ACTIVATING ARCTIC HERITAGE

EXPLORING UNESCO WORLD HERITAGE IN GREENLAND

PROJECT OVERVIEW AND ANNUAL REPORT 2019

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AAH Annual Report 2019. Compiled and edited by PI Bjarne Grønnow, The National Museum of Denmark.

Front page: archaeologist Jens Fog Jensen approaching a group of 18th – 19th century communal house ruins at Ukiivik, August 2019.

ACTIVATING ARCTIC HERITAGE - PROJECT OVERVIEW

Introduction

In 2017 and 2018, two areas in Greenland were added to the UNESCO World Heritage List. These prestigious appointments acknowledge the unique and diverse cultural assets of the properties and represent two diverse geographical and culturally distinct parts of the country.

Kujataa, in the South, is characterized by its rich Inuit, Norse and Colonial cultural remains, with a thriving tradition of Arctic sheep herding and agriculture. Conversely, *Aasivissuit-Nipisat* in West Greenland represents a 4,400 years long tradition of subsistence hunting and fishing that patterned itself across the Paleo-Inuit, Thule and Historic/Modern Inuit periods. Families in this area still make annual journeys from the coast to the inland to hunt caribou and fish Arctic char, retracing the same ancient pathways and camping on the same grounds as their ancestors.

'Activating Arctic Heritage' benefits from the world-wide attention, the present momentum, and the unique research opportunities resulting from the recent UNESCO appointments. Through developing and testing theoretical and methodological approaches in novel ways, the project explores the present historic moment of transition, where attention to Greenland's cultural heritage is shifting from local to global scale.

First and foremost, the project offers a rigorous basic research program that provides substantial new empirical knowledge about small-scale societies subsisting through millennia in extreme environments, their changing life conditions and connected environmental histories. Such insights across disciplines are of universal relevance today.

At the same time, the project is of great importance to the contemporary Greenland society: 'Activating Arctic Heritage' strengthens cultural awareness in the local communities as well as in the entire country. It is intended that the theoretical, methodological and cultural historical insights and results developed by the basic research program of the project will have long lasting impacts. The project runs for four years (2019-2022).

Novel and original approaches are introduced and new cultural and environmental historical issues are targeted through three interconnected key topics:

The first key topic, *'Dialogues on Arctic Cultural Heritage'*, is a novel approach to the co-production of knowledge by local people, researchers and other stakeholders. This is an experimental approach to theory building targeting perceptions of cultural heritage, local histories and lessons from Greenland's past.

The second key topic, *'New Scientific Approaches to UNESCO Sites in Greenland'*, combines a wide range of non- or minimally destructive scientific methods in order to extract 'hidden' information from cultural layers and to evaluate the multiple threats to vulnerable archaeological sites caused by increasing human activities and global warming. Furthermore, by focusing on the Medieval Warm Period and the Little Ice Age, this key topic explores past human life conditions and 'tipping points' in relation to human societies and their interplay with their resources and environments.

The third key topic*, 'Learning from and enriching cultural heritage'*, addresses knowledge-gaps by focusing on unexplored landscapes and uninvestigated Inuit and Norse sites. This will add substantial new cultural historical insights and provide long-lasting cultural value to the two new UNESCO properties.

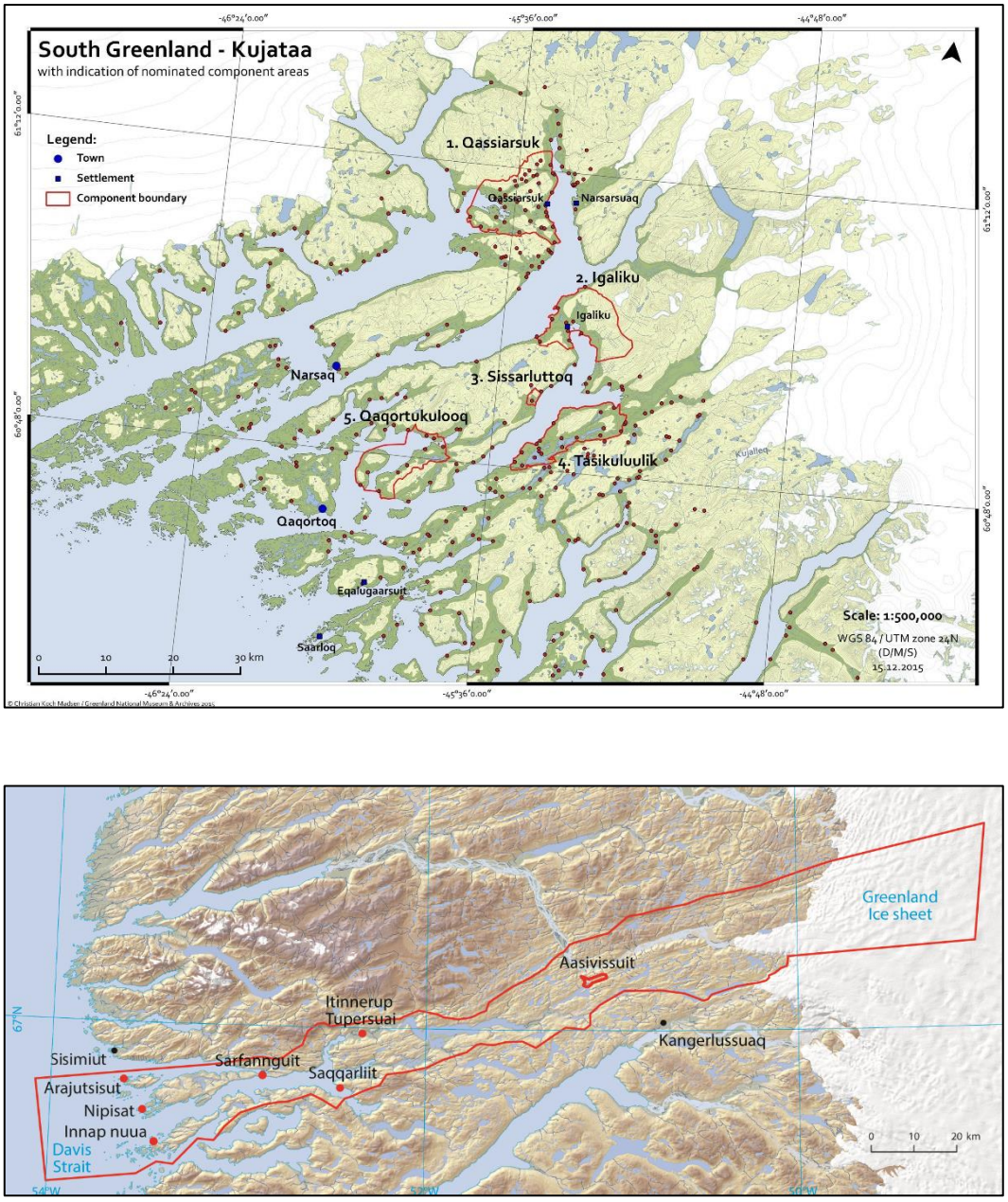

Fig. 1: Overview maps. Kujataa (upper) and Aasivissuit-Nipisat (lower).

