel helmet, of which parts have been found at Hallum, Friesland.



Key publications

Arnoldussen, S., & Linden, M. V. D. (2017).

Palaeo-ecological and archaeological analysis of two Dutch Celtic fields (Zeijen-Noordse Veld and Wekerom-Lunteren): solving the puzzle of local Celtic field bank formation. *Vegetation History and Archaeobotany*, 26(6), 551-570.

Çakırlar, C., & Atici, L. (2017). Patterns of animal exploitation in western Turkey: from Palaeolithic molluscs to Byzantine elephants. In U. Albarella, H. Russ, K. Vickers, & S. Viner-Daniels (Eds.), *Oxford Handbook of Zooarchaeology* Oxford: Oxford University Press.

Nicolay, J. (2017). Power and identity in the southern North Sea area: the Migration and Merovingian periods. In J. Hines, & N. IJssennagger (Eds.), *Frisians and their North Sea Neighbours: From the Fifth Century to the Viking Age* (pp. 75-92). Woodbridge: Boydell & Brewer.

Peeters, J., & Niekus, M. (2017). Mesolithic pit hearths in the northern Netherlands. Function, time-depth and behavioural context. *Séances de la Société Préhistorique Française*, 12, 225-239.

van Popta, Y. (2017). Lost islands, Drowned Settlements and Forgotten Shipwrecks: interaction between aspects of the maritime cultural landscape of the former Zuiderzee (AD 1100-1400). In *Baltic and Beyond: Change and continuity in shipbuilding: Proceedings of the Fourteenth International Symposium on Boat and Ship Archaeology Gdansk 2015* (pp. 107-112). Gdansk: The National Maritime Museum, Gdansk.

Highlighted

Popta, Y. van (2017). Lost islands, Drowned Settlements and Forgotten Shipwrecks: interaction between aspects of the maritime cultural landscape of the former Zuiderzee (AD 1100-1400). In *Baltic and Beyond: Change and continuity in shipbuilding: Proceedings of the Fourteenth International Symposium on Boat and Ship Archaeology Gdansk 2015* (pp. 107-112). Gdansk: The National Maritime Museum, Gdansk.

This paper focuses on the historical geography of the Noordoostpolder region, a reclaimed part of the former Zuiderzee (Central Netherlands). It is commonly accepted that the region was inhabited in the late Middle Ages, but little is known about the extent of habitation. This research therefore centres on the medieval landscape and occupation dynamics of the Noordoostpolder region. The interdisciplinary approach combines archaeological, (landscape) historical and geological datasets in a GIS environment. The results deepen insights into the maritime cultural landscape of the former Zuiderzee, and shows that habitation was not limited to the islands Urk and Schokland, and coastal zone.



Reconstructed settlement locations northeast of the former island of Urk (southwest corner).



3. GIA IN SOCIETY

3.1 Arctic and Antarctic Studies

Valorization and active public outreach have been central to Arctic Centre operations since its founding in 1970. The Arctic Centre built further momentum in 2017 by being accepted to the prestigious University of the Arctic (UArctic). Through direct engagement with the Arctic Council and IASC it played a central role in polar affairs, and functioned as a knowledge broker for the Netherlands Ministry of Foreign affairs, providing expert advice to Dutch diplomats, embassies and businesses. Through EU-PolarNet it also advised the EU on scientific policy. It also shaped and informed public opinion by communicating the importance of polar research in documentary films, websites and media appearances.

List of highlights/key publications/activities

Annette Scheepstra was active in policy-related research, and published: Tennberg, M., Dale, B., Klyuchnikova, E., Löf, A., Masloboev, V., & A. Scheepstra (2017). Local and regional perspectives on adaptation. In *Adaptation Actions for a Changing Arctic: Perspectives from the Barents Area*. (pp. 47-58). Oslo: Arctic Monitoring and Assessment Programme (AMAP).



The Arctic Centre makes regular contributions to policy-related reports, primarily through the work of staff as expert advisors to the Working Groups of the inter-governmental Arctic Council. This overview report is part of 'Adaptation Actions for a Changing Arctic: Perspectives from the Barents Area', with Annette Scheepstra contributing to chapters on local and regional development.

