Military Heritage from 20th Century

Published by ICOFORT Norway
c/o Riksantikvaren
Postboks 8196 Dep
0034 Oslo
icofortnorway2017@gmail.com

Cover: The winner of the Militage photo competition
Photo: Heikki Lahdenmäki

Design
Jiri Havran

Printed by
Oslo Digitaltrykk

Supported by:

Military Heritage from 20th Century

Preservation, Reuse and Management

September 4th – 7th, 2017, Northern Norway

Roberta Luciani (editor)

Icofort Norway
2018

CONTENTS

Foreword

Roberta LUCIANI
Architect, The Norwegian Defense Estates Agency, Norway
President ICOFORT Norway

This publication presents the full papers submitted to the conference "Militage 2017" organized by Icofort Norway from 4th–7th September 2017. This occasion also marked the first time an Icofort international meeting took place in Norway.

The title of the conference was "Military Heritage from the 20th Century - Preservation, reuse and management." The conference was arranged as a combination of site visits and lecture sessions. With 53 participants from four different continents and many countries including Australia, Taiwan, Puerto Rico and several European nations, the conference represented a broad cross section of scholars and experts from around the world. The conference changed venues, moving from the County Council in Tromsø, to the Frøy- and Lyngen defence lines in Storfjord, to Maukstadmoen camp in Skjold in Målselv, to the Narvik War Museum, the Trondenes fort and finally the Meløyvær fort in Harstad.

In addition to key-note speakers, there were almost 20 participants who contributed with short presentations and papers.

While our interests and areas of expertise were diverse, our collaboration worked toward several objectives. The Militage conference proposed:

- to be a forum for current perspectives and different approaches;
- to build awareness of the need to discuss the values, usage and safeguarding of 20th Century military heritage in general;
- to strengthen the international network;
- to promote «good practice» approaches, including enhancing the role of the local communities in those processes;
- and to show the Icofort international committee a variety of installations and military landscapes which are significant in Norwegian history.

The participants were invited to meet, find inspiration and exchange experiences and knowledge about the topics of the conference and their discussions contributed to the ongoing international work and processes concerning the protection of military heritage, with emphasis on the Second World War and the Cold War. The conference presented contemporary expertise on military heritage from

many countries, focusing on historical values, as well as challenges in protection, management and transformation.

Despite big variations in history, landscape and the types of military sites, the issues are often the same. The conference provided new discussions on how we value military sites, i.e. those that concretize or stand for painful memories or those that do not fit into a general understanding of what cultural heritage is or should be.

Another discussion indicated that the challenges of transformation into new usage, which may or may not refer to the symbolic values of the former military sites is also an issue discussed in every country. Additionally, reinvestment projects that propose to fund site maintenance through profit from sustainable activities add new dimensions to this discussion.

Moreover, the conference addressed the interaction between stakeholders, local authorities and even private people in the management of military heritage. Navigating these dynamics will be a continuing challenge in our field.

On behalf of the Icofort Norway committee, I would like to thank our keynote speakers: archeologist John Schofield from the University of York, historian Kristina Spohr from London School of Economics, historian Magnus Håkenstad from The Norwegian Institute for Defence Studies, and all the authors who contributed with papers and discussions during the conference.

I would also like to thank the president of Icofort International, Milagros Flores Román, and the members of the scientific committee of Icofort Norway. Moreover, I would like to thank all the collaborators who made the conference possible: The Norwegian Army Brigade Nord, Troms County Council, Nord-Troms Museum, Sør-Troms Museum, Narvik War Museum and Valhall in Meløyvær.

The conference was supported by the Norwegian Ministry of Defence, The Norwegian Defence Estates Agency, The Norwegian Directorate for Cultural Heritage, Giertsen Tunnel AS, Jotun Group and ICOMOS Norway.

Remains of a former POW's barrack at Trondenes Fort in Harstad, Norway

The Preservation of two Military Futuro Houses

Ingela ANDERSSON, Karl-Martin SVÄRD
Architects, Swedish Fortifications Agency, Sweden

Abstract

In the beginning of the 1970ies, the Swedish Armed Forces bought three specially adapted Futuro-houses to use on top of observation towers at training areas. Two of the three Futuro-houses were used as observation towers at the Noran training area in the middle of Sweden. In 1998, the area was closed down and now one of the Futuro-houses is sold and the other one transferred to the Swedish Air Force Museum. The third is still in use at another military airfield. The removal of the Futuro-houses was the second best way to make at least one of them publicly accessible at a museum.

Key words: Futuro-houses, Air force, Observation towers, Reuse

A model of the Noran target area at Söderhamn/F15 Air Force Museum

Forgotten heritage

In 2014 a journalist raised a question about preserving two observation towers as cultural heritage. The towers had been used for measuring impact points at a former military training area for air bombing at Noran training area outside of Söderhamn. No one within the Swedish Fortifications Agency or the Swedish Armed Forces had thought much about the two towers no longer in use. The towers in question are two out of three Futuro-houses bought by the Swedish Armed Forces in the beginning of the 1970ies specially adapted to military use.

The Noran target area

The Futuro-houses on Noran military training area were abandoned by the Swedish armed forces following the 2004 political decision to further decrease the number of active training areas. This was done in retrospect of the end of the cold war and the decreased need for airbases in Sweden. Noran had served as the principal target area for the pilots of the 15th airbase located in nearby Söderhamn.

The Futuro House

The airbase was active on Noran from 1945 to 1998.

The Futuro house

The two towers have an interesting military as well as a design history. Finnish architect Matti Suuronen originally designed the Futuro house in 1968 as a ski lodge. It was constructed of a plastic material in eight sections and was easy to assemble and place wherever you wanted to have your winter or summer house. At Noran they were lifted in place by a military helicopter.

The designer himself claimed that the design was based on pi, 3.14. There are similarities both with contemporary design and architecture, for example Eero Aarnios Ball Chair in fibre glass from 1963 or the moveable "capsule houses" designed by the Archgram group. Others associate the Futuro houses with UFOs and sees it as a part of a space age design. [1]

The house has a diameter of 8 meters and the original design came completely equipped with custom furnishings that fit the interesting shape of the house. The design of the military versions were altered to fit on top of the concrete towers and to their use as military observation towers.

Instead of entering the house through an airplane like flight of stairs, you had to enter the military ones climbing a ladder through a tube in the middle of the tower, originally the place for a fireplace. Instead of furniture, the houses were fitted with platforms with desks to facilitate working in the towers.

The Noran target area today

1 (Wilund, 2015).

The Futuro-house has landed on the ground

The Futuro house is a circular construction divided into eight sections, originally with two oval windows in each section. The military version has only one large window in each section to make it easier to see the impact points. Working conditions in the towers though were not very good. In the summer, it could be very hot and in the winter freezing cold.

After 1998, the towers were closed in waiting for a decision what to do with them. As the Futuro houses were situated on top of concrete towers in a remote area they were not easy to visit for anyone. This made them especially interesting for urban explorers. After one of the towers were broken into, the entrance doors to both towers were welded shut. This did not stop it from happening one more time. Somebody used considerable force to bend the steel door and frame to the side to gain entrance and the roof hatch was thrown to the ground letting birds in. It was therefore important to find a solution on what to do with the towers before more damage was done to them.

Preparations

When the Swedish Armed Forces handed over the target area to Fortifications Agency the work began to prepare the area for civilian use. The first step was to analyse the extension contamination caused by unexploded ordnance (UXO). Luckily, the area with high volumes of UXO was quite small and concentrated to a marshland in the middle of the property.

Next up was the question of what to do with the buildings once used by the Air Force. Some of them had a potential for civilian use without alterations. The Futuro-houses however could not serve a civilian purpose in such a remote location.

Preservation vs disposal

The first step was to do an evaluation of the heritage values. As little was known about the two towers, a report was written on their history and a discussion began on their value as heritage. The Futuro-houses as such is not unique, there are around 60 still in use all around the world. In Sweden there are only four Futuro-houses, one in Örebro in the original design and the three military ones that were owned by the Swedish Fortifications Agency, two at Noran and one at military airfield in another part of Sweden. The adaptation of them for military use makes them interesting historically but possibly that decreases their value as a design object since they lack several of the original design features.

After having read the report the Swedish National Heritage Board decided that the towers definitely were worth saving as heritage but realized it was hard to preserve them in their original location if they were to be

Tower no 2, Interior

opened to the public. The number of people that would be able to visit them would be also limited.

The regulation regarding disposal of state property in Sweden secures the opportunity for the state to transfer the property to the rightful state administrator. The receiving part will have no other cost than the book value. As the towers had high cultural value, the National Property Board of Sweden was a natural recipient as the Property Board manages the state owned cultural heritage that is no longer in use by the military or other state administrations. The Property Board declined taking over responsibility for the Futuro-houses since they saw difficulties in preserving them on site and adapt them for public access. In addition, the costs would be too high as they were two solitary objects in a remote location.

Instead, the Swedish Fortifications Agency passed the question on to another state administration, the Swedish Air Force Museum outside of Linköping and asked if they were willing to take over one of the Futuros as a museum object. They said yes, as they saw the potential of the Futuro house to tell another kind of history about the

Detail of device for handling of the rocket and bomb targets.

The Futuro-house waiting to be sold in Norrköping

Swedish Air Force than for example the airplanes in their collection.

After this input, the Swedish Fortifications Agency took an internal decision to transfer one of the Futuro-houses to the Air Force Museum while the other one should be sold to the highest bidder on a state web auction. In order to do this the houses had to be removed from the Noran target area and stored until the final destination was clear.

Dismantling and transportation

When the decision to move the two Futuro-houses had been made, the Swedish Fortifications Agency looked at different options on how to actually move the buildings. Lifting the Futuro-houses off their towers with a helicopter would be too expensive. Instead, the Swedish Fortifications Agency decided on using a combination of trucking and shipping.

First the plastic house had to be disconnected from the concrete tower that it was connected to. This could not be done while the house was on top of the tower. Therefore, the top part of the tower was cut with a concrete saw and the upper part was lifted down to the ground. This procedure required exceptional strength from the crane because of the weight of the part of the concrete tower that had to be lifted. After a day of preparations, the first house was lifted to the ground in April 2016, followed by the other one a day later. Local media as well as some of the national press followed the whole process closely as well as an international website specialized in Futuro-houses; thefuturohouse.com.

When both houses were on the ground, the plastic construction was disconnected from the concrete. In May the houses were loaded on two separate trucks. Because of the 8-meter diameter, the transport to the Norrsundet port in the Baltic Sea was made in the middle of the night. This way the E4 could be closed down about 12 km without causing a traffic jam. The transport went well and the houses were then loaded on a boat with a destination port in Norrköping a two-day journey further south.

When arriving in Norrköping the procedure was repeated in the reverse order. First the Futuro-houses were lifted off the boat and then the houses were transported on trucks to Bråvalla, a former air base. One

of the houses were then transported to the Swedish Air Force Museum in Linköping. Once again having to close down one side of the E4 at night time. It is now (2017) awaiting its renovation and will be transformed into a conference room.

The sales process

In order to have an effective sales process a sales prospect was produced in advance so that the media attention could be taken advantage of. Most of the international interest came from the USA and of course, Finland were the houses originate. The house sold at an auction in August of 2016 to a Swedish mega fan of the Futuro-houses. She and her partner disassembled the house before moving it. All with the intention of a full renovation before reassembling it at the final destination. The couple already owns an odd building in the southern Swedish town Laholm, Nebotornet. To this, they plan to add the Futuro-house in the garden also possible to book as a hotel room.

Remarks and Conclusions

The removal of the Futuro-houses was second best way to preserve the two military Futuro-houses and make it accessible to the public. Preserving them on location and opening them to public in a relatively remote area would have meant that the cost for preserving them would be high and only be a limited number people would have been able to visit them.

Both Futuro-houses will now be opened to the public in different ways, one as a conference room at a museum and one as a privately owned hotel room. Both will probably undergo major interior changes when they are adapted to their new uses. Some or maybe most of the heritage values will inevitable be lost when handling them this way. It can be discussed if this is right or wrong. The Swedish Fortifications Agency however still owns a third tower with a Futuro-house identical to the two at Noran. It is therefore possible that this tower can be classified as cultural heritage on site and opened to the public sometime in the future. Until that happens, the remaining Futuro-house tower will be a part of our living military heritage.

The lifting of Futuro house on tower no 1

Bibliography

Wilund arkitekter & antikvarier/Fortifikationsverket. 2015. Futurohusen på Norans före detta skjutfält, Söderhamns kommun.

Concrete at the Front of the Bruges Submarine Shelter (1917-1918)

Willem BEKERS, Ronald DE MEYER
Architects, Department of Architecture, Ghent University, Belgium

Abstract

Starting in August 1917, a large submarine shelter was erected in the port of Bruges. Its construction completed a transition from mixed wood-and-steel structures to all-concrete bunkers in this area. The new Gruppenunterstand prefigured many of the typological and technical key features of the iconic submarine pens from World War II. An early application of reinforced concrete, the bunker in Bruges illustrates how the Great War serves as a breeding ground for experiment. Moreover, it exemplifies the underexposure of military pioneering work in the field of construction.

Key words: bunker, submarine pens, First World War, reinforced concrete, Bruges

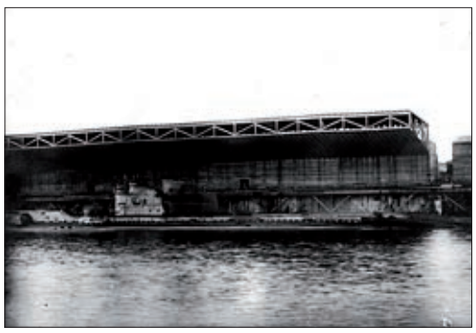
Introduction

In his book Concrete and culture: a material history, Adrian Forty acknowledges the transition of reinforced concrete from the realm of vernacular experiment to that of industrialized building and engineering as being instrumental in concrete's association with modernity.[1] This transition from 'mud' to 'modernity' takes places around the turn of the 20th century, when calculation methods, building codes and standards for reinforced concrete are developed, after decades of trial-and-error construction in different fields. While most attention in this respect goes to the pioneering work of civil entrepreneurs, the influence of the military remains underexposed. However, military courses on concrete calculation were organized and experimental laboratories had been installed well before the start of the war, for instance in the Belgian Royal Military Academy.[2] By 1914, after half a century of constructing fortifications in unreinforced concrete, military engineers had realized that only reinforced concrete would offer protection to contemporary siege artillery. The upcoming war would accelerate the implementation of these insights. At the same time, it established a firm association between reinforced concrete and warfare in people's minds.[3] An early but advanced example of such experiments is the large group shelter or Gruppenunterstand for submarines in the northern port of Bruges, erected in 1917-1918. This paper highlights its importance,

1 (Forty, 2012), 13-42.