Organization

The two national museums

The project is anchored at The National Museum of Denmark, Copenhagen (NM), and at The Greenland National Museum & Archive, Nuuk (NKA). Research Professor in Arctic archaeology, dr. phil. Bjarne Grønnow, Modern History and World Cultures at The National Museum of Denmark, is the PI of the project and heads the group of experienced scientists and post docs from a broad range of humanistic, social and natural science disciplines. Deputy director, post doc. Christian Koch Madsen, The Greenland National Museum and Archive is co-PI of the project. Several departments at The National Museum in Copenhagen are involved, in particular Danish Middle Ages and Renaissance and Environmental Archaeology and Materials Science.

The project is funded by The Carlsberg Foundation as a 'Semper Ardens Project' (2019 – 2022).

Fig. 2: The Greenland National Museum and Archive, Nuuk

https://www.carlsbergfondet.dk/da/Forskningsaktiviteter/Bevillingsstatistik/Bevillingsoversigt/CF18_1106_Bjarne-Gronnow

Each Key Topic is backed up by one or more work packages (WP), headed by senior researchers. The coherence of the entire project is secured through overarching activities including project administration, common seminars and outreach activities.

Project Group, 2019

Bjarne Grønnow, research professor (NM)
Martin Appelt, senior researcher (NM)
Jens Fog Jensen, senior researcher (NM)
Hans Harmsen, curator, project researcher (NKA)
Mikkel Myrup, curator (NKA)
Henning Matthiesen, senior researcher (NM)
Martin Mortensen, senior researcher (NM)
Jørgen Hollesen, senior researcher (NM)
Catherine Jessen, senior researcher (NM)
Jette Arneborg, senior researcher (NM)
Dorthe Dangvard Pedersen, post doc. (NM)
Peter Steen Henriksen, senior researcher(NM)
Anne Birgitte Gotfredsen, project researcher (Globe Institute, University of Copenhagen)
Christian Koch Madsen, project researcher, vice dir. (NKA)

Associated researchers:

Rasmus Voss, curator (NM)
Marie Bønløkke Missuno, museum director, Sisimiut Museum
David Gregory, senior researcher (NM)
Christian Sune Pedersen, head of research & collections (NM)

Key Topics and Work Packages – an overview

Key Topic 1: *Dialogues on Arctic Cultural Heritage*

WP 1.1: Dialogues on Heritage and Society (senior researchers Martin Appelt, Jens Fog Jensen, Hans Harmsen).

These inquiries are inspired by the principles of community dialogue and co-creation on different stages of the research process. The dialogues are intended to shed new light on 'Cultural Heritage and Entanglements'. Local ownership and perceptions of cultural property versus universalistic perspectives as promoted by the UN are discussed focusing on the consequences of appointing sites and monuments World Heritage. New insights into these entanglements of local and global are of great importance to Greenland and all countries that are custodians of World Heritage.

Key Topic 2: *New Scientific Approaches to UNESCO Sites in Greenland*

WP 2.1: Hidden in the Midden: Unfolding the Research Potentials of Well-Preserved Culture Layers (senior researcher Henning Matthiesen).

This WP explores the information potential, preservation and degradation of organic archaeological remains in the UNESCO properties. This requires the documenting and testing of stratified midden layers on selected Inuit, Norse and historic sites (10th – 19th century) situated in different ecological and climatic zones. Selected sites are investigated by researchers from natural sciences and archaeology, with a focus on sampling for analyses of soil chemistry, ancient DNA, lipids, pollen, seeds, insect remains and animal bones. The reliability and vulnerability of information provided by the bio-molecules and macro-fossils are critically evaluated.

WP 2.2: The Loss of Cultural Heritage: Human and Natural Impacts on Arctic Sites (senior researchers Hans Harmsen, Jørgen Hollesen).

The goal is to produce fundamental baselines and methods required to detect, monitor and quantify damage to archaeological sites and their components in the two new UNESCO properties. Data collected at key sites are used to create GIS layered models which form the starting point for identifying changes to site stability over time. Community mapping and integration of historical and current air and satellite imagery, drone maps, and site plans are combined in order to describe real-time changes on sites. Outcomes of the work package provide the opportunity to gain new insights into predicting, forecasting and mitigating critical 'tipping-points' concerning site preservation.

WP 2.3: Rain or Shine: Local Palaeoenvironments and paleo-climate in the UNESCO areas (senior researcher Catherine Jessen).

Analyses of ice cores and marine sediments have provided important information on large scale climatic changes in Greenland and the North Atlantic region during the Holocene. However, environmental histories at regional and local levels remain a significant knowledge gap in our understanding of local place histories. This WP addresses this shortfall through palynological and geochemical analyses of sediment cores from selected lakes in the UNESCO properties. In particular, the dramatic climatic changes that took place during the periods of intensive human settlement in West Greenland (i.e. during the Medieval Warm Period (c. 800 – 12/1400 AD) and the Little Ice Age (c. 1400 – 1850 AD) are investigated.

Key Topic 3: *Learning from and Enriching Cultural Heritage*

WP 3.1: Human Experiences in Norse Greenland: Health, Well-being and Trade-offs

(senior researcher Jette Arneborg and professor Niels Lynnerup)

This WP unpacks the complex relations of medieval Norse people in Greenland and their shifting lifeways under changing environmental, social and economic stress. Past lifeways are reconstructed through bio-archaeological and physical-anthropological (forensic) studies of quite unique skeletal materials from Norse cemeteries stretching from the earliest settlement phase until the disappearance of the Norse in the mid-15th century AD. For Norse communities, maintaining social sustainability and the well-being of individuals during times of change required clever solutions and trade-offs that often had unintended long-term consequences for both humans and environment. The WP explores these consequences.

WP 3.2: Plant Resources in the Norse Society (senior researcher Peter Steen Henriksen)

This WP relates to WP 3.1 as it addresses the food patterns and dietary habits of the Norse. Particularly, the vegetable component of Norse diets is only sporadically known and the WP fills this knowledge gap by investigating the cultivation and importation of cereals and vegetables, as well as the collection of wild indigenous plant resources by the Norse. The work package is based on analyses of macrofossils (preserved plant remains) in combination with isotope analyses made on soil samples from well-preserved midden deposits at Norse farms in the UNESCO property of Kujataa.

WP 3.3: Inuit Landscapes, Arctic Agency: Thule Inuit in Kujataa (post doc., vice director Christian Koch Madsen)

In contrast to the Norse history, the Inuit component of the cultural history of the Kujataa UNESCO area remains largely unknown. This knowledge gap motivates WP 3.3, which includes surveys, high precision mapping, and dating of Thule sites in the area. Data collected during field work will allow for modelling subsistence and settlement patterns, including changes in yearly cycles spanning the Little Ice Age (c. 1450 – 1800 AD) into the early colonial period. The WP provides new insight into the cultural development and changes through the Thule culture period in Kujataa, and moreover it is aimed at building local heritage capacity and competences through joined and balanced involvement of local UNESCO authorities and community members.

WP 3.4: Dynamic Glocal Networks – Settlement, Trade and Exchange in West Greenland (senior researchers Martin Appelt and Jens Fog Jensen)

With a starting point in the Aasivissuit-Nipisat UNESCO property this WP explores the origins, developments, zenith and decline of Inuit settlement and trade in West Greenland. Substantial new historical/archaeological information is gained from investigations at the aasiviit, or the traditional Greenlandic summer 'gathering places', where Inuit from near and far met in particular during the 17th to 19th century for trade and social/cultural activities. Moreover, excavations are conducted at selected coastal dwelling sites with deep midden deposits from the 'Whaling period', where European whalers and traders frequented the aasiviit. Thus, the Aasivissuit-Nipisat UNESCO area is put into a much wider cultural-historical perspective and new insights into Inuit connections to global trade networks are gained.