In 2017 Annette Scheepstra organised two sessions at the ninth International Conference on Arctic Social Science in Umeå, Sweden. This was part of the EU-PolarNet project and the goal was to improve transdisciplinary cooperation within large polar research consortia, with a focus on strengthening both cooperation between the humanities, social- and natural sciences and making polar research have greater societal relevance through engagement with a wider range of stake holders. As part of the same project she also organised an expert White Paper Workshop in Madrid.

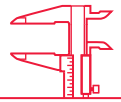
Frits Steenhuisen served as scientific advisor in the Netherlands governmental delegation to the Finnish Chairmanship of the Arctic Council.

Maarten Loonen was invited to participate in the Two-Degrees Expeditions organised by high-profile climate-change activist Bernice Notenboom. This brought Dutch CEOs to witness the impacts of polar climate change and resulted in a documentary film.

Maarten Loonen made several other media appearances, contributing inter alia to a national broadcast of Brandpunt+ (<https://brandpunt-plus.kro-ncrv.nl/brandpunt/dit-zijn-de-eerste-klimaatvluchtelingen-van-de-pool/>); he also helped design the KNMI special webpage on the effects of climate change in the Arctic.



Maarten Loonen (far left) appearing in a documentary film by climate-change journalist Bernice Notenboom (centre, red coat). This brought the CEO's of Dutch companies to Svalbard to witness the impacts of climate change at first hand, and was broadcast on prime-time TV.



Maarten Loonen helped design this special website for the Royal Dutch Meteorological Institute (KNMI), which aims to communicate the diverse implications of current polar climate change to wide range of end users.



Throughout 2017 Maarten Loonen made a range of other high-profile media appearances. Here he is pictured with Sacha de Boer, former news anchor woman, and now freelance photographer and journalist, in a documentary programme about polar climate change for the Brandpunt+ series on Dutch TV. He played a central role in the design and presentation of this film.

3.2 Classical and Mediterranean Archaeology

On Thursday, June, 2017, Attema, Bronkhorst and Noorda organised in the Smitsborg the international workshop “A 3D perspective on archaeological data, the means and value of 3D visualization and modelling” as part of their Digital Humanities Exploratory Project grant. International speakers of various backgrounds (universities, commercial firms, museums) presented cases relevant for the debate. Their own project, carried out with CIT’s Frans van Hoesel and his team, concerns the creation of a 3D environment of a burial monument that is currently being excavated at GIA’s excavations at Crustumerium containing superimposed burial and settlement contexts.

List of highlights/key publications/activities

Attema, P.A.J., T.C.A. De Haas, P.M. van Leusen with international partners: EU application Heritage in Changing Environments (Jpich):

“Unseen Heritage: realizing the potential of landscape archaeology for the past, present and future of Rome’s hinterland” with the Sapienza university of Rome (principal applicant) the University of Durham and various Italian cultural heritage institutions.

Van Leusen, P.M., T.C.A de Haas, the FAIR Surveys Project. Round table at the 2017 EAA Maastricht on archiving and making accessible survey datasets using Conceptual Reference Modelling (CRM).

Attema P.A.J., Bronkhorst, R. & Noorda, N. 2017, “Een multifunctioneel 3D-model: interdisciplinair onderzoek naar een opgeworpen heuvel te Crustumerium, Italië”, *Paleo-Aktueel*, vol. 28, pp. 33-39.

van ‘t Lindenhout, E., Een zoektocht naar betekenis. A Tribute to Annette Harder: Chair of Greek Language and Literature Rijksuniversiteit Groningen 1991-2017 (edited by M. Cuypers ; J.J.H. Klooster, G.C. Wakker, Groningen, Rijksuniversiteit Groningen, 2017. pp. 59-63.

de Neef, W., Alessandri, L., Ulrich, B., Rolfo, M. Grot, bot, pot, weerstandsplot, Archeologisch en geofysisch onderzoek in de grot La Sassa (Lazio, Italië). In: *Paleo-aktueel*, 2017 ; Vol. 2017, No. 28. pp. 27-32.



Poster for the June 2017 workshop.