2 (Van De Voorde, 2011), 134-153.

3 (Forty, 2012), 169-170.



Example of Kragunterstand and Ubootstall (BA-MA)

both as a typology and construction paradigm.

The need for new typologies

The stalemate of the First World War marks the transition to a full three-dimensional battlefield, characterized by overhead, underground and submerged warfare.[4] The introduction of those new tactical layers radically disrupted the traditional spatiotemporal experience of conflict space and paved the way for new building typologies. For instance, the confrontation between the new weapons of strategic aerial bombing and submarine warfare, is condensed in the construction of bombproof shelters in the German occupied Belgian ports, together forming the Kaiserliche Marinewerft Brügge.[5] The inland harbor of Bruges, linked by canals to the coastal ports of Zeebrugge and Ostend, housed the headquarters of the Unterseeboots Flotille Flandern, operating around the British Isles. This flotilla's successes turned the Marinewerft into an important objective for strategic aerial bombing. To keep pace with the rapidly increasing intensity and destructivity of aerial attacks, successive submarine shelter designs were developed throughout the war. Apart from some isolated particular designs, most shelters predating the Gruppenunterstand can be divided in two main types.[6]

Cantilevering canopies (Kragunterstände) attached to the existing quaysides constitute a first type. They come in a variety of construction methods, mostly using steel beams or trusses as a primary structure and corrugated steel as a secondary structure. These cantilevers are counterbalanced by containers filled with concrete or sand, or they are anchored to the quay. In some cases, the roof is doubled to create a hollow explosion chamber or to integrate an impact-absorbing layer of clay bags. Sometimes the upper roof is covered with steel plating, in other cases a thin slab of reinforced concrete is used.

The second type, the so-called Ubootsstall (U-boat shack), is a small covered dock, excavated between metal sheet pile walls. Part of the excavated earth is used to create a protective dike. The dock itself is covered by a roof composed of wooden supports, steel girders and corrugated steel plates. Bomb proofing is attained by absorbing sand layers separated by a slab of reinforced concrete.

Such proliferation of typologies and

4 (von Busch, 2011), 2-3.

5 The *Kaiserliche Marinewerft Brügge* (KMW) comprised the ports of Bruges (principal seat), Zeebrugge and Ostend (dependencies) and disposed of shipyard facilities in the ports of Ghent and Antwerp.

6 (BA-MA RM 120/97) summarizes aerial bombing and different shelter typologies in the KMW.

Gruppenunterstand (KLM)

construction methods indicates an empirical approach towards shelter design at this point in the war. Often, pragmatic reasons or local conditions, such as the load bearing capacity of existing quay walls, or the increasing lack of steel as a construction material can explain particular design decisions.

Constructing the Gruppenunterstand in the northern port[7]

Following a peak in aerial bombing activity in the summer of 1917, the German navy command planned a new bombproof shelter for the submarines of the Flandern flotilla. Realizing the flaws in earlier shelter designs, the engineers of the Hafenbauabteilung I conceived a new typology of juxtaposed covered wet docks that relied almost entirely on the use of reinforced concrete.[8] The choice for concrete added the potential of maximum protection to the advantage of reduced steel consumption, at a time when this had become scarce as a building material.

The new bunker was planned in the northern port, at the end of a partially excavated dock, whose construction had been commenced before the outbreak of the war. From the initially planned 11 covered docks, only 8 bays were completed by the end of the war, each measuring 8.80 by 62 meter. The bunker was built on the water to save time-consuming excavation works, a solution that at the same time would overcome the lack of steel sheet piles needed for retaining walls. A total number of 1,200 wooden piles measuring over 10 meter of length were driven in the bottom of the dock using floating steam pile drivers.[9] The overall layout of the bunker followed the outline of the dock, resulting in the stepped floorplan that characterizes the building. The main structure was executed as a framework of piers, columns and beams in reinforced cast-in-place concrete. To avoid extensive scaffolding and formwork over the water, the roof was composed of lined-up U-shaped precast concrete elements. Concrete ties, placed at regular intervals in between those elements, further ensured the horizontal stability. Similarly to the Ubootsställe, this supporting structure was then topped with a blast roof, here a double reinforced concrete slab, followed by an elastic layer of gravel and on top an impact layer of double reinforced concrete. To protect the base of the facades from bomb damage, protruding eaves were cast along the contours of the roof. For similar reasons, the voids between the columns in the facades were filled with blast walls in brick masonry, leaving only

7 This draws upon ongoing and unpublished research of archival sources from BA-MA, KLM, WLB and NCAP.

8 (BA-MA RM 104/234) describes explosion tests in March 1915 to assess he resilience of different construction methods.

9 (Journal de Bruges, 10 October 1951), 3.

small openings for access and natural lighting.

The size of the Gruppenunterstand allowed for a semi-industrialized construction process. Materials were delivered directly on site by train or via the dock, where a jetty provided direct access to a purpose-built concrete plant. The mixed concrete was raised to a casting tower and from there gravitationally distributed over the building site through a rotatable casting arm.[10] Additional narrow-gauge tracks on the roof and on the ground complemented this system. The stretch of land behind dock No.7 housed a production line for the precast roof elements, sufficiently large to cast the roof elements for an entire bay. Wooden gantry cranes displaced the finished elements to the end of this line, where they were hoisted by an identical roof-mounted crane. In turn, this crane would run on tracks over the columns to place the elements on their final position over the dock. This semi-industrialized process reduced the construction time considerably. Work started in August 1917 with the installation of the concrete plant and the pile foundation of the northern bay No.8. By the end of the year, two bays had been completed, followed by six more in the first half of 1918. No building progress was made after the end of July 1918, days before the start of the allied campaign that eventually would end the war.[11]

After the Armistice, the bunker in Bruges was recovered by the Belgian army. Initially, it served as a naval base for the short-lived Corps des Torpilleurs et Marins.[12] Following the dismantlement of the navy corps in 1927, the city of Bruges attempted in vain to have the bunker demolished for the extension of the port. The civil authorities claimed that the continued lowered water level in the dock had caused the wooden piles to rot to such a degree that the building risked collapsing.[13] Insisting on its strategic importance, the army dismissed the argument. In April 1939 the bunker was converted into a floating fuel depot for the war to come.[14] Somewhere between that time and early 1943, almost half of the building did collapse after all.[15] In 1951 the remainders were finally dynamited to extend the dock.[16]

Interior view of the Gruppenunterstand (BA-MA)

Design continuity

The March 1942 issue of the periodical L'Illustration proudly announced the

10 According to (Illingworth, 1972) concrete pumps were patented only later in 1927 by engineers Max Giese and Fritz Hull.

11 Account based on (KLM aerial photograph database), pictures dating between 30 September 1917 and 19 September 1918.

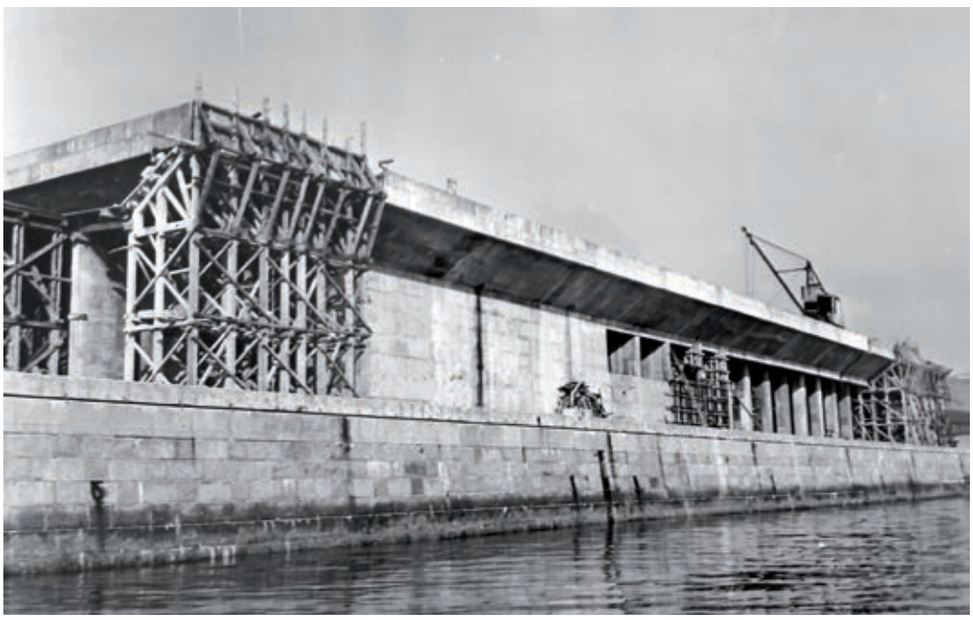
12 (KLM 185/311) The navy corps was formed with German ships that were assigned to Belgium by the Treaty of Versailles.

13 (KLM 185/3294).

14 (KLM 185/5320).

15 (WLB); (NCAP 25-524); (NCAP 25-525).

16 (Journal de Bruges, 14 March 1951), 3.



Construction of Nordsee III (1941), showing framework, concrete blast walls and beveled roof edge (BA-MA)

completion of the concrete submarine pens in Saint-Nazaire.[17] Interestingly, the article also included a picture of the bunker in Bruges and the text identified the Gruppenunterstand as the ancestor of the new submarine pens.[18] Even if the interwar evolution of technology had dramatically increased the scale of the new bunkers, the typological resemblance is evident, for instance in the juxtaposition of the covered docks and the protruding eaves. Less visible are other similarities, such as the layered blast roof, the judicious application of precast concrete or the thought-out organization of the building site. But essential differences also exist. The shelter in Bruges, for instance, does not dispose of the workshop facilities that were integrated in later designs. Its primary structure is composed of a concrete framework, while the examples of the 1940s feature solid concrete walls and eliminate the masonry blast walls. Moreover, pile foundations, such as in Bruges, would later be dismissed, being too sensitive and unable to take on supplementary loads after construction. Wherever possible, later bunkers would be founded directly on rock soil, for this reason sometimes even away from the waterfront (Keroman I and II). In the 1940s, steel trusses were preferred over precast concrete for the roofs in France, until the increasing lack of steel would favor pre-stressed concrete trusses for the later constructions in Germany and Norway.

The submarine bunker Nordsee III in Helgoland, Germany, is interesting in this respect. Built in 1940-1941, but conceived in the late 1930s, it constitutes a missing link between both wars.[19] It shares some of the trademark features of the bunker in Bruges that were completely abandoned in later projects, such as the skewed plan, the construction on the water, the concrete framework or the beveled eaves. On the other hand some ideas from Bruges were further devel-

17 (L'Illustration, 21 March 1942). By then, German propaganda would supervise the editorial board of *L'Illustration*.

18 A point of view shared by (Neitzel, 1991), 9-15.

19 (Neitzel, 1991), 97-99; (BA-MA RM 45-II/471-476).

oped or modified. Examples are: the use of soldier pile walls for the foundations of the piers, the installation of concrete blast walls and most notably the application of an enormous mobile concrete formwork for the roof instead of precast concrete.

Even if no hard evidence of continuity between bunkers of both wars could be found, the juxtaposition in L'Illustration under German supervision is a strong indication that the shelter in Bruges was used at least as a starting point for later designs. This seems to be confirmed by the fact that officials of the Krupp Germania submarine shipyards in Kiel photographed the ruins of Bruges in March 1943, only weeks before the start of the construction work on the Konrad submarine bunker, located next to their premises in Kiel.[20]

Conclusion

Within the timespan of the war, submarine shelters evolved from improvised mixed-material structures to all-concrete pens constructed in a semi-industrialized manner. Rather than being an endpoint of an evolution, the Bruges Gruppenunterstand sets a typological example for later submarine bunkers. Moreover, it exhibits certain technical solutions that would be continued, improved or dismissed in later designs. In particular, the experimental use of reinforced concrete in military context raises the question if the bunker in Bruges, in the words of Adrian Forty's Concrete and Culture, is 'mud' or 'modern'. If the previous Kragunterstände and Ubootsställe still tend towards empirical experiment, the later Gruppenunterstand displays a certain engineering rationality and mastering of reinforced concrete construction, that undoubtedly would justify the label 'modern'.

Archival sources and bibliography

Bundesarchiv-Militärchiv (BA-MA), Freiburg, Germany. RM 104/32, RM 120/97, RM 45/II/471-476.

Royal Museum of the Armed Forces and of Military History (KLM), Brussels, Belgium. 185/311, 185/3294, 185/4406, 185/5320, aerial photograph database, image database.

Bibliothek für Zeitgeschichte (WLB), Stuttgart, Germany. Bildsammlung Horst Dressler.

National Collection of Aerial Photography (NCAP), Edinburgh, UK. 25-524, 25-525.

Journal de Bruges. 14 March 1951, 10 October 1951.

L'Illustration. 21 March 1942.

Forty, A. 2012. Concrete and culture: a material history. London, UK, Reaktion Books.

Illingworth, J.R. 1972. Movement and distribution of concrete. London, UK, McGraw-Hill.

Neitzel, S. 1991. Die Deutschen Ubootbunker Und Bunkerwerften: Bau, Verwendung, Und Bedeutung Verbunkerter Ubootstützpunkte in Beiden Weltkriegen. Koblenz, Germany, Bernard & Graefe.

Van De Voorde, S. 2011. Bouwen in beton in België (1890-1975): samenspel van kennis, experiment en innovatie. PhD. Dissertation, Ghent University.

von Busch, O. 2011. Design at the Front. Helsinki, Finland, Aalto University.

20 (WLB); (Neitzel, 1991).

Cold War Heritage in the Russian Federation

Marina DOBRONOVSKAYA
Independent scholar, Russian Federation

Abstract
Numerous military sites from the Cold War time are scattered all over Russia. During the 1990s, many were abandoned and have deteriorated due to natural causes and looters. None of these sites are listed in the National Registrar. Inventorying, research and basic conservation would be the first steps in preserving those sites. This paper argues that the Cold War sites may fit the concept of preserving cultural landscapes in the form of historical-cultural preserves, which the state agency for historic preservation is currently developing, since they are a particular type of cultural landscape.