Selected Literature

Grønnow, B., Meldgaard, M. and Nielsen, J. B. 1983. Aasivissuit - The Great Summer Camp. Archaeological, ethnographical and zoo-archaeological studies of a caribou-hunting site in West Greenland. Meddelelser om Grønland, Man and Society, Vol. 5, 1983: 96pp.

Jensen, Jens F.; Andreasen, C.; Fleischer-Lyberth, P; Løgstrup, L.; Poulsen, H. H.; Olafson, O,R.; Løbentoft-Jessen, A-J.; Barr, S; Meldgaard; M. 2017. Nomination of Aasivissuit-Nipisat. Inuit Hunting Ground between Ice and Sea for Inclusion on the World Heritage List. – Rosendahls, Copenhagen: 192 pp.

Vésteinsson, Orri 2016. Kujataa – a subarctic farming landscape in Greenland. A nomination to UNESCO's World Heritage List. https://whc.unesco.org/en/list/1536/documents/: 265 pp.

Fig. 3: Work Package 2.1 in action: Henning Matthiesen investigating eroding midden layers.

ANNUAL REPORT 2019

Introduction - overview

Starting by April 1st, 2019, the initial phase of the Activating Arctic Heritage (AAH) Project included the official opening of the comprehensive project, the establishment of the research group and its logistic frameworks at the national museums of Denmark and Greenland, an explorative field season in Greenland, as well as many other activities, which are briefly described in this report.

AAH was launched by a series of presentations for all stakeholders, collaboration partners, press and sponsors in the festival hall at the National Museum on March 29th, 2019. Speeches were held by the directors of the two collaborating national museums, Rane Willerslev and Daniel Thorleifsen. A two-day workshop for the work package leaders marked the establishment of the research group. Tasks were delegated, and a detailed work plan focusing on the first field season in the two UNESCO areas was made.

July and August saw the initial field work in Greenland of the AAH Project: A team of work package leaders worked closely together with the local museum and UNESCO authorities in Sisimiut on assessing the archaeological and scientific potentials of Inuit and Early Colonial sites dating to the Little Ice Age (LIA, c. 1350 – 1850 AD), which is the focal time period of the project. Surveys and trail excavations at the key sites of Taseralik, Nipisat and Arajutsisut revealed unique preservation conditions of organic materials and stratified cultural layers, which probably can be dated with great accuracy. The promising archaeological observations led to the identification of written sources from the time of the early colonial Nipisat (Nepisene) fortress (1729 – 31). These important primary sources kept at the *Rigsarkivet* are practically unexplored. In combination with analyses of archaeological and ethno-historical sources these records will provide new insights into the cultural history of the northern UNESCO area.

Moreover, our field work also included sampling of lake sediments in the inland around Kangerlussuaq and the coastal zone at Sisimiut. Sediment cores were secured for detailed palaeo-environmental analyses.

Initial excavations in the southern UNESCO area (Kujataa) were also carried out in collaboration with a field school conducted by the Greenland National Museum and Archive for Greenlandic and international students. Here, an intact part of the Norse church yard of the Gardar bishopric was excavated, and just below the surface bones of buried individuals (probably 14th century) were found. This is a most promising start for our work package on Norse health and living conditions. In September the post doc. position in forensic anthropology concerning this work package was filled.

Fig. 5: The AAH Project joined forces with the archaeological field school at Igaliku, Kujataa UNESCO area

The AAH project successfully served as a 'catalyst' for collaboration around the newly established UNESCO properties. Sisimiut Municipality, ARTEC (DTU Arctic), the local museums, schools and tourist operators were engaged in dialogues. In November the activities of the work package 'Dialogues on Cultural Heritage' culminated with the

UNESCO Festival in Sisimiut organized in collaboration with Sisimiut Museum and the local UNESCO manager. Local stakeholders, including educational institutions and tourist operators as well as engaged citizens collaborated with us and produced new knowledge on the cultural landscape of the area.

Over a period of three weeks this fall, members of the AAH team contributed with lectures for graduate students at Ilisimatusarfik (The Greenland University in Nuuk) – a group of c. 15 students, some of whom within a few years will be ready to monitor and develop the new UNESCO properties on a professional level.

Finally, the archaeological finds, faunal materials and soil samples from the trial excavations have been analyzed and documented in our laboratories in Brede. This year's material is utilized for test runs concerning registration methods, treatment of organic materials, species determination, dating and preservation, paving the way for optimal treatment of the comprehensive find materials and samples that are expected to be recovered during the next two full scale field seasons.

Reports from Work Packages, 2019

WP 1.1: *Dialogues on Heritage and Society* (senior researchers Martin Appelt, Jens Fog Jensen, Hans Harmsen).

The Aasivissuit-Nipisat UNESCO area

Activities prior to and during the 2019-fieldseason included initiating collaboration with key-stakeholders in the Aasivissuit-Nipisat area, e.g. the UNESCO regional Site Manager and Site Ranger, the head of Sisimiut Museum, the Qeqqata Kommunia Tourist coordinator, the County administration, ARTEK (the Danish Technical University's arctic engineering branch), and a number of local citizens in Sisimiut and Sarfannguit.

It must be emphasized that the formal and practical collaboration with ARTEK made fieldwork considerably simpler, more successful and less expensive.

A close collaboration is now established with the UNESCO Site Manager and the Head of Sisimiut Museum. The latter is now a formally associated member of the AAH initiative.

During November 22nd – 24th 2019 researchers from the AAH-initiative and the UNESCO Site Manager, the Head of Sisimiut Museum, and the Qeqqata Kommunia's Tourist coordinator successfully co-organized a UNESCO World Heritage Festival with multiple activities taking place in Sisimiut and Sarfannguit. Activities among others included two "story-mapping" events (see below), various performances (Arctic games; drum-singing), and exhibitions. In immediate prolongation, four of the AAH-crew partook in, and contributed presentations and discussions significantly to, a regional tourism conference with local, regional and international tourist operators, researchers and stakeholders.

Fig. 6: The first story mapping activity of the AAH Project was carried out in the hamlet, Sarfannguit, as part of the UNESCO Festival, November 2019.

During the festival days, a number of preliminary interviews were collected with key-actors in the municipality administration and the tourism industry. These interviews are

being produced into two or three short podcasts. A special poster exhibition was designed for the festival entitled: Nunarsuarmioqatigiinnut Kingornussassat - Our World Heritage. These posters were displayed with information about the world heritage property of Aasivissuit-Nipisat in both English and Greenlandic. Individual poster themes included an introduction to UNESCO World Heritage and individual posters that highlighted people, places and archaeology of the property.

Fig. 7: UNESCO park ranger Francisca D. Olsen and curator Hans Harmsen collaborate in the field on plans concerning the protection of the UNESCO site, Nipisat.

Bringing local partners into the field proved to be an essential part of trust-building between the AAH researchers and important stakeholders in the UNESCO World Heritage area. With the participation of the Park Ranger and Director of the Sisimiut Museum, investigations of five areas (Nipisat, Arajutsisut, Saqqarlliit, Inaap nuua and the Maligiaq fjord) were carried out. They combined (1) test excavations; (2) differential GPS (dGPS) mapping; (3) areal drone photography and mapping; (4) identification of new ruins and features (such as graves, fox traps, turf houses, tent rings, etc.); and (5) documentation of vulnerabilities and visible threats to the heritage.