3.3 Greek Archaeology

Public outreach and the investigation of the role of archaeology in contemporary society remains a central component of the chair's activities. Doing archaeological research in the Mediterranean has some significant advantages, as there is a vivid interest in the past, and in archaeological monuments in particular. There are, however, also distinct disadvantages: The Mediterranean countries are at the moment undergoing severe financial and political crises, while some – in the Middle East in particular - are ravaged by war and destruction. The combination of all these factors is bringing new asymmetries and divisions into the archaeological field, especially between the north and south Europe. This newly emerging 'Great Divide' was discussed in an EAA session co-organised by Sofia Voutsaki together with Spanish and Greek colleagues in order to demonstrate the severe consequences of the financial crisis on the archaeological sector, and on the monuments themselves.

At the same time, Lidewijde de Jong is engaged in a series of initiatives developed to increase public awareness of the vulnerability of archaeological heritage in the Middle East. Her *Digital Tombs* project, and specifically the creation of a digital repository of the severely threatened archaeological monuments of Syria will be an important tool for both research and heritage management (or salvage).

List of key publications/activities

Voutsaki, S. & Cartledge, P. (eds.) (2017) *Ancient Monuments and Modern Identities: towards a critical history of archaeology in 19th and 20th century Greece*. Routledge, London.

EAA session, *The 'Great Divide' once more?*

Archaeology in the north and south of Europe

Public lecture by Sofia Voutsaki, *The Ayios Vasilios North Cemetery: an important new discovery*, Cultural Centre, Sparta

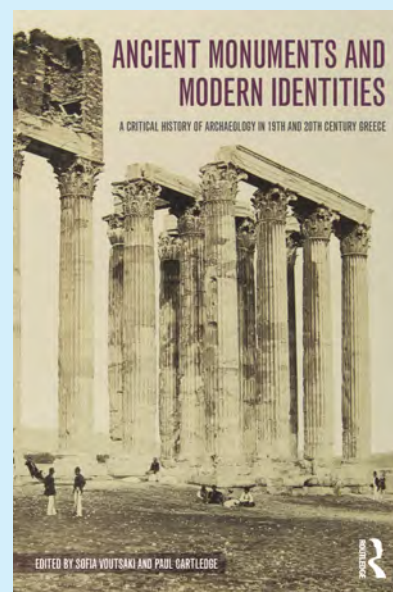
Talk by Lidewijde de Jong, *Digital Tombs: Towards an Integrated Study of Funerary Practices*, Digital Humanities Day, University of Groningen

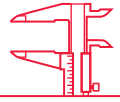
Talk by Lidewijde de Jong, *Archeologie in Syrië, Irak en Turkije: crises, bloei en digitale toepassingen*, Nederlands-Vlaamse studiedag Mediterrane Archeologie (NVSMA), Stichting BABESCH: 'Crises in de Mediterranée. De gevolgen voor het Nederlandse en Vlaamse archeologisch onderzoek'.

Highlighted

Voutsaki, S. & Cartledge, P. (eds.) (2017) *Ancient Monuments and Modern Identities: towards a critical history of archaeology in 19th and 20th century Greece*. Routledge, London.

Ancient Monuments and Modern Identities sets out to examine the role of archaeology in the creation of ethnic, national and social identities in 19th and 20th century Greece. The essays included in this volume examine the development of interpretative and methodological principles guiding the recovery, protection and interpretation of material remains and their presentation to the public. The role of archaeology is examined alongside prevailing perceptions of the past, and is thereby situated in its political and ideological context. The book is organized chronologically and follows the changing attitudes to the past during the formation, expansion and consolidation of the Modern Greek State. The aim of this volume is to examine the premises of the archaeological discipline, but also to apply reflection and critique to contemporary archaeological theory and practice. The past, however, is not a domain exclusive to archaeologists. The contributors to this volume include prehistoric and classical archaeologists, but also modern historians, museum specialists, architectural historians, anthropologists, and legal scholars who have all been invited to discuss the impact of the material traces of the past on the Modern Greek social imaginary.





3.4 Prehistory and Protohistory of Northwest Europe

Archaeological research in the northern Netherlands started in Groningen with the establishment of the Biologisch-Archaeologisch Instituut in 1920. Ever since that time, the university has been a leading player in archaeological research and heritage management in the region. The chair group aims to maintain this tradition of regionally embedded research and outreach, but expands its expertise at a national and international level.