Key words: Russian Military Heritage, Russian Cold-War Historical Preservation

Russia has a long history of wars and military conflicts. In the 20th century it was a major actor in both World wars and of the Cold War that defined international relations for 55 year. A cult of the Great Patriotic War (Russian part of the World War II) continues through these days. It is a part of the state ideology and it is expressed through book publications, movies, historic reconstructions, military parades, clubs and youth movements of field research and expeditions, and museums of military glory. Victory memorials and monuments exist in every Russian city and town. Yet, the only one real historic site from World War II is Prokhorovo Battlefield near Kursk. It became a historical museum-preserve in 1995.

The Cold War is not celebrated or commemorated in Russia, and there are no sites associated with the Cold War that are under state or local authority as monuments. And yet, numerous military sites are scattered all over the former Soviet republics as material remnants of the fierce international strife that dominated a half-century of Soviet history. The Cold War phenomenon not only defined international relations; it was also at the core of Soviet domestic policies, and loomed over the lives and minds of Soviet citizens for fifty-five years. After 1990, many of these sites were abandoned, and missiles and armaments were dismantled and removed. While research and preservation of the Cold-War heritage has been conducted in numerous other countries, and in the former Soviet republics, in Russia all these sites lay in neglect, and quickly deteriorate. They are not considered cultural heritage in

need of protection. This paper is the first attempt to identify problems related to the protection of military heritage sites in Russia and to determine the set of immediate tasks to be taken for their preservation.

The main aspects of preservng the military legacy of the second half of the 20th century include:

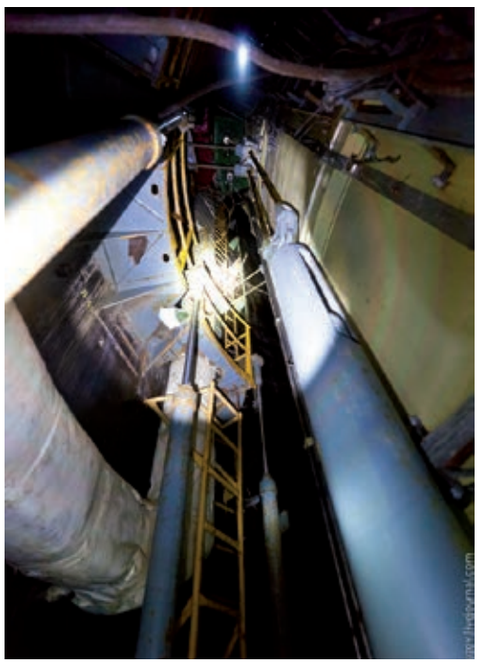
1. Classification and evaluation of military heritage sites;
2. The mechanism of designation and preservation;
3. Main stakeholders.

1. Classification and evaluation of all the military sites

need deeper research since there are many different types of settings. It is beyond this paper to provide detailed technical information about weapons, but some basic descriptions may be gathered from open sources such as Wikipedia and public blogs and online forums. While useful, however, some of this information may be outdated or not accurate. Much deeper research needs to be conducted, and a taxonomy still needs to be developed. At first glance, however, several types of properties can be identified:

a) Military bases to house troops, with barracks, training facilities etc. These ordinary structures, built of bricks or concrete, are not masterpieces of architecture. Now these are almost completely destroyed, full of junk and debris.

b) Intercontinental ballistic missiles' silos and their control and command centers. Examples of this type include the unified command station 15V52U [15B52Y] that operated the UR-100UTTKh (15A35, the NATO reporting name SS-19 mod.2 Stiletto, put into service in 1979). The stationary missile complex included 10 intercontinental ballistic missiles 15A35 mounted in silo launchers 15P735, as well as a unified command station 15B52Y of high security, designed to withstand nuclear strike. Within modern Russia boundaries 170 silos were built. This station is located in Kaluga district, 250 km south from Moscow. It comprised of a 40-meters deep, twelve-levels underground vertical command station made of re-enforced metal, and a system of underground tunnels. Description and photographs of the type are available at the Museum of rocket forces in Ukraine.[1]



Command station 15B52Y. View from the bottom. Photo: frantsouzov.livejournal.com

Another type of site includes the R-16 missiles units of three silos and a control system (NATO reporting name SS-7 Saddler). One known site that is left is located in Novosibirsk district, others were destroyed and flooded. The R-16 was the first truly successful intercontinental ballistic missile devel-

1 http://varandej.livejournal.com/369299.html

Underground strategic storage of food supply in Samara. From Livejournal

oped by the Soviet Union. It was on duty in 1963 through 1977. On normal duty the missiles were stored in hangars, and it took one to three hours to roll them out, fuel them, and reach launch readiness.

c) Antiaircraft forces units, such as S-200 (NATO reporting name SA-5 Gammon), also still exist. The S-200 was a long range, medium-to-high altitude surface-to-air missile (SAM) system designed to defend large areas from bomber attack or other strategic aircraft. Each battalion had 6 single-rail missile launchers for the 10.8 m (35 ft) long missiles and a fire control radar. S-200 was put into service in 1967. This unit is located in Archangelsk district.

d) Radio-location stations, such as a radars system located in Naro-Fominsk, Moscow district, are possible sites for preservation. This site was a part of the A-35 (later A-135) anti-ballistic missile system deployed around Moscow to intercept enemy ballistic missiles targeting the city. The A-35 was supported by the two Dunay radars (NATO: Cat House and Dog House) and the Soviet early warning system. It was in operation since 1971.

e) Ammunition and food supply storages are another type of Cold-War remnant, for example an underground former strategic storage facility for food supply in the city of Samara. Total capacity of the underground complex, including rooms and corridors, amounted to 16,400 tons.

Repair and spare-parts factories and facilities were built to serve armed trains, aircrafts and military vehicles in the 1950-s through the 1980-s. Many of them were abandoned after the Cold War, since these vehicles were also abandoned and destroyed. These were often very large structures. An example of this kind of site was the depot for maintenance and repair of the Combat railway missile system (abbreviated BZhRK, ghost train), a train designed to carry strategic missile systems. The train carried the RT-23 missile (NATO reporting name SS-24 Scalpel). In total, the USSR produced twelve trains starting in 1987. Two of these trains were transferred to museums, all others were destroyed after the end of the Cold War. The depot was closed. It is located in Kostroma district.

A number of facilities for testing aircraft and missiles engines were closed in the 1990s. One of these is located in Samara district, with remains of technical equipment still in place (Figure 7). All these sites are in poor condition, full of junk and debris. Once people discover them, they are quickly looted for metal. However, many people who visit these facilities express fascination with the size, the power, the machinery that was operated, and the meaning and spirit of that era. It is important to preserve what is left before it completely vanishes.

Of course, not all these places have values to be preserved. But such fa-

cilities as missile silos and command stations, radio-location stations, etc. represent outstanding achievements in science and technology. Some of them were built in order to withstand a nuclear strike, and their construction required innovative design and great effort. Thus, they are outstanding examples not only of science and technology, but also of building technologies. Some types of weapons, such as the C-75 Dvina, went down in history and became legendary. They were used in Vietnam beginning in July 1965. In May 1960, one of the C-75 missiles shot down an American reconnaissance aircraft, a U-2, piloted by Gary Powers, while on a secret mission over Sverdlovsk.

2. The mechanism of designation and preservation

Identifying and classifying these sites is the first task to be undertaken. A second task revolves around the question how these properties receive designation as cultural heritage status. One of the major problems of protecting Cold-War sites is that, at present, they are not considered cultural heritage. No agency has expressed interest in protecting them, although there exists a legal basis for their preservation. The law "On Objects of the Cultural Heritage of Peoples of the Russian Federation" (art. 3) reads that valuable objects of science and technology including military may receive a designation as "monuments of cultural heritage" or as "historical places". "Historical places" are cultural and natural landscapes related to historic events, including military sites. Probably, the best way to preserve these sites would be under the definition of historic places since they usually are located in natural settings such as forest areas. The Chief Administration for Protection of Cultural Heritage of the Ministry of Culture (CAPCH) has the authority to designate Cold-War sites as historical places or cultural monuments and put them under legal protection. The first steps for designation would be inventorying, research and documentation, and evaluation. If designated, the next stage would be to implement security measures to protect against looting, and basic preliminary conservation of the properties to prevent further deterioration. This, however, presents a problem because the land and structures where these sites are located belong to the RF Ministry of Defense, which would be responsible for security and protection.

Recent measures taken by the Ministry of Defense show that it has an understanding of the importance of protecting military heritage and of its role in public's patriotic upbringing. In July 2016 it opened the Military Patriotic Park of Culture and Recreation of the RF Armed Forces "Patriot", with exhibitions of Soviet and Russian aviation, rocket and aerospace devices and equipment, and armored and special vehicles. To date, this park comprises several kinds of structures, such as the Central Museum of Armored Weapons and Equipment, the military-historical complex Guerilla-warriors village (imitation of a World-War II partisan-guerillas camp), the Center for Military-Tactical Games, and a field for historical reconstructions. The mission of park "Patriot" is to contribute to the education of citizens and youth, to create an attractive and friendly image of the RF Armed Forces, and to

Testing facility. Samara district. From Swalker website

help developing a sense of pride and respect for the Motherland. The Park combines education with amusement. Within a short period of time, it became a popular place, receiving hundreds of daily visits.[2]

This military park demonstrates the country's commitment to and pride in its military heritage, although the Park is different from historical sites associated with original events. Park "Patriot" and traditional other military museums bring together movable artifacts in the form of a museum collection. Protection of original sites, often in remote areas, is a different matter and involves a different concept. Still, the success of park "Patriot" gives hope that it may lead to the next step, namely protection of original sites. They present not only technical or scientific achievements of the time, but also what it took to build and maintain the construction. Equally important, the original location of these sites would give visitors a very different experience than that in museum settings. The emotions, the sense of power of the original structures, and the opportunity to be in a real structure would be impossible to recreate in a museum or amusement park.

The same law "On Objects of the Cultural Heritage" (art. 57, 58) allows for protection of cultural landscapes in the form of "historical-cultural preserves". This is a relatively new concept that has not been widely used yet. The CAPCH is planning to promote this concept in the near future. "Historical-cultural preserve" would differ from a "museum-preserve" arrangement that has been traditionally used in Russia for preserving cultural landscapes. The main difference is that the historical-cultural preserve may have a museum or may not, but it will not relay on a museum collection as the main attraction to the site. Instead, it may have one or several original (not replicated) historical attractions of high cultural value, in their original historical and natural settings. Historical-cultural preserve may be a separate institution, or may be a part of a national park. This concept is similar to that of national monuments and national parks in Northern America and some European countries. The Cold-War sites do not have to be the only attraction in a historical-cultural preserve. For example, the unified command station 15B52Y, mentioned above, is located on the border of a large natural national park, Ugra. An adjacent historical-cultural preserve would complement the park and would be mutually beneficial. The CAPCH considers creating a historical-cultural preserve in Northern Russia, Karelia, with the lake Onega Neolithic petroglyphs as its core. In addition, examples of traditional wooden vernacu-

2 http://patriotp.ru/about/general-information/

lar architecture and churches would be included. Military sites are also located in the area and could be incorporated. Creating a historical- cultural preserve with multiple historical sites of different typology would attract tourists with a wide range of interests. This concept of historical-cultural preserves may be adopted by the Ministry of Defense. This will fit the goal of creating a positive image of the Armed Forces, and may be an additional tool for patriotic education of Russian citizens, particularly of youth.

Potential audience is an important question, since this will define the interpretation and adaptive use of the properties. At present, the Cold War heritage sites are in high demand among two segments of population. One is looters and hunters for metals. They bring with them heavy tools to strip off all metal armor, doors, stairs and equipment, and they destroy the sites quickly. The second group is the numerous communities of adventurers and amateur explorers of abandoned places. They range from former military officers to teenagers looking for excitement. Some of these people have an interest in military history and do research and analysis of military equipment, which may be a useful source of information, Such a person is Martin Trolle Mikkelsen, an amateur military researcher and traveller from Denmark.[3] Others are engaged in extreme tourism and guide unauthorized tours. Young people, such as "Lana" from Moscow, for example "like to look beyond fences, unwashed windows and locked doors simply because it's interesting and exciting."[4] These types of communities and individuals often take good quality detailed photographs of their trips, maintain blogs and websites and exchange information and comments on the internet. They include thousands of people from all regions of the Russian Federation. Their activity demonstrates that there is interest in military heritage, and they are a potential core audience for military historical-cultural preserves. They are also a source for documentation and potential volunteers.

Ghost train maintenance depot. Kostroma district. From Livejournal

3. Main stakeholders

It is clear that efforts to preserve Cold-War heritage sites may be accomplished in collaboration between the Chief Administration for Protection of Cultural Heritage and the Ministry of Defense. The public and adventurers' communities would be a third major participant in this effort. Finally, the issues of research, legal designations and adaptive use need to be decided with local authorities, a fourth group of stakeholders. Designation of the Cold-War heritage properties and making them into historical attractions will be a long and costly process. But it is necessary to start it today before these sites disappear.

3 https://www.flickr.com/photos/martintrolle/albums

4 http://lana-sator.livejournal.com/

Puerto Rico Coastal Defenses during 20th Century: WWII

Milagros FLORES-ROMÁN
MA in History at the University of Navarra, Spain
President ICOFORT International

This papers intends to share the state of identification and protection of the US Military Heritage which was introduced in Puerto Rico by the US Army based on the modification and reuse of the old Spanish colonial fortifications to serve new modern military purposes in support of the defense of the Panama Canal during WWII.

Western European Military Heritage was introduced in the Colonial Caribbean during early 16th century as result of Spain's struggle against the other European Nations to defend its new territories discovered in 1492 by Christopher Columbus. Spain placed their special interests in safeguarding the Caribbean which was the entrance to power and wealth of its new domains through the design and implementation of a Defensive System included all main ports of the Caribbean resulted on a military engineering masterpiece today it stands as a UNESCO World Heritage and remains as a testimony to the historic strength and the power of Spain in the New World.

Puerto Rico, remained as the last stronghold of the Spanish colonial domains in the new world until the events of Spanish American War in 1898 when the island was transferred under the domain of the United States of America. As result, old Spanish colonial fortifications were modified and reused by the Military forces of the United States of America.

San Juan Defenses

After the new sovereignty change of the island of Puerto Rico under the command of the United States and facing the panorama of World War I the American army made several attempts to improve the bad state of the defenses of the island, thus giving beginning to an initiative of preservation of the fortifications of San Juan. The first plan of improvements to the old Spanish defenses recommended the installation of new and more efficient artillery according to the "Junta Taft", was created in the year 1905. This plan was not implemented because it was considered very expensive.