After the fieldwork in august, Sisimiut Museum hosted a public gathering that gave the opportunity for the AAH team to share insights about the current project as well as connect the on-going work to the larger issues of protection and preservation of Greenland's heritage. Harmsen gave a talk entitled: The big picture: Heritage preservation and protection in Greenland and the Responsibility of Nunatta Katersugaasivia (Greenland National Museum).

Fig. 8: Poster announcing the talk by Hans Harmsen held during the UNESCO Festival.

Our preliminary observations from working in the Aasivissuit-Nipisat area suggest that the AAH-initiative can indeed function as a catalyst/an impetus for collaborations in between crucial local actors. It furthermore became apparent that we in the coming years will work with three, partly inter-connected, geographically centered methods to gather/develop useful data for research as well as for heritage management.

Story-mapping, is centered around people's experiences and stories at specific localities across the Aasivissuit-Nipisat area. During the Festival days it turned out that the head of the local radio station in Sisimiut (Radio TUSAATAAT/Jens Klaus Lennert) across some ten years recorded in the excess of a thousand analogue geo-referenced interviews with

local citizens across the coastal landscape of the UNESCO area. Mr. Lennert have agreed to have these interviews digitized and made available to both the AAH-researchers, Sisimiut Museum, and a general audience. We are presently developing plans for ensuring these data, and making the available in collaboration with assistant professor Caitlin Curtiss (University of Wisconsin-Parkside).

Citizen-science, will – in our context – be focused on collecting heritage management data (i.e. mainly concerning the degradation of heritage site) in collaboration with local users of the sites. As part of a wider baseline and management-strategy, AAH-researcher Hans H. Harmsen collaborates with the UNESCO Site Manager, the head of Sisimiut Museum, and the Association of Arctic Expedition Cruise Operators (AECO) in order to develop Site Specific Guidelines for tourist visits.

Citizen-mapping, primarily deal with wide digitally-based surveys on wishes and dreams that the citizens have for the development of the Aasivissuit-Nipisat Heritage area. Our work on citizen-mapping is presently in its exploratory phase, but the already initiated collaboration with senior researcher Morten Nielsen (the National Museum of Denmark), and professor James Holston and Greg Niemeyer (both Berkeley, University of California) should provide us with inspiration and technical assistance. In addition, anthropology student Kathrine Vintov in the coming months will be conducting qualitative interviews with youth in Sisimiut, Kangerlussuaq, and Sarfannguit specifically about their wishes for the development of the UNESCO area.

Our coming work with these concepts/methodologies, as well as a number of other initiatives, will benefit from our collaboration with the European Union's Creative Europe research project "Taking Care", which will be unfolded in the coming years and includes partners from 14 different European Ethnographical museums.

The Kujataa area

Our dialogical initiatives in relation to the Kujataa UNESCO World Heritage area in South Greenland take their starting point in the network connecting local stakeholders and the Greenland National Museum and Archive (NKA) established during and after the inclusion of Kujataa property on the UNESCO list. The activities of WP 1.1 in Kujataa will be intensified with the onset of our field work in 2020 in this area. Thus preparations were made in 2019, i.a. the announcement for a post doc. in anthropology, whose initial focus will be to apply the concepts of 'Dialogues' in this area in collaboration with NKA, the three local museums and the local UNESCO manager and his ranger.

WP 2.1: *Hidden in the Midden: Unfolding the Research Potentials of Well-Preserved Culture Layers (*by senior researcher Henning Matthiesen*).*

'Hidden in the Midden' focuses on the information stored in Arctic kitchen middens. The work package has three parallel aims: 1) to develop, test and compare multiple methods for unfolding the information potential of middens, 2) to study the taphonomy of selected materials and critically review the information obtained from them, and 3) to obtain detailed information of selected sites that feeds into the other work packages in AAH.

2019 has mainly been a planning year, where we have focused on preliminary investigations, literature surveys, discussions and coordination with other researchers within and outside the AAH.

The preliminary field investigations in August 2019 have been very promising. The fieldwork included both reconnaissance and test excavations in the coastal area near Sisimiut, where several sites with middens were visited in order to evaluate their

potential as study objects in the AAH project. 'Hidden in the Midden' will focus on 3-4 sites only, so it is extremely important to select the sites with the best potential.

Small test pits were made at several sites visited during reconnaissance. Initial measurement of environmental conditions in the cultural deposits (pH, water content, porosity, organic content, salinity) were carried out in 5 test pits at Nipisat and Arajutsisut, and compared to results from other sites obtained during the reconnaissance. Initial characterization of the state of preservation of bone material and other artefacts was also carried out. Automatic monitoring equipment was installed at Nipisat and Arajutsisut, which will monitor soil temperature, soil water content, air temperature and precipitation every 6 hours for the next couple of years. The first data will be downloaded in August 2020 at the next site visit.

Fig. 9: Work package leader Henning Matthiesen mounts a series of sensors in the section excavated at Arajutsisut.

The initial results are promising for the outcome of Hidden in the Midden. We have seen a gradient in the state of preservation of the archaeological remains, covering both very well preserved material in some test pits, and degraded material in others, which is ideal for taphonomy studies. Our challenge the coming years is to explain these gradients and correlate them to differences in the environmental conditions. Several of the test pits had frozen layers at the bottom,

hindering excavation of the deeper layers during the field visit in August. This means that we may have permafrozen layers deeper down, which gives ideal preservation conditions that may serve as a benchmark in the midden studies. The extent and total thickness of the middens will be investigated in 2020 where we will use drilling equipment to obtain samples from these (perma)frozen layers.

Fig. 10: The section through the midden layers at Arajutsisut with the sensors in place.

Laboratory work in 2019 has included some initial analyses of soil and bone material, but the bulk work will be carried out in 2020 and 2021, when we have sample material from larger archaeological excavations with well-defined stratigraphy.

Other activities in 2019: Project offices have been established at Brede. Digital infrastructure has been established that allows storage and exchange of data among the partners. A research application for under-water equipment has been submitted, to allow exploration of a possible underwater midden deposits in front of the sites. The

first post doc. position within ‘Hidden in the Midden’ (concerning eDNA in midden layers) has been announced with expected start primo 2020.

WP 2.2: *The Loss of Cultural Heritage: Human and Natural Impacts on Arctic Sites* (by senior researchers Hans Harmsen, Jørgen Hollesen).

Field research for this WP does not officially begin until 2020. However, there was a significant amount of survey and documentation performed in August 2019 at many Key Sites that will feed into this WP.