Because a safe future for archaeological remains in situ cannot be taken for granted, the chair group continues to engage in activities aimed at a stronger support base for the sustainable preservation of archaeological heritage by means of various activities. We work towards this goal by presenting our research to wider society via publications, lectures, public media (television, radio, newspapers), as well as involvement in 'commercial' projects, for instance as member of an advisory board.

In 2017 several activities were undertaken in which staff members and students played a role. Schepers paid attention to the experience of silence and darkness in the past a lecture given in the context of the 'Feel the Night' event on the Dutch northern coast. Other activities involved issues of representation of the past (papers and talks by Nieuwhof, Raemaekers), archaeology and society (Groenendijk), and contributions to discussions about ways forward in development-driven research (Raemaekers), including the management of submerged prehistoric archaeology and landscapes (Peeters). The zooarchaeological department (Çakırlar, Nobles) conducted two small projects under the umbrella of Digital Humanities focussed on a digital reference collection (Bonify) and the creation of an open-access dataset ('Dogs of Van Giffen').



Bonify: GIA's zooarchaeological reference collection going digital.



An experimental project on the construction of a Mesolithic dwelling near Swifterbant (Flevoland) received attention from the local media.



Co-design in archaeology: unlike the professional's scientific agenda, the public is interested in political autonomy, new utilisation of meaningful places, and talent development.



List of key publications/activities

- Groenendijk, H. (2017). Gezamenlijk ontwerpen in de archeologie. In R. Knoop, & M. Schwarz (Eds.), *Straatwaarden: In het nieuwe speelveld van maatschappelijke erfgoedpraktijken*. Amsterdam: Reinwardt Academie, pp. 72-79.
- Nieuwhof, A. (2017). Het imago van de Chauken: Plunderende zeerovers of ondernemende terpbewoners? *Archeologie in Nederland*, 1(2), 26-33.
- Peeters, J.H.M. (2017). *De buitendijkse archeologische potentie vanuit een binnendijks perspectief*. Paper presented at the workshop 'Archeologie van het prehistorisch landschap onderwater', National Heritage Agency, Amersfoort.
- Peeters, J., Raemaekers, D., Devriendt, I. I. J. A. L. M., Hoebe, P. W., Niekus, M., Nobles, G. R., & Schepers, M. (2017). *Paradise Lost? Insights into the early prehistory of the Netherlands from development-led archaeology*. (Nederlandse Archeologische Rapporten; Vol. 62). Amersfoort: Rijksdienst voor het Cultureel Erfgoed.
- Schepers, M. (2017). *Stilte en Duisternis in Vervlogen Tijden: oerverhalen?* Paper presented at Feel the Night (Nacht van de Nacht), Kollumerpomp, Netherlands

Highlighted

Peeters, J., Raemaekers, D., Devriendt, I. I. J. A. L. M., Hoebe, P. W., Niekus, M., Nobles, G. R., & Schepers, M. (2017). *Paradise Lost? Insights into the early prehistory of the Netherlands from development-led archaeology*. (Nederlandse Archeologische Rapporten; Vol. 62). Amersfoort: Rijksdienst voor het Cultureel Erfgoed.

This book reports on a synthetic analysis of reports produced in the context of development-driven projects over the past 10-15 years. The analysis has shown that the degree to which these reports permit to take major steps forward in answering questions from the National Archaeological Research Agenda is highly variable. A limited number of topics and research questions has profited from the generated data, and in some cases it has shown to be on the forefront of innovative approaches. Most often, however, results remain of an anecdotal nature. Having identified key problems, the book also provides possible solutions in order to improve future outcomes of development-driven work.



Results of 10-15 years of development-driven research reduced to a 259 pages counting book: urgent need to build bridges between commercial and academic archaeology.



4. NARRATIVE

Among the many research projects the following is highlighted to give an idea of the cross-pollination of academic research and societal relevance.

4.1 Archaeology in 3D

While archaeologists may be digging into the distant past, they do use the latest technological devices to enhance and visualise their results. Transforming large amounts of data into three-dimensional images is one of these technological innovations. Peter Attema, Frans van Hoesel and Remco Bronkhorst explain how this works in the excavations at Crustumerium in Italy.