A few years later, in 1915 the War Department presented another improvement plan to determine what changes were needed to optimize the future of the artillery. After World War I, the US Army published the conclusions and recommendations of this commission, which would serve as fundamental guidelines during World War II. The US Army reiterated among others the need to build high-caliber batteries, modifications to the old defenses according to the new artillery site, the construction of a battery system or coastal defenses complemented by a fleet of aircraft, and the consideration of the establishment of a first-class naval base.

Again because of the high cost, the option of building coastal batteries and with high-caliber artillery prevailed as an option during the 1920s and 1930s.

As the world political scene changed and with the possibility of a Second World War becoming a real threat, the United States incorporated preventive measures of military infrastructure both at the continental level and at the level of its new territories.

In Puerto Rico, these infrastructures were mostly built by the United States Army Corps of Engineers during the 1940s and were mostly located in the San Juan Bay and Passage areas of the island of Vieques.

During the German threat to the American possessions in the Caribbean during the period of 1939-1941 became the time of Preparations before the imminent war being required that the military authorities in Puerto Rico modify the old Spanish fortifications located in San Juan.

It was decided to create the Military Department of Puerto Rico (Puerto Rico Army Department) with the objective of transforming the island into an "impregnable citadel".

Between 1938 and mid-1939 the fortifications in San Juan underwent a program of improvements. The work was assigned to the construction company Rexach. The work consisted of the demolition of part of the old walls, provided new foundation and rebuilt the section of wall. In addition to the bastions San Agustín and Santa Elena, Sentry Boxes were repaired along the walls. In Castillo San Felipe del Morro, which had been converted into an administrative and housing complex, electricity was introduced, drinking water and the construction of new free standing buildings on the grounds of El Morro. Also as part of the defensive improvements a canon Amstrong of 4.7 inches was installed.

Prior to the outbreak of World War II, Washington openly accepted that the island was the Key to the Caribbean Sea and an essential base

Fort Brooke, San Juan Defenses WWI

for the defense of the Panama Canal. For the United States, possession was of utmost importance for the defense of the territory against aggressions overseas because Puerto Rico was the most eastern land in the Caribbean under American sovereignty. Puerto Rico's own governor, Blanton Winship, indicated that the island "had become the most important piece of the American defensive system."

The island of Puerto Rico was to become one of the most important strategic points in the Atlantic, with the establishment of large aviation bases, naval bases and other military installations. The security of San Juan, its capital city was vital for the effective defense of Puerto Rico.

Along the coast of Puerto Rico artillery batteries and observation posts were established, sometimes on over foundations of old Spanish defensive installations of the nineteenth century.

All the facilities built during 1939 and the war years were connected by a system of roads called "military", and they had the necessary services of water, communications and electricity.

Harbor Defenses of San Juan

By the 1940 the Harbor defenses of San Juan Harbor were composed:

Fort Brooke (1903 - 1949/1966), Old San Juan

This was the U.S. Army's main garrison post, centered mainly around the historic El Morro and San Cristóbal Castles. Originally known as the San Juan Military Reservation. Renamed in 1943. The Americans built a harbor entrance control post (HECP) and Battery Point (a three-

inch gun mounted on an older 4.7-inch Armstrong gunblock) on the old El Morro fortress, as well as three fire-control stations (one still exists). Located at San Cristóbal Castle were two fire-control stations (still here), and a 155mm gun battery on Panama mounts. Numerous barracks and quarters covered the open plain below El Morro ("El Campo del Morro"). The old Ballajá Barracks became the Fort Brooke Army Hospital (aka Rodriguez Army Hospital) in 1943. The Convento de los Dominicos, originally built in 1523, was used in WWII as the administrative headquarters of Fort Brooke and the U.S. Army Caribbean (Antilles) Command. It is now a museum. Most of the historic areas of the post were nominally transferred to the NPS in 1949.

Punta Escambrón Military Reservation

(1941 - 1949), Puerta de Tierra

Located here was Battery Schwan (1942 - 1949, destroyed 1965) at Punta Escambrón near Fort San Gerónimo. A hotel swimming pool was located later on the site.

Fort Amezquita

(1941 - 1948), Isla de Cabras

During World War II, the island of Cabras was connected to the mainland of Puerto Rico by a rocky causeway constructed by the Corps of Engineers of the United States Army during the 1930s and El Cañuelo became part of the new " Fortress Amezquita ".

World War II batteries here were Battery Reed (1941 - 1948); a 155mm Panama-mounted gun battery nearby; and an Anti-Motor Torpedo Boat battery. A secondary harbor entrance

San Juan Defenses. Observation Post Castillo San Cristobal

control post. Originally known as the Cabras Island Military Reservation until 1943. This site is now used as a local police training area and shooting range.

San Juan Fortifications under the US Department of Defense

As a result of the Spanish-American War of 1898 the Spanish cede Puerto Rico to the American government. With the signing of the Treaty of Paris that same year the San Juan Military Reservation is established in the forts and the site is reserved by the US Government for military purposes by an Act of Congress in 1903. The military used the fortifications until the 1960's.

Several alterations occurred in San Cristobal during the American military presence:

- Fixtures for a new sewer and plumbing system were installed in 1899.
- Electricity was introduced in 1901.
- A large housing development for military personnel was erected at La Princesa Bastion in 1930.
- The late 1930's were characterized

by restoration and repair work carried out by the US Army.

- The harbor defense system was installed during World War II years, 1941-1945.
- Two fire control stations were built at El Caballero and the North Bastions.
- The Joint Operations Center was constructed in the main moat in 1942.
- Several gun blocks are placed along the northern edge of the outworks.

The Morro Castle also saw various alterations during the American military presence:

- Electricity was introduced in 1901.
- A new water supply system was built.
- New building was constructed on the grounds in front of the fort.
- A golf course and a pool was added to the area.
- In 1929 damages done in 1898 were repaired.
- Some restoration work was done starting in 1939, including the restoration of the sentry boxes.

During WWII (1941-1945), the concrete observation tower was built into the walls and the bunker was built in the moat.

In December 1941, the enemy presence in the area was confirmed by intelligence reports which caused fear of an attack or invasion of Puerto Rico to increase. This caused the mobilization of personnel by assigning the headquarters of the Army in La Princesa, the Fort of San Cristóbal and the Island of Cabras in Cataño.

During the summer of 1942, the Caribbean Maritime Frontier headquarters and the Joint Operations Center were moved to a bomb-and-gas-proof structure built in the dry moat at Fort San Cristobal in San Juan. At this time, the presence of enemy submarines, the administration and defense of the Netherlands Antilles, and the situation in Martinique were the most important issues in the Command.

At the end of June 1943, Puerto Rican troops began to replace the American troops, while they began to be transferred to other points of the Caribbean and Pacific. Three years and five months after the attack on Pearl Harbor, peace returned to the Caribbean.

At the end of World War II, developments in military technology and new combat tactics experienced during World War II changed the concept of coastal defense originally projected by the Modernization Program of 1940. In addition, the development and use of the atomic bomb dramatically changed the planning of military strategy opaque all existing defensive systems military strategy and opaque all existing defensive systems since the beginning of World War II. The American defensive strategy changed from a defensive against a possible invasion to a defense against a possible destruction. The new concept of amphibious warfare, new tactics and landing gear, coupled with an eagerness to economize in the immediate absence of a powerful enemy naval force, brought about the practical end of coastal defenses. All attempts by the Costa Artillery Corps to improve, maintain or modify existing facilities failed.

In Puerto Rico, all coastal defenses were eliminated by the end of 1947. Most of the armaments used during the war were removed and stored.

After World War II the function and use of the fortifications of San Juan changed dramatically due to the use of modern weapons that made the fortifications obsolete. Indeed, President Franklin D. Roosevelt had expressed concern about the historic importance of these forts since 1934, and legislation was introduced in the United States Congress to include them in the national park system since 1935.

Negotiations between the War and Interior departments had begun during the decade of 1930 when the historical character of the fortifications of San Juan began to focus considerably as the first historical units to became accepted as parts of the system of national parks, were summarized in 1946, culminating in 1949 when President Harry S. Truman established the San Juan National Historic Site, Initially under cooperative administration between the Department of the Army and the National Park Service.

In 1961, San Juan fortifications were officially transferred as part of the National Park Service site at San Juan National Historic Site.

As part of the National Park Service's mission of presenting the history of the site, the new Visitor's Center is housed in the old Joint Forces bombproof shelter. A structure was built in preparation for any possible involvement of the Caribbean area during WWII, and for protection from modern weaponry. Today, this modern installation serves to tell the story of the site.

San Juan Defenses. Visitor Center Castillo

References

Bearss, Edwin C., San Juan Fortifications, 1898-1958 (Washington, D.C.: US Department of the Interior, National Park Service, 1984.

Berkowitz, Cliver, Crisson et al. The Fortifications of San Juan National Historic Site. Historic Structure Report, Vol. I, II, III (Southeast Regional Office: National Park Service, 1991)

Lewis, Emanuel Raymond, Seacoast Fortifications of the United States (Annapolis: Naval Institute Press, 1993).

Terrance McGovern y Bolling Smith, American Coastal Defenses, 1885-1950 (Oxford: Osprey Publishing, 2006).

Pinero Cádiz, Gerardo M., El Gibraltar del Caribe en Guerra Las Defensas Costeras en Puerto Rico durante la Segunda Guerra Mundial (San Juan, Isla Negra Editores, 2015).

Alonso M.M. y Flores M., El Caribe en el siglo XVIII y el ataque británico a Puerto Rico en 1797 (San Juan: Publicaciones Puertorriqueñas, 1998).

González, Flores, Sepúlveda et al., San Juan la Ciudad que rebaso sus murallas (Ediciones Puerto: San Juan, 2005).

From garbage to heritage? Two land defence lines in Arctic Norway: the Lyngen line (WW2) and the Frøy line (Cold War)

Anders HESJEDAL.
Archaeologist, Norwegian Institute for Cultural Heritage Research, Norway

The mountain area between the Finnish border and the bottom of the Lyngen fjord has probably been one of the most important military strategic areas in Norway during the last 70 years. In 2014-2015 a part of the mountain area was surveyed (Hesjedal og Andreassen 2015). More than 1000 structures were mapped, most of them remains from the Lyngen line constructed as an "unconquerable" defence line against the Soviet army in 1944-1945. During the Cold War the area became strategic important for NATO. From 1950 and onwards military installations were regularly constructed. In the 1980 a modern land defence line, the Frøy line was constructed, finished around year 2000. The Norwegian defence decided to demolish the line because of the détente between Russia and the west. In 2012 the local community and the regional heritage management managed to stop the demolition in the mountains in the municipality of Storfjord. A process was started to evaluate the landscape and the various military structures as heritage.

When the "official" history of the WW2 in Norway was written it was biased. Focus was mainly on what happened in the southern part of the country and still the occupation and war history of the northern part of Norway is under communicated. Unpleasant and painful parts of the history, as the Norwegian business sectors cooperation with the Germans, or the role of the Norwegian police force in the deportation of the Jews was not raised. The destiny of the Soviet POWs, including Operation Asphalt dis not became a part of the Norwegian history before the Cold War had come to an end. This of course was also the case for the history of the Cold War. After 1990 archives, both in west and east was opened, new questions asked, and new historical insight acquired. There was also an increasing interest in the material remains both from the WW2 and the Cold War.

The Lyngen line, historical background

Norway's geopolitical situation have since 1941 been dominated by a few but important factors. Firstly, the former Soviet, now Russia, and Norway are neighbours in the northeast. Secondly, Norway has a long coastline with long and narrow fjords towards the Atlantic in the west. If you control the coast, you have the possibility to control the north Atlantic. Thirdly, there was no railway connecting north-

ern Norway to the south. This was the situation when the Germans attacked in 1940 and still today the Norwegian Railway ends at the city of Bodø. This means that Northern Norway must be seen an island when it comes to defence matters. Supplies to North Norway, soldier and military equipment must come by ship or by plain, both vulnerable transport methods. During the war, the Germans invested heavily in the construction of railways in Norway. The planned Polar Railway, that should end up in Kirkenes close to the Russian/Soviet border, was one of Hitlers prestige projects and an attempt to improve the military defence capacity in the north. One of the crucial tasks for both the Lyngen and the Frøy line was to protect the Bardufoss airbase, important for the Germans and essential for the Cold War Norwegian and NATO defence.

When Germany attacked Soviet the goal in the high north was to conquer Murmansk, an important Soviet port. However, the attack failed, and the German army got stuck in the Litza valley, and three years of trench warfare followed between the Soviet and the German troops. The German attack on Soviet was followed by a Finnish attack, in Finland this is called the Continuation War. The Finns wanted revenge for the loss in the Winter war in 1939-40, where Finland lost 10% of their land to the Soviet. During 1943 it became apparent to the Finns that the Soviet and the allies would win the war. This would probably have serious consequences for Finland and therefore the fins started to try to get to an agreement with Soviet. Negotiations between the Finnish and the Soviet governments led to a ceasefire in the beginning of September 1944. One of the many conditions the Finns had to accept was that the Finnish army now should fight the Germans still in Finland, all German troops had to leave immediately. The Germans first considered a defence line in Lapland, from Petsamo via Ivalo to Karesuando, but this plan was dropped due to poorly developed defensive positions. In addition, nickel from the Petsamo area was not necessary for the German war industry, there was no need to defend the mines and the nickel industry. So, under attack from the Finnish army the German Lappland-army or 20th Gebirgsarmee started to withdraw from Finland heading for Norway and the mountainously area between Finland and Lyngen fjord. Finnmark, the northernmost county in Norway is huge, the landscape is flat, is sparsely populated and difficult to defend. In Troms County, the landscape changes. The mountains are higher, steeper and more alpine and divided by deep and narrow valleys. This is a landscape that favours an army defending itself, and this was exploited both by the German army during the WW2 and the Norwegian defence forces during the cold war.

In the beginning of October 1944, the Soviet army attacked the Germans at the Litza front line and the Germans were completely overrun. The fighting developed to a race to the south and west, the Germans desperately trying to avoid being trapped by the Soviets. In the end of October, the Red Army stopped their advance. The eastern part of Finnmark was liberated. The German Lapland army consisted of ca 220 000 soldiers, 60 000 horses, 20 000 vehicles and an unknown number of Soviet POWs. The plan was to get most of the army behind or the

planed Lyngen defence line and to build it so strong that if the Soviets attacked they should not be able to break through.