Site documentation and surveys were performed at several locations in the Aasivissuit-Nipisat World Heritage area, building upon and expanding previous knowledge of the Key Sites. In some locations, high resolution drone mapping was performed enabling

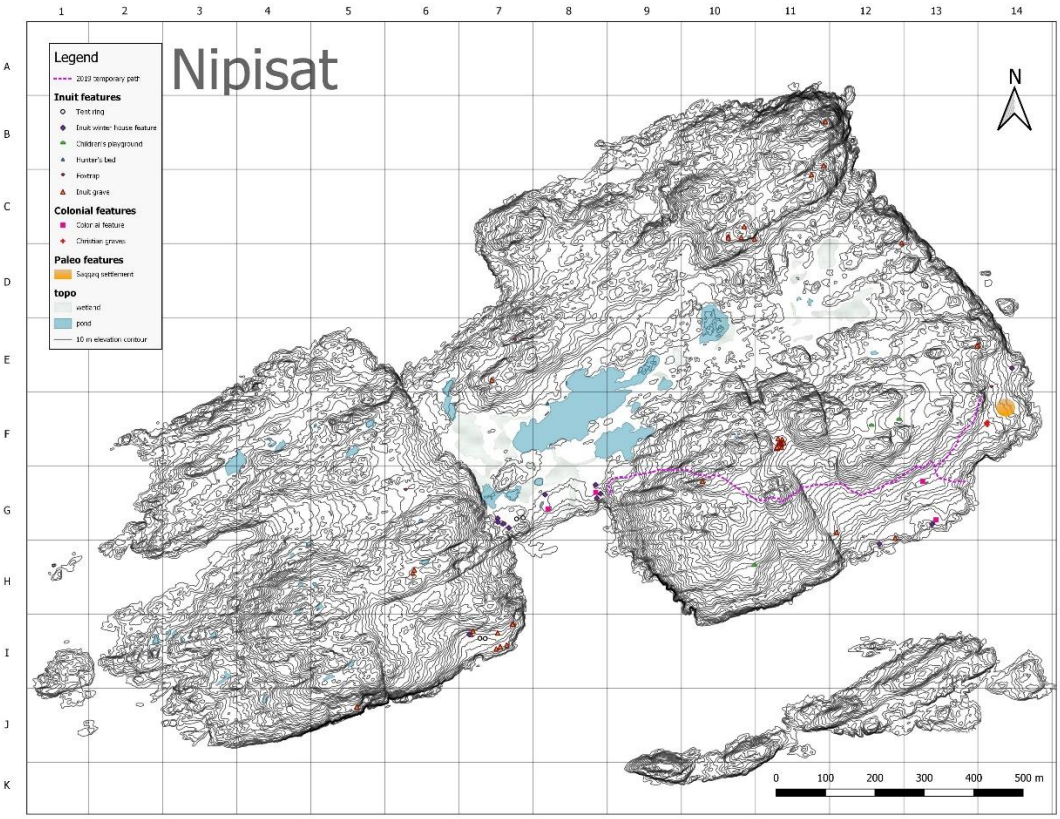

Fig. 11: Map showing the island of Nipisat including archaeological features and a suggested tourist path. (Mikkel Myrup (drone data) and Hans Harmsen (dGPS positions of features)).

the generation of 1 & 10m contour topographic maps. This was supplemented by high-precision feature locations and shape capture via differential GPS and hand-held GPS point-plotting.

Table 1 provides a summary of the different types of activities and data sets collected at five different locations in the Aasivissuit-Nipisat World Heritage area in August 2019.

Survey location:	Drone mapping	dGPS (high-precision)	GPS (medium precision)	Feature registration
Nipisat	✔	✔	✔	✔
Arajutsisut	✔	✔	✔	✔
Inaap Nuua	✔	✔	✔	✔
Saqqarliit			✔	✔
Maligiaq fjord			✔	✔

WP 2.3: *Rain or Shine: Local Palaeo-environments and paleo-climate in the UNESCO areas* (by senior researcher Catherine Jessen).

During 2019, Work Package 2.3 has prepared, planned and completed fieldwork in the Aasivissuit-Nipisat UNESCO property involving the extraction of lake sediments representative of both the inland and coastal zones. Preparations included the building and design of a mobile coring platform and the pre-selection of suitable lakes via the published literature.

The pre-selection of suitable lakes takes account of their size and position in the landscape which can help indicate their potential sedimentation rate and the presence of plant macrofossils suitable for AMS radiocarbon dating. Published literature was assessed to determine whether it was possible to revisit certain lakes where the sedimentation rate, and therefore the time represented, was already known. Elevation

Fig. 12: The custom built drilling platform in action on a lake close to the Arajutsisut site.

was also an important factor in selection of lakes in the coastal zone due to the known post-glacial uplift. Access to lakes was also important in pre-selection. In addition to lake size, on-site selection of suitable lakes involves determining their depth and bathymetry prior to the transport and assembly of the coring platform. The lakes must be of a depth which removes the sediments from the effects of surface wind action, avoiding bioturbation and preferably with a deep basin allowing for sediment focusing and therefore increasing the sediment-time resolution. A small echo-sounder

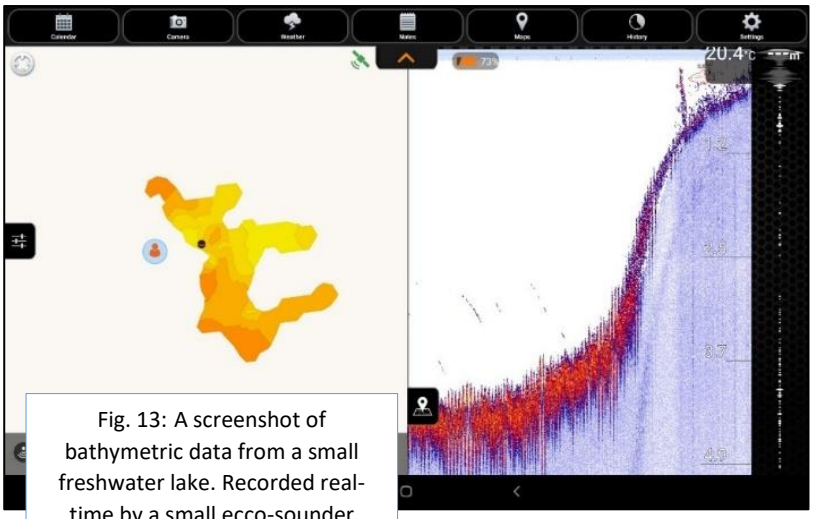

Fig. 13: A screenshot of bathymetric data from a small freshwater lake. Recorded real-time by a small ecco-sounder attached to a fishing line.

was attached to a fishing line and cast out into the lake. The data was shown immediately on a tablet and by repeat casting, the shape and potential of the lake can be assessed. This equipment was indispensable during the 2019 fieldwork.

The inland zone (Lakes NM1 and NM2): Nine lakes were assessed in the inland zone. Two of these met the criteria demanded by this work package. NM1 is situated in an area where larger lakes have previously been studied as part of palaeolimnological studies but no research has been published from this lake. NM2 lays closer to the populated areas of Kangerlussuaq but where no previously published work is available. Cores were taken from the deepest part of the lake using a HON-Kayak corer (Fig 3). This retrieved undisturbed sediments, which were then sub-sampled on-site at 0.5 cm resolution in the upper 10 cm of the core and at 0.25 cm resolution below 10 cm. The depth of core retrieved can be variable and 3 parallel cores were sub-sampled at NM1 and NM2 (See table 1).

The coastal zone (Lake NM3): No published lake studies are available from the area on and around Nipisat. Nine lakes were assessed using the echo-sounder but all but one was found to be too shallow (< 1.5-2.0 m) and relatively flat-bottomed. They were therefore not suitable for this study. One lake was considered to have more potential and lay at the same elevation as a shell bank known to be c. 6000 years old. However, upon coring, the lake sediments were shown to be only c. 10 cm thick and coring was abandoned.

Some published work exists from the area around Sisimiut and in order to ensure that we could retrieve sediments from the coastal zone during the 2019 fieldwork season, one of these lakes was selected. This lake (NM3) was cored and 4 parallel cores were sub-sampled (Table 1). As these cores were relatively short, they were sampled at 0.25 cm throughout.