Descending into a burial chamber

I am received at the Reality Center of the university's Centrum voor Informatietechnologie (CIT). Frans van Hoesel switches on the devices and shows me around. Sporting a cap, 3-D goggles and slippers, we descend into a chamber tomb of the 7th century BC. We need to stoop to enter the tomb. Frans hands me a digital torch. Peter Attema, who heads the excavations at Crustumerium, is crouching beside me. In the burial chamber multiple bodies were deposited; I

discern two recesses in front of me and one to the left, still containing some bones. Peter points to the floor, where a fourth body lay. "With it we also found some small bottles that had probably contained scented oil for anointing the dead body and as a gift to take into the afterlife", he explains. "What did it smell of?" - I find that the virtual environment triggers my curiosity and imagination. Peter laughs; "We don't know; there was nothing left inside."

Significance to science and public education

Upstairs in the office we continue our talk about the collaboration between archaeologists and IT specialists. Peter Attema: "In fact it all began with the data that we gathered from excavations. These came in such large quantities that at the GIA we found them hard to process. Remember that in the old days everything was measured and drawn by hand. But now we have ever-increasing facilities for exact measurement and recording of every detail. For instance, if you systematically take photos and can have them joined up by ingenious software, you can hugely improve your recording. This technique, known as photogrammetry, can nowadays even be performed by smartphone. But in an excavation we can also



Chamber tomb in 3D.



Still from a short film on Crustumarium for valorization purposes showing Peter Attema explain the work done at Crustumarium.

use drone images, geophysical data from resistivity measurements, ground-penetrating radar and laser measurements. If all these data can be linked up, the result becomes far more transparent. 3-D techniques are immensely helpful and therefore are important tools for evolving science. But we also immediately spotted their potential for presenting archaeology to the public in an attractive form.”

Collaboration at Crustumarium

What makes the excavations at Crustumarium so eminently suited for 3-D imaging? “Indeed there are multiple reasons. Above all, the complexity of the site. There is a jumble of burials: older graves underlying younger ones with maybe a defensive moat in between and remains of a settlement on top. 3D is helpful in clarifying such interrelations. Besides, the conditions for experimenting with new IT applications are

favourable. There is a long-term, stable collaboration with the archaeological service and university of Rome and with commercial agencies. We have the time and space for developing things and to pursue and improve upon them in the next excavation.” To which Frans van Hoesel adds that for IT specialists it is fun to think along with archaeologists and to find possibilities for sharing the newly found technical knowledge with other disciplines.

Looking to the future

One of the ways in which the new techniques are disseminated is by training archaeology students. Peter Attema is amazed at the ease with which students pick up such matters and at what they themselves manage to work out. Student Remco Bronkhorst, who is specialising in 3 D in archaeology, agrees. He rapidly demonstrates to me a range of IT tricks and what kinds of images and insights these can produce. We also discuss other archaeological applications, such as the on-site identification of bones by means of a 3-D program.

Then the conversation returns to making archaeology accessible to a broad public. The actual burial chamber that I had just paid a virtual visit to is now closed up. It is too costly to protect such sites while opening them to visitors, but in this way they still remain accessible. This offers a truly different experience from a showcase full of potsherds, and archaeologists are well aware of this. For 2019 the



Photogrammetry in action at Crustumarium.



Allard Pierson Museum in Amsterdam is planning an exhibition about the excavations at Crustumerium and Satricum (together with the University of Amsterdam). Attema: “There too we want to use 3D technology, to allow the public to experience how important these projects are. How exactly we shall do this will also depend on the museum. But this site tells us so much about the rise of the Roman Empire, it’s something people will really want to be part of.”

Saskia Visser, policy advisor for applied science, faculty of Humanities

Learn more?

The project’s official website: Crustumerium.nl (including a short video of the chamber tomb in 3D) Further informative videos: <https://www.rug.nl/about-us/news-and-events/video/archive/2015/crustumerium>

4.2 Plastic pots of pulses and specimens of spices

It is a well-kept secret that the world’s greatest archaeological seed bank is in Groningen. Next door to the Academy, at Broerstraat 9, we find professor of archaeobotany Dr René Cappers, surrounded by his cabinets, pots and tubes. We are interviewing him about the importance of this collection to archaeological and multidisciplinary research and to modern society.