Scorched earth policy

The first line of defence however, was to force the civilian population to move away and to burn and destroy the land. All territory east and north of Lyngen should be laid desolate. In Finland 110 000 people had to leave their homes, 50 000 to Southern Finland the rest to Sweden. In Norway about 70 000 were affected by the forced evacuation. The majority, ca 50 000 were transported to the south, some thousand fled into the mountains, living there hiding from the Germans during the winter, the rest living in the liberated areas. Fishing villages, barns, residential buildings, hospitals, schools etc were burned or blown up. Bridges, telephone poles, ports and roads were destroyed. Livestock was killed. The scorched earth policy should make it as difficult as possible for the Soviet army to reach the German defence lines.

Constructing the Lyngen line

Simultaneously with this systematic destruction of the north, the construction work in the mountains started. The choice of the Lyngen area is obvious, and the Lyngen line is based on the German experience from the Litza front. The Lyngen fjord cuts deep into the land and is a natural barrier surrounded by high and steep mountains. Distance from the bottom of the fjord to the Finnish and Swedish border is only about 40 km. The landscape is dominated by steep mountains and narrow valleys, it is a landscape that favours the defender and make an attack more complicated and risky. The order from Berlin told the 6. Gebirgsjäger division to establish an unconquerable defence line in the mountains (Fossum 2014:54). The division brought with them between 8000 and 10 000 POWs. The POWs had to work on the defence line, constructing roads, cable cars and defence structures like dug inns, gun posts etc. and the desolate mountain area now became a major construction site with thousands of people working there. Time was short, the construction work should be finished in May 1945. The cold, the snow, the polar night together with lack of food, medicines and bad housing and clothing gave especially the POWs a hard time, and about 800 died, most of them the last few months of the war.

The material culture

There was established a system of small POW camps close to the construction sites, housing Soviet prisoners forced to work on the defence structures. Most of the camps was named after villages and cities in Austria[1], especially from the federal state of Salzburg. Maps shows where the camps[2] Kitzbühel, Gastein, Zermatt, Windeck, Salzburg, Mallnitz, Spittal, were situated in the mountainous Lyngen area. The landscape must have reminded the Austrian soldiers of their homes and the naming could be interpreted as an attempt to symbolic "plant" a part of the Alps into the North Norwegian mountains. We do not have much information about the camps, prob-

1 A few names were from Germany and one from Switzerland.

2 The spelling of the names is in accordance with German maps from 1944/45.

Cluster of German dug outs/shelters

ably some of the documentation was destroyed by the Germans at the end of the war (Soleim 2009:345)

From two of the camps, camp Mallnitz and camp Kitzbuhl however, there are some photos and reports from an Allied War Crime Commission visiting the area in June and July 1945. POWs here were maltreated to death and then the corpses were hidden in four mass graves by the German/Austrian soldiers. The War Crime Commission tried to find the hidden corpses, identified them and documented the cause of death. The dead ones were then taken to the local churchyard at Hatteng for the funeral. Here they were until 1950 when the Norwegian government decided to rebury all the Soviet POWs at Tjøtta, an island in the county of Nordland. The argument was that the Soviet visitors to the churchyards where the POWs were buried was Soviet spies, spying on Norwegian and NATO military facilities.

Camp Mallnitz was probably the worst camp in the area. Prisoners to weak or ill to work on the defence line were gathered here to starve to death, their food rations taken away from them and given to the prisoners still able to work. Most of the photo documentation from the commission consist of dead prisoners. But some of the photos shows the landscape and could help us to find the spots were different actions took place.

The Germans in Norway capitulated 8. Mai 1945. The soldiers where repatriated to Germany/Austria, the surviving POWs repatriated to their countries, and the Norwegian civil population could return to their homes. The British and the Norwegian armies cleaned the area for munition, weapons and explosives. The German defence structures now became an important resource for the local population. Huts and barracks where dismantled and the materials was used

for rebuilding and repairing the destroyed homes. No one thought of the German remains as heritage.

Soon after the WW2 the Cold War was a fact. In 1949 Norway became a member of NATO. During the cold war the area were gradually militarized again. The fortifications from the Lyngen line was reused during military exercises, a few were also remodelled. Probably some of the German structures were demolished when the Cold War defence structures were constructed. This however is not recorded, but traces in the landscape suggest this.

Historical background, the Frøy line

In 1948 there was a secret meeting in Oslo between Norwegian and Swedish officers and German ex Nazi officers who had served in Norway during the war. The purpose of the meeting was how to defend the Scandinavian peninsula against Soviet. The German officers proposed a defence line in the Lyngen area, a continuous line of fortifications (Jaklin 2009:31-42). The new Lyngen line were however not built. The Norwegian parliament thought that it was too expensive, the priority was given to rebuild the country after the war, especially the northern part. A military objection was that the post-war coastal artillery was inadequate. There were not enough personnel to man the German coastal forts. In addition, many of the forts were outdated and did not meet the post-war military requirements. Attacking Soviet forces could therefore invade the coast further south and attack the line from behind and thereby making it useless. Even if a major construction phase was turned down in the first place, fortifications were built in the area. The Korean war, the increased tension between east and west and the increasing importance of the north-eastern corner of the NATO alliance led the defence forces to strengthen the land defence in the area. The military exercises in the area used and partly rebuild a few of the German defence structures. (Jaklin 2009, Gjeseth 2012).

Operation Asphalt is an example of the authorities fear of the Soviet enemy. In 1945 deceased Soviet POWs were buried on local church yards all over the country. The authorities considered Soviet officials and private persons visiting the churchyards as potential spies. In 1951 therefore the POWs was exhumed, put in paper bags treated with asphalt and moved to the distant island of Tjøtta in Nordland county, were almost 7000 were buried in a common grave and ca 800 in single graves. Operation Asphalt also included destroying monuments raised by surviving POWs to remember and honour their dead comrades. The operation was kept secret and was first described in its full width after the Cold War. Destroying the POW camps immediately after the war, the relocation of the deceased POWs and the destruction of the monuments shows how the authorities used material culture to achieve a kind of collective strategic forgetting the relations between the Soviet POWs and local communities trying to help them as best they could. (Fjermeros 2013, Soleim 2016)

During the 1970 the plan for building a land defence line was highlighted again. Now the coastal artillery was modernized, and more important,

German Dug out. The Lyngen Alps in the background

there was economy to start building the line. The new line was called the Frøy line and was built as a system of ca 300 strongpoints, mainly in the same areas as the German Lyngen line from 1944-1945. (Gjeseth 2012, Dalmo 2014). When constructing a part of the Frøy-line in Nordalen a grave with 16 deceased Soviet POWs were found. It is unclear whether this was a new grave, or it was a part of one of the mass graves excavated by the War Crime Commission in 1945.This was in the beginning of 1980ies, the tension between NATO and the Warsaw pact was high. Finding WW2 Soviet POWs when constructing defence structure directed toward Soviet was a delicate political issue and information about the discovery is scarce.

The general plan for the Frøy-line was very much the same as the German plans for the Lyngen-line. The county of Finnmark was too difficult to defend, an attack had to be stopped in Troms. And to make it difficult for an attacker, the infrastructure in Finnmark was supposed to be destroyed by the local population and the Norwegian army during the withdrawal. (Rapp 2011, Gjeseth 2012, Dalmo 2014).

The Frøy line consist of dug-inns and gun-positions, distributed through seven municipalities. The major task for the defence was to stop or to slow down an attack until we got in allied NATO forces to combat and fight back the attacker. The Bardufoss Airbase, ca 60 km south west of the Frøy-line was a central element in this strategic thinking. Here allied forces should land, and allied aircrafts were to operate from this base together with the Royal Norwegian Air Force. In this area, the NATO partners stored lot of heavy military material to be used in a conflict with Soviet.

The construction work continued after the collapse or the dissolution of the Soviet Union and the Warszawa pact in 1991. In fact, the Norwegian

defence forces continued to construct defence works until after 2000 even if official politics now said that Russia or the former Soviet no longer was a threat to Norway or the west. (Dalmo 2014, Solvang 2013). The Frøy line was never staffed, the new geopolitical situation led to a reorganizing and downsizing of the Norwegian armed forces. The coastal fortresses were dismantled, the same happened to the Frøy line.

However, the regional cultural heritage management and the local politicians managed to stop the demolition of some of the structures in the municipality of Storfjord, arguing that the structures were important material remains from the cold war era and therefore should be treated as cultural heritage and preserved. Similarly, the material remain from the Lyngen line is important documentation of a decisive phase in European history. Being situated close to each other in a mountain landscape, the structures is a unique material record of the 20th century Arctic military infantry warfare and strategic thinking. It is possible to argue that the material culture in this area is a material representation of Norway's political, ideological and military relations to the world. As we saw, the Lyngen line were constructed when the local population were evacuated. When they returned home they had to come to terms with the military structures. For the local community this was also a story about how the local population had to deal with and adapt to decisions taken other places, like London, Washington, Moskva, Berlin. On a general level this was also a history of how the authorities repeatedly made free with their landscape and environment. When the demolition of the Frøy line started, people felt that their history was threatened. The physical structures were part of a history, which on the one side was not known outside the local community, but on the other was important for understanding the Norwegian WW2 and Cold War history. Demolition of the cold war structures was to neglect the impact and how the consequences of the military installations, both German and Cold War, had affected the community for more than 70 years. The demolition was also seen as an extension of the under communication of Northern Norway's role in the national war and Cold War history.

Managing a military landscape in a changing world

There were, and are different stakeholders involved in the negotiations on how the area and the military structures from WW2 and the Cold War should be managed in the future. Landowners, the Norwegian Defence Estates Agency, Statskog; the State-owned Land and Forest Company, the Directorate for Cultural Heritage, the regional heritage management and the local community started to negotiate how the material remains should be interpreted. Basically, the contradictions were between those who perceived it as garbage which should be removed and those who perceived it as European heritage that should be protected. This controversy, interesting as it is, were however solved. There was an agreement on that the material remains was heritage that should be protected, and the discussion concentrated upon how and who should manage the area. The Directo-

rate for Cultural Heritage started together with the stakeholders to plan for protecting a part of this area.

In 2014 the problems between Ukraine and Russia escalated. Western countries introduced sanctions against Russia and the political tension between east and west gradually increased. In 2016/17 the Norwegian defence signalized a renewed interest in the area and in the remaining structures of the Frøy line. In 2012 the Defence wanted to demolish the line, then the heritage management wanted to protect some of them, and then the material culture once more was given the status as military material. The planned protection of the sites was postponed and the dug inns, guns posts, and commando centre is now again a part of the Norwegian defence. Once again Norway's security policy response affected the Lyngen area, the material culture and the local community. This somewhat confirms the importance of the area and that the military structures certainly are an important part of the national and European heritage. If it is possible to combine heritage perspectives and military activity is a task for the future.

Winter begins in October. German dug out/shelter, Lyngen defence line.

Litterature

Dalmo, Kurt Henrik 2014. «Forsvarstillinger i Lyngen-området. Bakgrunn og beslutning om bygging 1950-1981». Oslo Files on defence and security des/2014. Institutt for forsvarsstudier.

Fjermeros, Halvor 2013. Med lik i lasten: Operasjon asfalt: de sovjetiske massegravenes skjebne i Norge. Scandinavian Academic Press. Oslo.

Fossum, Finn 2014. «Den tyske Lyngenlinja». I (red): Figenschau,Tore Krigen i Storfjord. Mord, mytteri, krigsforbrytelser. Tekst & Cetera.

Gjeseth, Gullow 2012 Landforsvarets krigsplaner under den kalde krigen. Fagbokforlaget Vigmistad & Bjørke AS. Bergen.

Hesjedal, Anders; Andreassen, Dag-Magnus 2015 «Kulturminneundersøkelser i 2015, Krigsminnelandskap Troms. Registreringer langs Lyngenlinja i Storfjord kommune». Befaringsrapport Kulturetaten 2015. Troms fylkeskommune.

Jaklin, Asbjørn 2009 Isfront:den kalde krigen i nord. Gyldendal. Oslo

Rapp, Ole Magnus 2011 «Norge ville ofre Finnmark». Aftenposten 12.10.2011

Soleim, Marianne Neerland 2009 Sovjetiske krigsfanger i Norge 1941-1945. Antall, organisering og repatriering. Scandinavian Academic Press. Spartacus forlag. Oslo.

Soleim, Marianne Neerland 2016. «Operasjon asfalt»: kald krig om krigsgraver. Orkana akademisk. Stamsund.

Solvang, Ola 2013 «Den hemmelige underjordiske festningen». Nordlys, 27. april, 2013

The cult of the Defensive? Cold-War Norwegian defense planning

Summary

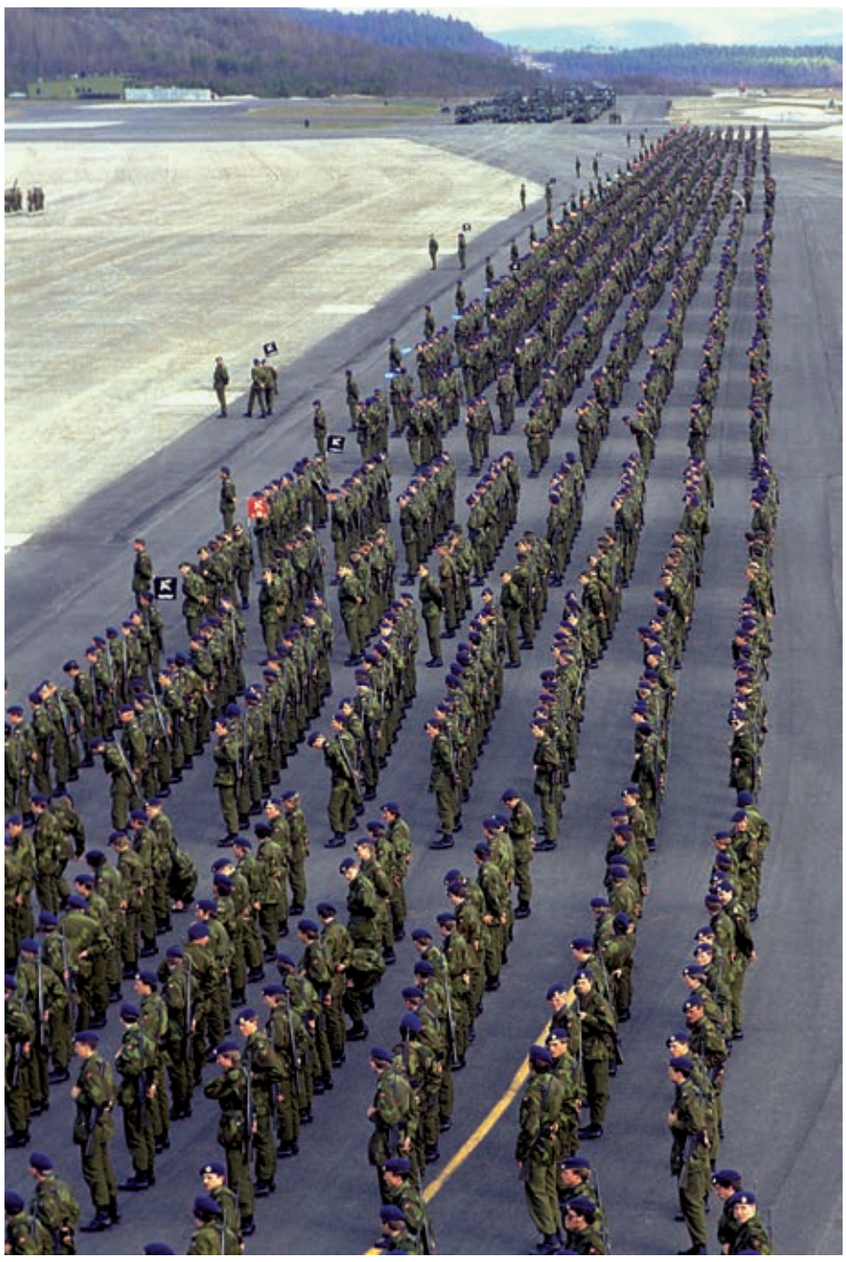
Magnus HÅKENSTAD
Historian, Norwegian Institute for Defence Studies, Norway

Magnus Håkenstad is Research Fellow at the Norwegian Institute for Defence Studies. He has a MA in history from the University of Oslo, and he has participated in several projects, such as The History of the Ministry of Defence; Long-term plan, risk preparedness and crises administration. Håkenstad's area of scholarship is Norwegian and European military history and he has written several articles and books in this field, among others: *Balansegang*, *Long-term defence planning*, *Mellom fred og krig*.