Post-fieldwork: In total over 900 sub-samples were collected from 3 lakes and 10 cores. These samples were refrigerated on return. To discover the time frame represented in these cores, 3 samples from each of NM1 and NM3 are presently being sorted for

macrofossils suitable for 14C radiocarbon dating. This involves small amounts of sediment in distilled water and manually searching for suitable material. All of the sediment is then stored for possible later use.

Table 1: Lake information

Site	Zone	Coordinates	Elevation	Water depth (m)	No of cores	BH1	BH2	BH3	BH4
						Core depth (cm)			
NM1	Inland	66°59'01.582N 50°58'30.132W		4.1	3	28.0	35.5	31.0	
NM2	Inland	66°59'53.19"N 50°40'20.86"W		4.3	3	29.5	27.5	30.0	
NM3	Coastal	66°56'04.83"N 53°36'09.72"W		2.8	4	14.5	17.5	19.0	28.5

WP 3.1: *Human Experiences in Norse Greenland: Health, Well-being and Trade-offs* (by senior researcher Jette Arneborg, professor Niels Lynnerup, and post doc. Dorthe Dangvard Pedersen).

Starting up on April 1st, 2019, the initial task of the WP 3.1 was to fill the postdoc position in physical anthropology. The choice was Ph.D. Dorthe Dangvard Pedersen, who began her new position in August.

Fieldwork was conducted during 19 days, July 4th – 23rd in the village Igaliku, located at the Medieval Norse bishop seat, known as Garðar.

Archaeological investigations at the cemetery at Igaliku were organized as a collaboration between the two national museums and The Arctic Viking program of the Institute for Field Research (IFR). The field school hosted twelve students (8 international and 4 Greenlandic students) and was run as part of an on-going effort by the Greenland National Museum to train students in basic archaeological field methods and provide the students with insights into the cultural history of Greenland. During the program considerable emphasis was placed on introducing the students to the growing threats to archaeological remains in South Greenland due to climate change, tourism and farming.

Fig. 14: Drone photo of the excavation area at the church yard close to the cathedral in Igaliku.

Due to earlier excavations we already possess human skeletal material from early period/landnam cemeteries that will form the baseline for our bio-archaeological and demographic studies under WP 3.1. The primary goal of the present excavations in

Igaliku is to get fresh, late Norse settlement period skeletal material for comparisons and new demographic calculations.

The cemetery has undergone numbers of more or less amateurish and professional archaeological excavations, and before field work, we made thorough preparations in the archives at the National Museum to ensure we did not excavate our predecessors back dirt. We knew from the literature that preservation was best on the east side of the cathedral, and we managed to locate an almost untouched spot NE of the northern chapel of the church. The excavations at Garðar cathedral were a climax for the students, as the undisturbed portions of the medieval cemetery produced several individual burials with moderately preserved human skeletal remains.

The skeletal material from the field work 2019 has been cleaned, recorded and analyzed, and is included in the technical report on the field work that was finalized January 2020 and published on the AAH TeamSite.

Fig. 15: Field school students excavating one of five human skeletons found during the investigations of the upper layers at the churchyard at Igaliku.

Other activities

New analyses of old skeletal material from Norse Greenland kept at the Copenhagen University Anthropological Laboratory, Dept. of Forensic Medicine, have been carried out and further in-depth analyses are in process. Literature studies on social behavior relevant for our work package have been and will be carried out concurrently.

WP 3.2: *Plant Resources in the Norse Society* (WP 3.2 scheduled to begin in 2020)

WP 3.3: *Inuit Landscapes, Arctic Agency: Thule Inuit in Kujataa* (by post doc., vice director, co-PI Christian Koch Madsen)

Although this WP is not scheduled to start until July 2020, the Greenland National Museum & Archive's international Arctic Vikings Field School July 2019 provided a unique opportunity to begin archaeological field work that will contribute directly to the AAH project. The field school's team of ten international and Greenlandic students, as well as six changing supervisors, managed to carry out extensive landscape surveys across the Igaliku isthmus, a key area and nodal point in the development of both Norse and Inuit farming in South Greenland. For the first time, archaeological surveys in this area was aimed at recording all types of features, from the Norse period and up to early 20th century farming. The results were incredible: the students managed to locate and identify hundreds of features spread over the landscape that related to Inuit hunting and farming past and present, no less than 6 new Norse sites, including a new farm, and 6 Thule culture summer camps. The detail and high coverage of this survey has provided completely new insights on the many faceted use of this very busy cultural landscape, not only during the Norse settlement period, but also from the Thule culture onwards, i.e. has provided a central case study for the AAH project.

WP 3.4: *Dynamic Glocal Networks – Settlement, Trade and Exchange in West Greenland*

(by senior researchers Martin Appelt and Jens Fog Jensen).

Test excavations, surveys and mapping were carried out in July-August, 2019, at gathering sites north of the UNESCO area at Ukiivik and Taseralik as well as in the fjords and archipelago of western Aasivissuit-Nipisat. The key localities selected for test excavations were Arajutsisut and the nearby island of Qaarusulik, and the sites of Nipisat, Innap Nuua and Saqqarliit. At these localities minor sections and test pits were excavated in promising places concerning preserved midden layers, in particular in front of entrances to dwellings. Test excavations and clearing of sections were carried out in order to detect and describe well preserved cultural layers suited for excavations and analyses during the coming field seasons.

Ukiivik and Taseralik: A team visited the historically known early colonial 'predecessor' of Sisimiut, Ukiivik (NKAH 2814), as well as the aasivik sites on Taseralik (NKAH 2801) at the southern shore of the mouth of the large Nassuttooq fjord. In addition to topographic mapping by drone, survey and GPS plotting of features at both sites, test excavations were carried out on the largest and most spectacular camp sites of Akunnerinnaq and Avannamut Nuua on the main island at Taseralik. The test excavations revealed extensive scatters of 19th century artefacts, whereas – quite unexpectedly- deeper and earlier culture layers with pre-colonial or very early colonial cultural layers were not identified. The deepest stratigraphy documented in a small area at Akunnerinnaq showed c. 40 cm thick peat layer including rich 19th century perhaps early 20th century cultural remains. The recorded stratigraphy and the grass vegetation covering the culture layers on these Taseralik settlements thus confirm a heavy 19th

century use of the sites followed by the historically described decline in the use of the aasiviit prior to Second World War. During the last 75 years most of the historically known camp sites appear to have been used only sporadically by fishers and hunters.

Fig. 16: The AAH project team made test excavations at the famous *aasivik* site (summer gathering site) on the island of Taseralik at the mouth of the great fjord, Nassuttooq.

Arajutsisut: The site of Arajutsisut (NKAH 285) contains ruins of at least 10 large Inuit winter communal houses. The extent of the cultural layers was investigated by two sections and a series of test pits. The section at the edge of the coastal cliff (Section 1) towards the shore, showed rich midden deposits below the Lyme grass turf. Section 2 at the 'plateau' behind ruins 8 and 10 showed partially dense layers of bones as well as artefacts. Permafrost was encountered in a depth of approximately 60 cm. The excavations will be expanded in the coming field seasons Test pits on the nearby

supposed Early Thule site of Qaarusulik, did not demonstrate similar conditions of preservation, and further excavations are not planned at this locality.

Fig. 17: Drone photo from west of the huge Arajutsisut site containing at least 10 turf built communal houses with thick midden layers from probably 17th to 18th Century.