Wim van Zeist, professor of archaeobotany, first established the seed bank in the 1970s. His aim was to facilitate identification of the huge variety of seeds and fruits from excavations. “We wanted to compare this material with modern seeds and fruits”, Cappers tells us at his office, which is more of a museum than a traditional workplace. Since then the seed bank has



expanded to encompass over 40,000 different seeds and fruits. Since the beginning of the project, a large collection of subfossil seeds and fruits have become available. This subfossil collection covers a period of over 10,000 years: from early hunting-gathering right up to the 18th-19th century. The transition from hunting-gathering to early farming raises many questions. What prompted hunter-gatherers to start growing wild cereals and pulses? What artefacts did they possess to harvest them and process them into something palatable? And what was it that they prepared from them?

Connections to the present

“The earliest domesticated plants were cereals, such as barley and wheat, and pulses: green pea, lentil, chick pea and bitter vetch”, Cappers explains. The oldest known grain of wheat, excavated from a settlement in southeastern Turkey, is part of the subfossil collection. “In those days it was quite a challenge to make such plants into edible products.” Most food remains from the past have of course perished, therefore every bit of evidence from the past is needed to add to the picture. A good example is *kashk*, a type of cheese made without rennet, which is still being prepared in Afghanistan. It consists of chalk-like chunks tasting of buttermilk. That the earliest farming societies may already have produced it is a fascinating idea.

In order to understand how and why people used particular farming methods, the Groningen archaeobotanists have travelled to Turkey, Syria, Iran and Iraq, the cradle of agriculture. The few remaining traditional farming settlements offer a wealth of information about the past. “In these communities, people traditionally rinse their cereals. Their ancestors started doing this to remove any lumps of soil, because grit and clay damage the teeth. So you see that even our distant ancestors were concerned about long-term health effects.” So what’s new about our “Healthy Ageing” projects?

Archaeobotanists should, however, hasten to safeguard this evidence, as agriculture is being modernised and farming traditions are fast disappearing everywhere. Genetically uniform and manipulated seeds are displacing the old varieties. The seed collection thus constitutes a piece of essential heritage,



documenting pre-Monsanto times. The subfossil seed and fruit collection may also unintentionally acquire an important extra value, for instance as a result of the current situation in Syria. The advance of Islamic State destroyed the depot that held all the archaeological finds from the excavations at Tell Sabi Abyad (in Raqqqa province). As the seeds and fruits were being studied and preserved in Groningen, they now are the only surviving material from these important excavations.

An increasingly multi-disciplinary perspective
When Capper shows us around the research lab, we see a PhD student analysing subfossil plant remains from a cesspit. She only briefly averts her gaze from the microscope. This reflects the multidisciplinary nature of the field of research. Archaeology is far more than just gum-booted trench-digging, and the GIA advocates this approach. For instance, Dr Mans Schepers as an archaeobotanist is interested in the landscape and arable farming in the coastal regions: “Human behaviour has a strong impact on the aspect of the landscape. Understanding the landscape and the people who shaped it is a prerequisite for good research.”

Nowadays the seed bank serves research by scientists from a wide range of disciplines. Biologists

use the collection to investigate the effects of climate, soil and moisture on plants. The current generation of archaeobotanists is also interested in the ways in which food was prepared and might be preserved for long periods. Were they energy-efficient? What effect did they have on its flavour development? What kind of technology did they require? “There now is a great deal of interest in healthy and sustainable nutrition. Research of the food economy in the past can provide insights into the choices made in those days. Why did people select different crops? What economic criteria played a part? And what was the health effect? Nowadays spelt bread is on sale in many shops, with spelt being promoted as a kind of primordial superce-real. But was it equally popular in the past?”

The image of the archaeologist thinking beyond disciplinary boundaries and having relevant things to say to modern society, deserves to be promoted rather more, according to Cappers. A large part of the collection of recent seeds and fruits is accessible in the form of a book and a website. The latter also documents the research into traditional agriculture and food processing (www.plantatlas.eu). “This has given our research an international reputation.”



Prof. Cappers showing a bushel.



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