The Cult of the Defensive?

Magnus Håkenstad first explained that Norway's considerable militarization during the Cold War was due to strategic, tactical and operational concepts, but also an ideological imperative born of the Norwegian experience during the Second World War. Characterized by the slogan "*aldri mer 9. april*", a date synonymous with the Nazi invasion of Norway in 1940, the Norwegian Cold War militarization was based in part on the notion the nation should always be prepared to defend itself if an enemy should attack again.

Håkenstad then detailed the most important points in the country's defence strategy during the Cold War, including membership in NATO from 1949, a massive armament programme, general conscription and the total defence concept, etc. He concluded that in spite of the situation during the Cold War, Norwegian militarization was firmly established with the intention to defend, never to attack.



Line-up Bardufoss, 1987

Heritage Management of WWII 'Conflict landscapes' in PNG: Issues related to ephemeral landscapes and multiple stakeholders in a developing nation context.

Matthew KELLY
Senior Archaeologist at EXTENT Heritage Advisors, Australia

The WW2 campaign in the South-West Pacific from 1942 to 1945 has played a significant role in the development of current Australian national identity as well as being the catalyst for national independence for Papua New Guinea (PNG).

The artefacts and sites remaining from the fighting along the Kokoda Track especially are the focus for both nations' efforts to manage heritage associated with the military activities in WW2.

The battle along the Kokoda Track has historical and commemorative importance that is recognised in Australia through its listing as a place of national heritage significance. For Papua New Guineans while no such listing exists it is nonetheless acknowledged as a place which helped forge their move to nationhood by bringing their disparate peoples together for a common purpose.

For Australians the sites along the Kokoda Track now rival Gallipoli, where the ANZAC myth was born, as a place which forged a unique Australian character. Both Gallipoli and the Kokoda Track are visited by thousands of Australians each year as acts of personal, familial and national commemoration.

PNG contains numerous places, battlefields and objects, in varying stages of integrity associated with the Kokoda battles and other events of WW2. However none have, until recently, been the subject of systematic heritage survey or archaeological recording.

Since 2010 I have been lucky enough to direct projects undertaking the archaeological survey of three areas of PNG associated with significant WWII activity:

1. A battle field at Eora Creek on the Kokoda Track;
2. A rest and recreation area for troops outside Port Moresby known as Blamey's Garden (local name Namanatabu) ;
3. And an extensive military support landscape around Jacquinot Bay, on the south coast of New Britain.

All three sites are currently within properties on PNG's Tentative List for World Heritage nomination.

Our work at the first two sites has resulted in substantial management documents, shown here, which are anticipated to become model reports for a number of other significant sites along the 96km of the Kokoda Track. Our work on New Britain is designed to investigate and provide additional heritage information on the local cul-

tural values for an area where only the natural values are well documented.

The heritage management regime in PNG is largely focused on their extensive and rich indigenous archaeological and cultural heritage. Numerous archaeological and anthropological research projects have been undertaken over decades focussed on this to the exclusion of its colonial past. The responsibility for management of the country's heritage assets is the responsibility of the chronically underfunded National Museum of PNG.

In respect of WWII heritage the relevant legislation is the War Surplus Material Act of 1952 described by the preamble to legislation itself as an Act "to facilitate the collection of war surplus material and for other purposes".

It is a piece of legislation enacted in the years immediately after WWII by the then colonial power – Australia. It is a piece of legislation of its time and was never designed for heritage management.

Policing this legislation has proven difficult where no adequately funded Museum administrative arm previously existed to develop protocols and procedures to manage items of colonial or military heritage.

The PNG National Museum holds an extensive collection of objects in its store that relate to WWII – items big and small. Many of the larger pieces stand outside in the elements, with little effort at conservation, while the smaller pieces, that are under cover, are yet to even be catalogued.

Over the last 40 years numerous items of WWII heritage have been lost to PNG through circumvention of the legislation.

Even today as Australian trekkers walk the Kokoda Track one of the major issues identified by both the National Museum and trek operators themselves is the continuous removal of items, spent ammunition, equipment, and sometimes weapons, by the trekkers.

Bootless Bay artillery battery remains near Port Moresby, PNG

However things are gradually changing.

Our work at Eora Creek, 80km NE of the capital Port Moresby, was the result of a request from the PNG Dept. of Environment and Conservation in 2012, to develop a heritage management plan for the site, considering that the area has a high visitation rate from trekkers crossing the Kokoda Track.

The Eora Creek site extends primary rainforest in a wilderness area of the Kokoda Track. The 5 sq. Km site lies between 1400m and 2100m above sea level on the slopes of a steep river valley. Visibility can only be described as severely limited and many features lie beneath 700mm of leaf litter that has accumulated over the 70 years since the battle took place.

Japanese defensive revetments and bunkers here, constructed of local soft woods, have completely rotted away leaving some tell-tale features buried beneath the leaf litter.

The battle site also lies within the traditional hunting lands of the local villagers, the people of Alola, and so issues related to community access and use of the battlefield as a resource overlie other issues such as site access for out-

Remains of Fokker aircraft in grounds of the National Museum of PNG

siders, UXO still being present on the ground and Australian trekkers disturbing features and moving artefacts.

The site also lies within a still active local mythological landscape and some areas of the battlefield remain off-limits to the survey team. The oral histories we have recorded from the Alolans, have interestingly conflated some events of the war with local myth sites – evidence of the continually developing social landscape that contains the battlefield.

The work at Blamey's Garden was also initiated by the PNG Dept. of Environment and Conservation.

Part of the initiative here, recognising the importance of military tourism to the country, was to provide an interpreted WW2 site, closer to Port Moresby to which military tourists could travel in a day, without undergoing the trek across the Kokoda Track.

Blamey's Garden, in contrast to Eora Creek, lies on privately owned land in dry savannah hills south-east of Port Moresby.

Access is still problematic with a river crossing (with crocodiles perhaps) and a hike up a mountain the only current means of access.

Remains of former garden pathways at Namanatabu (Blamey's Garden)

As at Eora Creek the site's natural resources are used to support the owner's family through hunting game and gardening.

Blamey' Garden site formed part of the landscape of support for the Allied defence of PNG.

Surrounding the Garden were hospitals, machinery workshops, transport units, fuel stores and airfields with associated accommodation – all supporting the Allied war effort.

The Garden was originally designed to provide an area of rest, reflection and recuperation for soldiers who had fought along the Kokoda Track and the north coast of PNG against the Japanese.

Today the features and artefacts, which comprise its archaeological remains, are disturbed, scattered and overgrown. Its original purpose is now largely forgotten.

Once realised, it was not substantial material remains that defined the garden but its plantings, views and pathways.

Its use is often misunderstood and it remains a difficult site to place within the narrative of the military operations on 1942-3.

Again, as at Eora, the site is part of an active mythological landscape and access to some areas is only permissible while the site custodian is present.

The spirit that dwells in the central lake of the site is very much an active presence and the attendance of the custodian is necessary to ensure visitors do not suffer from potential malicious intent of the lake spirit.

The work at Jacquinot Bay is part of a joint project, with James Cook University in Cairns, through an Australian

Government grant to review the cultural heritage significance of the area.

Jacquinot Bay lies within the poorest developed province of all of PNG with access to the region only by plane or 24 hour boat trip and then access to some of the sites through hikes in rainforest and sinkhole dotted limestone karst landscapes.

The WWII survey is largely concentrated on the coast where the efforts of both the Japanese and Allied Forces were focussed between 1942 and 1945. As at Eora Creek, the survey is undertaken through tropical rainforest with 100% canopy with limited visibility and complete ground cover of rotted vegetation making the identification of features difficult.

Many of these sites here are currently under threat from logging, palm oil plantations and road construction.

This development of basic infrastructure is undertaken, not by the local and National Governments of PNG, but by the logging and palm oil companies who are filling the funding gap in this under developed region at the expense of the adequate policing of PNG Environmental and Heritage legislation.

So for example the archaeological sites of three of the early 20th colonial coconut plantation houses have already been destroyed by development construction in the last 12 months. These three sites represented the most substantial European settlement structural complexes in the bay area and the threat to other local sites continues.

Jacquinot Bay was also the site of a large military airfield from 1944 onwards – still used for flights to the area. Both NZ, Australian and Japanese air force plane wrecks formed part of the remnant WWII material culture here. Collectors have over the last 30 years, however, paid local landowners for the wrecks and have subsequently removed the aircraft from the country, contra the1952Act, to refurbish them in the US or Australia.

WW2 remains on the foreshore at Palmalmal Jacquinot Bay

Our work in PNG has produced two Conservation Management documents for Eora Creek and Blamey's Garden. They are based on the conservation approaches outlined in the Burra Charter; an Australian developed values based assessment process.

As a practical advance PNG has recently employed a Military heritage advisor at the National Museum whose brief includes the implementation of these Conservation Plans at their respective sites then the use of the approach as a model applied to more sites along the Kokoda Track and then other WWII sites in PNG.

We hope that these recent developments are the first stages in the creation of a viable heritage management regime in PNG. A regime that is happy to consider elements of its colonial past and 20th Century military events as worthy of conservation for future generations of Papua New Guineans.

20th century fortifications on the National Heritage List for Poland

Lidia KLUPSZ,
Landscape architect, National Heritage Board of Poland

Abstract

There are a lot of defense structures dating from the oldest ages to contemporary times on the territory of Poland. Some of them are protected by entry into the register of monuments, 20% of which are 20th century fortifications. They are very various in terms of technical solutions as well as their origin. We can find fortifications from the World War I, World War II and the Cold War era between them. These are Prussian, Austrian, Russian, Polish, German and Soviet defense structures. Those fortifications are valuable monuments, because they are examples of the most modern solutions of particular defense systems.

Key words: fortifications, defensive structures, national register of monuments, cold war

Detail of Soviet double embrasure artillery traditor in Przemysl, 1941. Photo: Lidia Klupsz

Introduction

Territory of Poland is characterized by a large variety of defensive structures from different historical periods starting from the early Middle Ages to modern times. The fortifications were built not only by the Polish State, but also by other armies fighting in central Europe like for example Swedish army of Charles X Gustav or French army of Napoleon, and after the partitions of Poland by the partitioning powers states: Russia, Austria and Prussia. This situation is associated with the turbulent history of Poland among others due to geopolitical location and with a loss of independence in the nineteenth century.

The characteristics of historic fortifications in Poland

Those defensive structures, which are valuable because of the historical, scientific and less because of artistic values, are protected on the national level through the entry into the register of immovable monuments which forms the National Heritage List for Poland.

Concrete Soviet double embrasure artillery traditor in Przemysl, part of Molotov Line from 1941. Photo: Lidia Klupsz

Types of historic fortifications entered into the Polish register of monuments

According to the classification adopted for the list of different types of immovable monuments entered into the register, fortifications were classified as defensive structures. This category includes objects of defensive construction such as for instance walls, gates, arsenals, forts, etc.

The Polish register of monuments which contains about 71 000 objects, includes about 1200 defensive structures (not counting about 400 castles) from various historical periods, which were constructed according to the principles of different schools and systems of defence. Those fortifications were built not only by the Polish State, but also by the allied forces which for example was Napoleon's army or by the armies of enemies like Swedish army of Charles X Gustav and the armies of the partitioning powers states: Russia, Austria and Prussia or military forces of Nazi Germany and Soviet Union during the period of World War II or Soviet Union's military forces during Cold War time.

Border changes after the World War II are important fact for the current resources of historic fortifications in Poland, especially of Prussian and of Nazi Germany defensive structures. They came to Poland with territorial compensation covering the eastern part of Germany as a result of the decisions that were made at the Yalta Conference. From other hand, at the same time Poland lost a large part of territory on the east (with Polish fortifications of different historical periods) which passed into the Soviet Union. Poland was also placed in the zone of influence of the Soviet Union by decisions taken at the Yalta and Potsdam Conferences. Therefore, during the Cold War time, since 1955. Poland was a member of the Warsaw Pact (the Warsaw Treaty Organization

of Friendship, Cooperation, and Mutual Assistance).

Legal protection of these most recent fortifications became possible only after the dissolution of the Warsaw Pact in 1991, but in practice only after leaving the territory of Poland by the Russian army in 1993. Currently, 20th century defensive structures in the number of about 240 which are protected, represents 20% of the total number of about 1200 fortifications listed on register of monuments.

Types of the 20th century fortifications entered into the Polish register of monuments

20th century fortifications, which are included to the National Heritage List for Poland can be divided into three groups:

1. fortifications erected at the beginning of the twentieth century during the preparations to the WWI by the three partitioning powers states.
2. defensive structures associated with the World War II built by the Polish State and by the occupying armies of Nazi Germany and Soviet Union;
3. military heritage coming from the Cold War period.