Nipisat: The colonial quarters of 'Nepisene' (a fortified whale hunting station, 1729 - 31) as well as the subsequent Inuit communal houses on the island of Nipisat (NKAH 5526) were investigated by two series of test pits: one at the eastern part of the settlement just below the colonial 'fortress' and one at the midden area in front of the communal house situated in the western part of the cove (NKAH 276). Both midden areas showed rich cultural layers with well-preserved bones and artefacts. Due to these promising observations extensive excavations are scheduled for both midden areas, where Inuit communal houses and a trapezoid winter house have been built into and partly covered colonial structures.

Fig. 18: Overview from east of the site of the Nepisene Fort. In front the main building, 'Vaaningshuset', was situated. The Bastion was situated on top of the light gray rock in the grass covered area in the back.

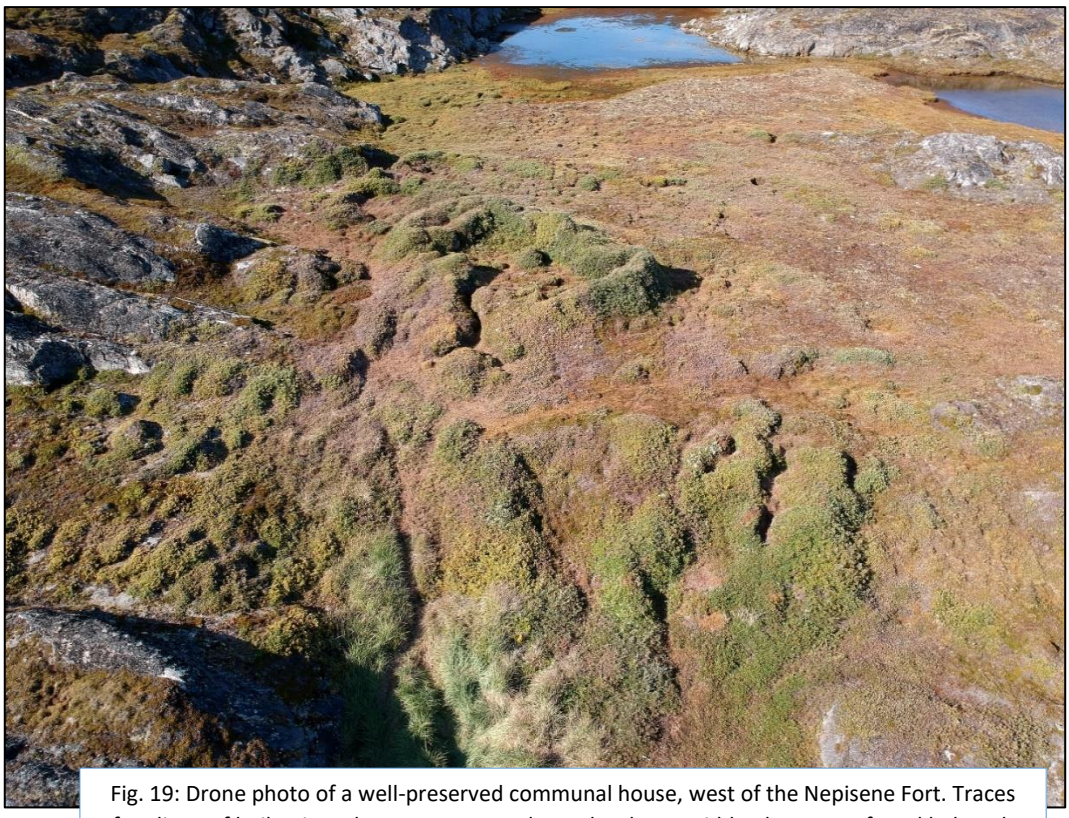

Fig. 19: Drone photo of a well-preserved communal house, west of the Nepisene Fort. Traces of earlier turf built winter houses are seen above the slope. Midden layers are found below the lyme grass covered surface.

A hitherto unknown winter turf house showing a round dwelling room and a short entrance passage was identified a few meters north of the colonial bastion. A few test pits in front of and inside the ruin showed few, but quite well preserved faunal remains and some European trade goods. The dating and character of this feature will be investigated during the field season of 2020.

Innap Nuua: the site (NKAH 2703) was visited and test pits excavated on the large plain between two ruin groups (A and B). Ruin 9 is an isolated round feature with the superficial appearance of an early Thule winter dwelling with south facing entrance. Here a few tests revealed preserved bones, and permafrozen layers. To the west of Group A there is a little 'valley', with extensive raised boulder beaches. The lover boulder ridges hold a burial site with at least 11 graves. Some graves have associated grave offerings such as soap stone vessel and kayak parts placed nearby.

Tørveø and Maligiaq survey: The islet named Tørveø was surveyed due to the earlier reported finding of a Norse chess piece (a queen) carved in walrus tusk from this locality. The eroded peat cliffs were searched for cultural remains, but no cultural layers were detected. The western shore of the fjord Maligiaq was surveyed and GPS coordinates and descriptions were recorded for a number of features along this coast, which today is a favored summer camp area. 'The Danish Lady' is a marked cairn situated high on the cliffs on the northern side of Maligiaq. Among the other features documented in this area are tent rings, graves and a few more cairns. Most spectacular is a burial site where 6 graves are situated on an alluvial fan.

Saqqarliit: This historical settlement was established in 1859 and abandoned in 1961. In addition to the ruins of the wooden houses and Christian graveyard, there are numerous heathen graves showing that the point most likely was a favored settlement area in prehistoric times, as well. Visible structures were mapped by Precision GPS, and an eroded cliff with visible cultural layers was documented. However, the section proved that all were mixed layers in secondary position, since there were colonial objects

exposed near the bottom of the section as well as a side notched Dorset culture blade in the uppermost layers.

Other sites visited:

Several other sites were visited briefly by boat and tested for preservation conditions for faunal material. These sites include: Uummannarsoralak (NKAH 3240); Illunngussat II (NKAH 318); Amitsukujooq (nord og syd (NKAH 301); Illuit (NKAH 2708); Illulissuaq (NKAH 2700); Eqaluk (NKAH 2699)

Fig. 20: Illuit, the forerunner of the hamlet of Ikerasaarsuk, seen from north-east. The lyme grass covered, clustered ruins of c. 10 single family turf houses probably from late 18th and early 19th century are seen in the center area.

***WP 3.5**: History*

By the end of 2019 an additional work package 'WP 3.5 History' was formed, targeted to examine the spectacular history of the Nepisene colony. The group consists of three historians: the director of the Sisimiut Museum, Marie Bønløkke Missuno, and, from The

National Museum of Denmark: Head of Research, Christian Sune Pedersen, and curator Rasmus Voss (Danish naval history) and student assistant Emil Andersen.

The historical background is as follows: In 1729, eight years after Hans Egede founded the first Danish colony in Greenland, another colony was established at the island of Nipisat approx. 400 kilometers north of "Gott Haab". Eighty men from the first colony - including officials, soldiers, women, convicts and a few baptized Greenlanders - were sent into the wilderness to found the colony of Nepisene under the leadership of governor Claus Enevold Paars. The colonial project ended, however, as a failure: After two years of disappointments, hardships, illness and internal conflicts, the Danish king terminated the project. Today, only turf built foundations of a ware house and the faint traces of the residence of the governor and his staff and soldiers remains as results of this peculiar colonial project.