Fortifications erected at the beginning of the 20th century

Poland did not exist at the begging of the twentieth century, during the preparations to the World War I, that's why fortifications erected at that time, which exist today on the territory of present-day Poland were built by three partitioning powers states which were Prussia, Austria and Russia.

Accordance with the military doctrine and new fighting techniques in the early twentieth century, the partitioning powers states has modernized 19th century fortresses and forts. These works included among others the rebuilding and strengthening the old fashioned forts by concrete and steel to increase resistance to artillery fire. There is a big number of Prussian, Russian and Austrian defensive structures on the territory of Poland, which were modernized before the World War I. Most of them were part of the 19th century fortresses like Prussian defensive structures: Torun Fortress, Grudziadz Fortress, Poznan Fortress, Boyen Fortress, Kostrzyn Fortress, Swinoujscie Fortress, Wroclaw Fortress, Austrian defensive structures: Krakow Fortress, Przemysl Fortress and Russian defensive structures: Modlin Fortress, Warsaw Fortress, Deblin Fortress, Brest Fortress and Osowiec Fortress which are protected as 19th century fortifications.

These fortresses occupy very large areas, sometimes even goes out beyond the borders of cities. Nowadays they are very often not protected as a whole complexes but in the form of selected defensive structures and because of that only some new elements of the fortifications from the period of modernization of the pre-World War I are protected and inscribed in the register of monuments but only as the part of 19th century fortifications. In addition to strengthening the 19th century fortresses the partitioning powers states built also completely new defensive structures of concrete

and reinforced concrete, which also were equipped with armour.

Prussian fortifications are the largest part of defensive structures from the pre-World War I period which were built according to the modern system and which are inscribed on the Polish National Heritage List as the 20th century defensive structures. These include:

- Fortress Chelmno (Festung Kulm) protected as a complex of thirty defensive structures (8 forts, 10 shelters for infantry, 10 shelters for ammunition and 2 fixed artillery batteries) designed and build according to the new principles since 1903 to the World War I.
- Group of the fifteen historic fortifications constructed from 1906 to 1914 located in the foreground of Fortress Boyen consisting of a whole complex of defensive structures of concrete and earth, and communication networks. Preserved objects are primarily material example of shaping space and landscape for defensive purposes what decide on their unique historical and scientific value.
- Object called today Fort Outpost (Fort Placowka) dates back to 1911, is part of the Prussian system of coastal fortifications, rebuilt by Polish military forces before the World War II. It is located in Gdansk, on Westerplatte peninsula, on the area of the protected battlefield commemorating Battle of Westerplatte and Germany's invasion of Poland on 1 September 1939 which was the beginning of World War II.
- Five defensive structures of the complex of Fort No. 9 for infantry from 1912 are located in Wroclaw Fortress.

Russian fortifications are the smaller part of defensive structures from the pre-World War I period which were built according to the modern system and which are inscribed on the Polish National Heritage List as as the 20th century defensive structures. These include:

- Complex of concrete and earthen defensive structures of Brest Fortress lying on the left side of the River Bug in Terespol's bridge-head built in 1912 - 1915: Fort "Kobylany", Fort "Koroszczyn", Fort "Zuki" , the group of fort's "Zuki", artillery magazine, artillery battery "Lebiedziew", artillery battery "Struga", artillery battery "Kolonia Dobratycze", military warehouse "Kobylany II", military warehouse "Borek", defensive structure "Kobylany I" lookout tower.
- Few concrete and earthen defensive structures of Modlin Fortress built in 1912 – 1914: Fort XVII B "Janowek", Fort X „Henrysin",Fort XI „Strubiny", point of resistance No. 8 "Czarnowo".
- Two concrete and earthen defensive structures of Rozan Fortess built in 1905 – 1912: Fort I and Fort II.

Austrian fortifications are the smallest group of the defensive structures from the pre-World War I period which were built according to the modern system and which are inscribed on the Polish National Heritage List as the 20th century defensive structures. These are:

- Few concrete and earthen defensive structures of Przemysl Fortress built in 1900 – 1905: Fort XIII „Zablocie", Fort „Cykow" for infantry, double shelter of Fort XVI "Zniesienie".

• Few concrete and earthen defensive structures of Krakow Fortress built in 1900 – 1904: artillery battery of the Group of Fort "Wegrzce", shelter for ammunition of Fort „Swoszowice".

Defensive structures associated with the World War II

This group includes:

Polish fortifications - built by the Polish State (Republic of Poland) in the 1930s. These are:

• Three reinforced concrete combat bunkers of Mlawa Position (complex of 49 bunkers) built in 1939.

• Two reinforced concrete combat bunkers in Pultusk built in 1939.

• Two defensive structures of Reinforced Military Transit Depot on Westeplatte Peninsula, Gdansk, built in 1925 – 1939.

• Complex of fortifications of the Hel Fortified Area which consists of 6 concrete-strengthened positions for artillery batteries, 10 concrete combat bunkers, 4 ammunition storage bunkers and 4 firing positions, built in 1931 – 1935 in Hel on Hel Peninsula.

• Complex of 4 reinforced concrete combat bunkers of the Jastarnia Resistance Centre built in 1939 in Jastarnia on Hel Peninsula.

• Concrete combat bunker in Cieszyn-Boguszewice, part of Defensive Position of Cieszyn, built in 1939.

• Command bunker (command post) of the Fortified Area of Silesia in Chorzów, built in 1938.

German fortifications – built in Germany by the Nazi Germany in the 1930s and by the German occupying army during the World War II on the territory of Poland, which are currently within the borders of Poland.

• Central section of Fortified Front Oder-Warthe-Bogen (the Festungsfront Oder-Warthe-Bogen) which consists of system of anti-tank obstacles and barriers, underground system of tunnels linking the ground defensive structures, 44 combat bunkers, observation bunker, 4 pretendative cupolas, rotary bridge, 2 armored towers, ventilation shafts, drainage systems, 2 machine gun stands and other defensive structures built in 1934 – 1944.

• Complex of railway headquarter, part of Installation South (Anlage Süd) built for Adolf Hitler which consists of 2 reinforced railway tunnels, 5 combat bunkers and observation posts with other buildings used for operations, administration, and maintenance, built in Stepina-Cieszyna in 1940 – 1941.

• Reinforced railway tunnels, second part of Installation South (Anlage Süd), the railway headquarter built for Adolf Hitler in Strzyzow in 1940 – 1941.

• Complex of "Schleswig-Holstein Battery" for heavy coastal artillery which consists of three emplacements for 406 mm coastal guns (the same type as gun in Trondenes in Norway), rangefinder tower and two munitions magazines built in Hel on Hel Peninsula in 1939 – 1941.

• Complex of Coastal Artillery Batteries "Vineta" consists of rebuilt 4 barracks and combat bunkers, command bunker, engine room bunker and guardhouse built in Swinoujscie in 1938.

• Above-ground, anti-aircraft concrete gun blockhouse towers built in Wroclaw in 1941-1943.
• Underground anti-aircraft concrete shelter built in Wroclaw in 1942-1943.
• Anti-aircraft concrete bunker shelter in Glogow in 1930.

Soviet fortifications - built by the Soviet army on the territory of Poland during the World War II, which are currently within the borders of Poland. These are:

• Group of 3 reinforced concrete combat bunkers (2 of one level and 1 of two levels) of Przemysl fortified region (part of so-called Molotov Line) in Medyka, built in 1940 – 1941.
• Complex of 8 concrete bunkers of Przemysl Fortified Region built-in earlier fortifications of Przemysl Fortress (part of so-called Molotov Line) in Przemysl, built in 1940 – 1941.

Military heritage coming from the Cold War period

This is the smallest group in terms of number of the protected 20th century fortifications. It includes defensive constructions built by the People's Polish Army, not by the Soviet Army, although there are many defensive structures in the territory of Poland constructed by the Soviet Army, which was stationed in Poland from the end of World War II until 1993.

• The most important is complex of 19 Fixed Coastal Battery built in Kolobrzeg on the coast of the Baltic See in 1951. This battery was used until the late 70s. It contains of eight different defensive structures which survived in original form and material. Some of them are located in the area which is still controlled by the army.
• The second protected defensive structures constructed during the Cold War period on the coast of Baltic Sea are shelter and the tower for rangefinder built in 50s in the complex of the 25th Coastal Battery of Fixed Artillery (BAS) in Westerplatte near Gdansk on the also nowadays protected territory of the first battle of the World War II.
• Former German defensive structures of the complex of Coastal Battery of Artillery "Vineta" in Swinoujscie rebuilt in 60s into backup reserve command post of the People's Army of Poland in case of World War III with underground tunnel which links the ground defensive structures built in 1965, were entered into the register in 2016.

Remarks and Conclusions

The largest and highly diverse group of the 20th century fortifications included on the National Heritage List for Poland are German fortifications from World War II like for example well preserved Fortified Front Oder-Warthe-Bogen, the complex of the defensive structures of fortified military defence line of Nazi Germany between the Oder and Warta rivers. It was the most technologically advanced fortification system of Nazi Germany built in 1934 – 1944. The central section of the Fortified Front Oder-Warthe-Bogen listed in rhe register of monuments consists of several bunkes which are interconnected with an underground system of tunnels 32 kilometers long and and up to 40 me-

tres deep. The railway stations, workshops, engine rooms and barracks are also situeted in this underground system, wchich is a great turist atraction. Valuable from the point of view of technical solutions and history is complex of a pair of railway headquarters built for Adolf Hitler in Nazi-occupied part of southern Poland where was organized a meeting of Adolf Hitler with Benito Mussolini in connection with the aggression on USRR on 27-28 August 1941 and complex of Schleswig-Holstein Battery on Hel Peninsula which is similar to the Battery Theo with four guns mounted at Trondenes Fort in Norway. Group of Polish defensive structures connected with World War II is valuable because of the history and Polish technical solutions. Military heritage from Cold War period is inadequately protected in terms of legal, despite the fact that it is a great tourist attraction. Some examples of military and defensive structures built by the Soviet Army stationed in Poland until 1993 should be now entered into the register of monuments because apart from scientific values, they present also the historic values. Above all, they are a testimony to the history of this part of Europe.

Bibliography

Kaufmann, J.E., Jurga, R. 2002. Fortress Europe: European Fortifications of World War II, US, Cambridge, Da Capo Press

Klupsz, L. 2002. The fortress landscapes - the proposal of the new heritage category. Polish examples. 13th General Assembly, Scientific Symposium, Spain, International Council of Monuments and Sites

Klupsz, L. 2012. Between East and West – the phenomenon of fortified landscapes in Poland; Between East and West. Between East and West, Firenze, Edifir

Klupsz, L. 2015. Problems of the protection, conservation and re-use of the military monuments in Poland. Fortified heritage: management and sustainable development, Pamplona, Pamplona City Council

The German Coastal Defence Strategy in Norway

*Kjetil KORSNES *, Bengt STANGVIK, Håvard HOVDET, Olve DYBVIG*
Korsnes is Freelance Historian, Førsteamanuensis Fakultet for Biovitenskap og Akvakultur, Bodø, Norway

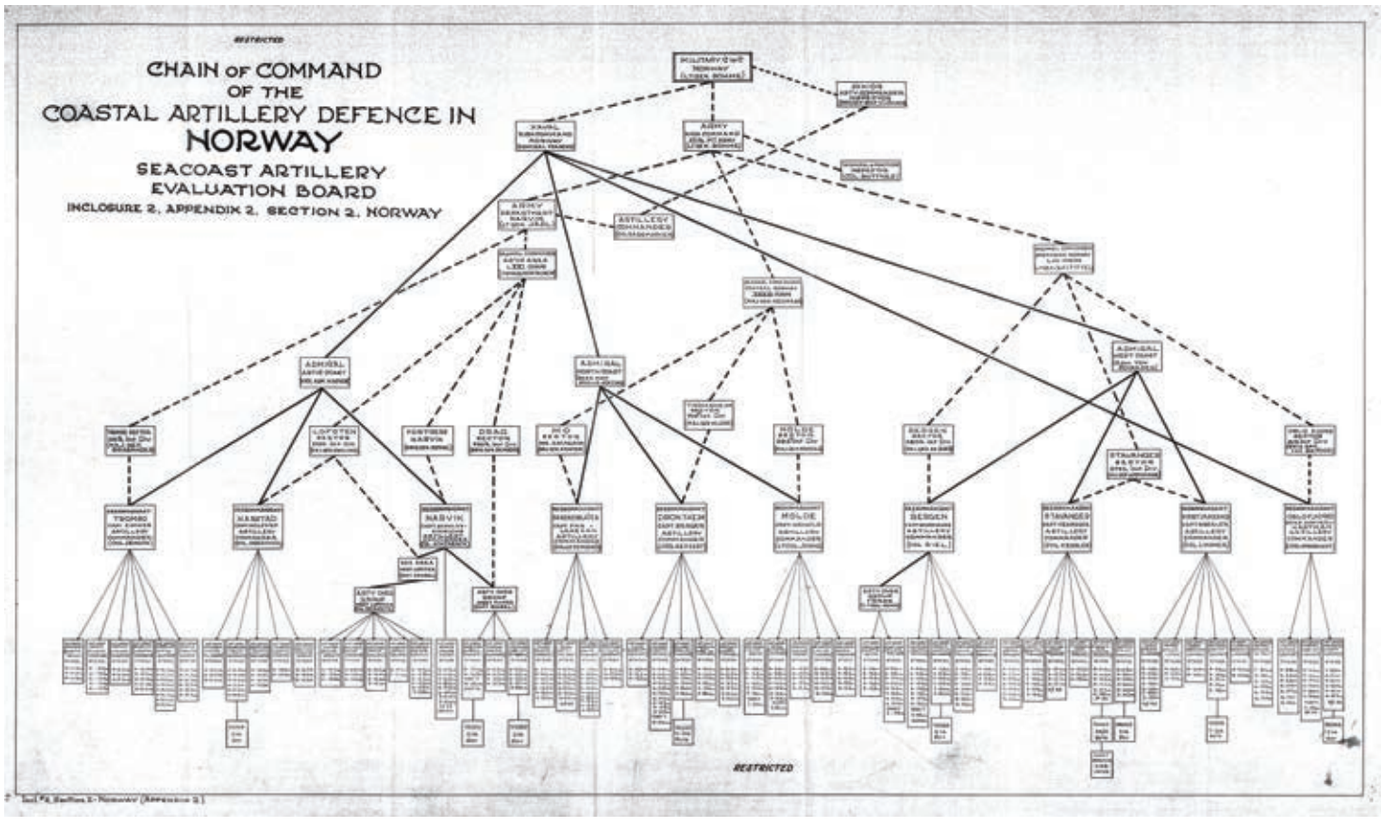
Abstract
German coastal defence strategy in Norway during WWII was influenced by the topography, invasion of Soviet Union with drain of soldiers from Norway and British commando raids against Lofoten. In 1941, the development of the war called for strengthening of the entire Atlantic wall to replace the soldiers moved east. Priority was given to the coastlines of Norway, Denmark and Belgium. In Norway, a lack of mobile army forces lead to the build-up of coastal artillery battalions as replacement. Construction of fortified coastal sites continued during the war and followed the principal plan laid out in 1941.