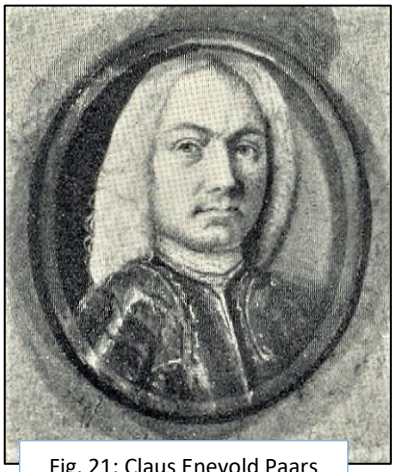

Fig. 21: Claus Enevold Paars

Our research started in the National Archives in order to get an overview of the records. Soon it became apparent that the material was extensive and the degree of detail was of a nature, that allows us to dig deep into the details of history. The records are written in Danish with gothic handwriting. However, the records are in a mess, so it took some time to get an overview of the material.

In addition to a number scientific articles, we hope to be able to write a more thorough, historical account with a starting point in the micro-histories of the site. The sources are detailed enough to describe the colony on an everyday level: How was daily life for 80 people of very different social class and background living close together in a small three-lined lodge situated in a harsh and extreme landscape at the edge of the known

world? What hardships were they facing? What conflicts arose, and how was the relationship to the Inuit and the use of the surrounding landscape and resources? These are some of the questions we would like to dive deeper into and try to answer. Furthermore, we expect to be able to support other work packages. We have found accurate descriptions of the colony's interior with adjacent structures, magazines and workshops, gardens and more. Also among the records are detailed lists of literally everything that has been shipped to the colony. With extensive lists of building materials, supplies, goods, weapons and ammunition, we hope to contribute knowledge as the excavations uncover artifacts of European origin. We have now identified several main records, that will give a better impression of the chronology, from which will we will establish a structure and then decide which topics, we want to work with in further detail. An exciting job awaits with transcriptions and summaries of a variety of records. (Text by Rasmus Voss).

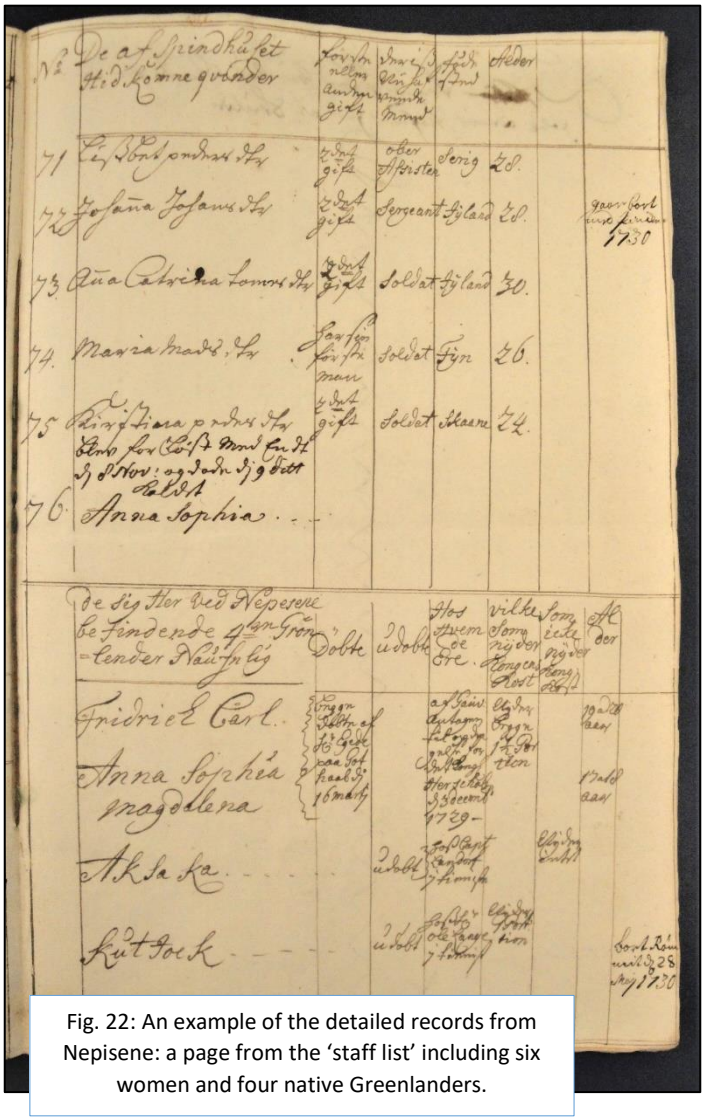

Fig. 22: An example of the detailed records from Nepisene: a page from the 'staff list' including six women and four native Greenlanders.

Other Activities

Graduate course in in Nuuk

The collaboration between 'Activating Arctic Heritage' and Ilisimatusarfik (The Greenland University) in Nuuk was initiated in 2019, when senior researcher Jens Fog Jensen (JFJ) and PI Bjarne Grønnow (BGR) contributed with lectures in a graduate course headed by professor Morten Meldgaard and ph.d. student Manumina Lund Jensen. JFJ and BGR stayed in Nuuk during October and taught a class of 15 Greenlandic students about UNESCO World Heritage (Emnefag A) using the UNESCO properties Aasivissuit-Nipisat and Kujataa as case studies. Based on the lectures the students tested their knowledge and developed their creativity by making proposals for new UNESCO areas in Greenland and by writing applications for large scale interdisciplinary research projects exploring their imagined properties. Written exams will be held in January 2020. The students at Ilisimatusarfik - among whom future UNESCO administrators, rangers and archaeologists probably will be recruited – were very enthusiastic about the course, and 'Activating Arctic Heritage' will indeed benefit by this direct contact with young, talented Greenlanders.

Outreach

Information about the Acivating Arctic Heritage Project can be found on the following home pages and portals

The Carlsberg Foundation:

https://www.carlsbergfondet.dk/da/Forskningsaktiviteter/Bevillingsstatistik/Bevillingsoversigt/CF18_1106_Bjarne-Gronnow

The National Museum of Denmark:

https://natmus.dk/historisk-viden/forskning/forskningsprojekter/activating-arctic-heritage/

ISAAFFIK:

https://www.isaaffik.org/activating-arctic-heritage-0

Other public information about the project is found in the following new paper articles:

Schnohr, Josephine 2019: Ilisimatuussutsikkut suliniuterujussuaq/Kæmpe forskningsprojekt. Dobbelt opslag i Atuagagdliutit, 13. Februar, 2019

Schnohr, Josephine 2019: Forskere graver dybere i Grønlands forhistorie. Artikel i Kristieligt Dagblad d. 8. April, 2019

Schnohr, Josephine 2019: Misissuiartorluni angalanissamut piffissanngorpoq/ Tid til at rykke I felten. Artikel i Atuagagdliutit, 12. Juni, 2019.

Hansen, Anders Lundt 2019: På sporet af Nordboerne. Artikel i Weekendavisen, Ideer, 22. Nov., 2019.

Acknowledgements

The PI, the Co-PI, and all researchers of the Activating Arctic Heritage initiative wishes to warmly thank **The Carlsberg Foundation** for opening a unique window of opportunity for research collaboration between Denmark and Greenland. These years, the basis for profound insight into and sustainable use of the UNESCO World Heritage sites in Aasivissuit-Nipisat and Kujataa is being established.

The hospitality and keen interest, we have met everywhere during this initial phase of the Activating Arctic Heritage initiative, are treasured by all of us, and our thanks go to our new partners in Greenland:

The UNESCO managers and rangers of Aasivissuit-Nipisat and Kujataa

ARTEK Campus Sisimiut (DTU Greenland)

Sisimiut Museum