Key words: Coastal defence, WWII, Kriegsmarine, Wehrmacht, Norway

Shortly after the invasion of Norway in 1940 (operation Weserübung), the German High Command (Oberkommando der Wehrmacht – OKW) realized the problem of protecting the supply lines along the coast. The coastline was vulnerable to attacks from ship and aircraft, and the German navy struggled to supply the land forces, particularly in Narvik. Already in May 1940 the issue of protecting the coastal traffic was raised by the OKW, that recommended strengthening of coastal batteries and increased effort by the air force (Luftwaffe)[1]. It was apparent that the defence of the Norwegian coastline would cause challenges. The topography was demanding with numerous fjords and islands where the enemy could hide easily, and the infrastructure was poorly developed, particularly in the northern parts of Norway, making the transportation of supplies dependent on sea transport. In mid-1940 the German Wehrmacht had to defend a coastline stretching from French Biscay to the North Cape, a coastline which would eventually constitute the Atlantic Wall.

To understand the structure of fortifications in Norway, it is necessary to look at how the German coastal defence was organised. The primary tasks were to protect the important shipping routes and prevent enemy landing of troops. In occupied areas, this responsibility was split between the navy (Kriegsmarine), protecting the coastal traffic and seaways, and

1 WFA/Abt. L Nr. 33034/40 g.K. Chefs. Richtlinien für Feindtäuschung. Dated 25th May 1940. It was pointed out that the 8 divisions in Norway needed replacement of way to transport supplies until it was obtained control of the entire operation area. National Archive and Record Administration (NARA) microfilm T1022 roll 3467, frame 200.



Chain of command of the German coasal artillery defence in Norway. Solid lines are navy and dotted lines are army chain of command. Extracted from report by Seacoast Artillery Evaluation Board dated 20th December 1945. National Archive and Record Administration, USA.

the army (Heer), charged with repelling invasion attempts and raids. This caused limited unity in the chain of command, as the responsibility for engaging the enemy rested with two independent bodies. When interrogated after the war and asked why coastal defence was placed under the navy rather the army, Albert Speer replied that coastal defence targets were fundamentally the same as naval targets with moving ships and he considered it a sound organisation[2]. The concept of dual control of command functions persisted during the war, complicating the organisation, creating a basis for rivalry and fight for resources between the navy and army. This complexity is visible in figure 1.

After the ceasefire in Norway in June 1940, strengthening of former Norwegian fortified sites and construction of new ones were prioritized. The German navy focused on protecting the most important harbours and anchoring areas with strong points, while, due to lack of resources, the army was asked to build, equip and man batteries in other areas as part of the anti-invasion defence. The coastline of Norway was divided into three sectors with a navy Admiral responsible for the defence in each sector. In 1940, the focus was on protecting the important shipping route to Narvik[3].

2 German Seacoast Defenses – Report by Seacoast Artillery Evaluation Board, dated 20th December 1945. Record group 498, item 5821479, NARA, USA. In the fall of 1945, a survey of the German seacoast artillery defences in Europe was performed and lead by US Army with the purpose of providing data to the War Department on seacoast artillery organisation, tactics, technical design and construction. The Board visited numerous sites and interviewed German personnel. This report is a very useful source to the organization and function of the German fortifications along the European coastline. The interrogation of Albert Speer is cited in the report.

3 Ibid. The German army divisions participating in the occupation where still in Norway

In February 1941, OKW expected increased activity of British forces in the Mediterranean and coastal areas of western Europe, including Norway. Increasing the coastal defences was seen as a necessary protective measure, especially to guard the seaways to Narvik and along the Artic coastline (Polarküste)[4]. Even more, as the attack on the Soviet Union (operation Barbarossa) was under way with the need to secure the vital transportation route to supply the forces attacking from Norway and Finland. This created an urgent need to strengthen the coastal defence. This became apparent in April, when OKW issued an order to the Wehrmacht commander in Norway to provide personnel for the planned operations Silberfuchs and Renntier which were parts of Barbarossa[5]. The build-up and deployment of German troops necessitated transportation and secure supply lines, and the only way of providing this for the northern frontlines was by sea. The German army forces used in Silberfuchs and Renntier were mainly taken from Norway, and this resulted in substantial weakening of the defence of the country[6]. In March 1941, it became obvious how vulnerable the Norwegian coastline was for attacks. The British launched the first Combined Operation, operation Claymore, towards the Lofoten islands in the beginning of that month. The small town of Svolvær was raided and shipping and fish oil factories destroyed[7]. Svolvær was carefully chosen as target based on weak protection and a remote location difficult to reach by German reinforcements. Most importantly, there was no German airfield closeby. The German Navy High Command in Norway responded to this attack by pointing out the need for close air support, and already in December 1940 the need for better coastal protection had been discussed with Reich Commissar Terboven[8]. This tip and run raid added further weight to arguments for more resources to protect the coastline, and proved that the expected increase in British war effort was real. As a response to the raid, OKW issued a Kampfanweisung (warfare instruction) for Norway[9]. This was based on expectation that British forces would exploit the fact that German army divisions were occupied in other places in Europe. To prevent further attacks or landing of Allied troops, the OKW guidelines for the defence of Norway involved strengthening of the coastal artillery by transfer of 160

at the end of 1940, and part of the main defence of Norway. This was experienced forces capable of moving mechanized warfare. The Luftwaffe was also strong, with responsibility for air reconnaissance off the coastline.

4 Oberkommando der Wehrmacht, Nr. 44141/41 gK Chefs. WFSt/Abt.L (I Op.). Dated 15th Februar 1941. NARA microfilm T1022 roll 3467, frame 296.

5 Oberkommando der Wehrmacht, Nr. 44508/41 gK Chefs, WFSt./Abt. L (I Op.). Unthernehmen "Silberfuchs" und "Renntier". Dated 10th April 1941. NARA microfilm T1022 roll 3467, frame 317.

6 Ibid. Wehrmacht Befelshaber Norwegen was ordered to supply troops and material for *Silberfuchs* and *Renntier*, which would necessarily result in drain of experienced army personnel from the defence of central Norway

7 The planning and how the operations was carried out is well described in DEFE 2/140-142. The National Archives, Kew, London, UK. The raid tok place on the 4th of March, with success and according to the objectives. No German opposition was met.

8 Admiral Norwegen. Kriegstagbuch for March 1941. Bundesarchiv catalouge RM45III/103, Freiburg, Germany.

9 OKW/2072. Oberkommando der Wehrmacht, Nr. 00469/41 gK Chefs, WFSt./Abt. L (I Op.). Kampfanweisung für des Verteidigung Norwegens. Dated 26th March 1941. Microfilm NHM 198/FAa reel 1288, Norwegian Resistance Museum, Oslo Norway.

army artillery batteries[10]. Thus, already in March 1941 it was obvious that Norway needed strengthening of the coastal artillery. In early December 1941, OKW had the entire Atlantic Wall under revision. The movement of German forces from the west to the east as Barbarossa progressed represented a challenge for the defence of the coastline in Europe against an invasion. A "new" west wall (neuen Westwall) was suggested by OKW, basically replacing regular mobile army divisions with coastal artillery battalions[11]. The increased effort of building fortifications also meant that prioritization was needed. This meant that areas with challenging topography and poor infrastructure, restricting mobility of army troops to reach the combat area rapidly, were given higher priority. The list of prioritized seacoast areas included Norway, Denmark and Belgium, followed by the Netherlands, Germany and finally the Baltic Coast[12]. The Norwegian coastline was in the need for imminent improvement. This was underlined by the next large scale British raids on Norway, carried out in late December 1941, simultaneously in Vågsøy island (operation Archery) to the south and Lofoten islands (operation Anklet) to the north coordinated to interrupt shipping and destroy vital supplies. Operation Anklet was ambitious with a goal to stay for several months to block traffic to and from Narvik and northern Norway, but failed and a hastily retreat was necessary after just three days. Operation Archery, on the other hand, was successful and achieved most of its objectives, destroying fish oil factories and German shipping[13]. The raids in Norway were on the agenda when the German Navy High Command (OKM) had one of the regular conferences on naval affairs with the Führer in the evening of 29th December[14]. Hitler was concerned that British forces once again had attacked the Narvik area, and pointed out that the navy should increase the protection and move surface ships to Norway to strengthen the coastal defence. He made it clear that defence of Norway was important. The year of 1941 became very much decisive for the coastal defence strategy in Norway.

In January 1942, OKW responded to the raids with a supplementary Kampfanweisung for Norway[15]. In March, Führer directive number 40 was issued with detailed guidelines to coastal de-

10 Ibid. The instruction (Kampfanweisung) from OKW is extensive and includes methods to prevent invasion, where both air force, navy and army should be aware of the increased risk of attack.

11 OKW/1739. Oberkommando der Wehrmacht, Nr. 003022/41 gK Chefs, WFSt./Abt. L (I Op.). Küstenverteidigung. Dated 14th December 1941. Microfilm NHM 198/FAa reel 1285, Norwegian Resistance Museum, Oslo, Norway.

12 Ibid. OKW listed the various cost lines with decreasing priority, and the vulnerable and exposed coast line in Norway was given high priority. Shipping with supplies to Norway and metals, fish and minerals back to Germany were important to secure and protect.

13 The Archery and Anklet operations took place 27th and 26th-29th December and are well described in catalogues DEFE 2/81-83 and HS 2/225 (Archery) and DEFE 2/73-74 and HS 2/198-199 (Anklet). Archery became the baptise of fire for the Combined Operation organisation and was the last against Norway. From 1942 only small raids were carried out, as German defence became stronger and suitable objectives could no longer justify the effort. The National Archives, Kew, UK.

14 Der Oberbefehlshaber der Kriegsmarine und Chef der Seekrigsleitung. Vortrag des Ob.d.M. beim Führer am 29.12.41 abends in Wolfsschanze. NARA microfilm T1022/1729.

15 H22/106. Oberkommando der Wehrmacht, Nr. 00226/42 gK Chefs, WFSt./Abt. L (I Op.). Kampfanweisung für die Verteidigung Norwegens. Dated 18th January 1942. Evaulation of the strategy as Norway had become one key area where the enemy attacked. Microfilm NHM 198/FAa reel 2685, Norwegian Resistance Museum, Oslo Norway.

fence of Europe[16]. This directive pointed out the existence of an increased risk of enemy invasion in near future. In Norway, directive 40 caused considerable friction between the navy and army in how to organise the coastal defence[17]. The inherent problem of dual command was never solved during the war. In general, the main task for the navy batteries was defence of the sea lanes to protect coastal traffic and repel enemy ships while the army batteries should repel any enemy landings the navy batteries failed to stop[18]. The decision to substantially increase the number of coastal batteries in Norway was made in early 1941. Execution of the plans were carried out successively and coordinated by the army commander in Norway. As the war progressed, the Norwegian coastline became a battle zone. The British Fleet Air Arm and Coastal Command attacked German coastal traffic, warships, fishing industry and military sites to the end of the war. The German navy was the primary target, but these attacks were also part of an overall strategic deception to prepare for the allied landing in France in June 1944[19]. The number of coastal batteries and sites varied during the war, and in February 1945 the official records listed 258 unique locations[20]. The number of artillery pieces consequently also varied, and one estimate is 1130 guns of various calibre when the war ended. The whole register of calibres was present, ranging from long range naval guns of 40,6 cm, to short range guns of 6,5 cm for local defence. The most abundant calibres were 15,5 and 10,5 cm, which made more than 50% of the artillery pieces[21]. Most of the coastal batteries did not fire any of its guns in anger against naval targets, with a few exceptions in the Egersund and Måløy/Vågsøy areas (south) and at the frontline close to Kirkenes/Petsamo (north)[22]. Anti-aircraft guns (Flak) were the only types which were frequently used throughout the war.

In many local communities in Norway, the coastal artillery sites have been and still are highly visible remains of the German occupation from 1940 to 1945. Preservation of such sites should include knowledge of their origin, use and function and be placed in the broader historical context. The coastline of Norway as a battle zone is one of the lesser known histories of World War II, and the coastal artillery batteries played a significant role.

16 Der Führer und Oberste Befehlshaber der Wehrmacht. OKW/WFSt./Op. Nr.: 001031/41 g.Kdos. Weisung Nr. 40. Dated 23rd March 42. Microfilm NHM 198/FAa reel 2686, Norwegian Resistance Museum, Oslo, Norway.

17 OKW/168. Various correspondence between army commander and navy high command in Norway. Microfilm NHM 198/FAa reel 1285, Norwegian Resistance Museum, Oslo, Norway.

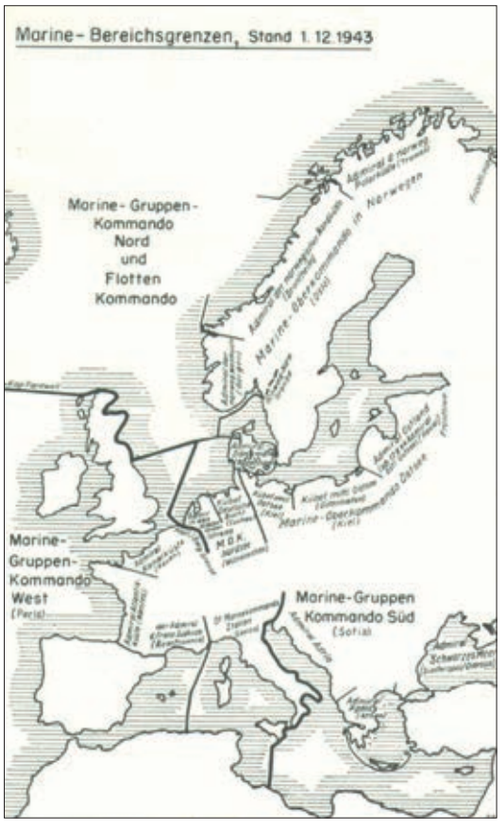
18 OKW/1535. Anlageheft zu «Organisation Küstenartillerie». Dated October 1942. Microfilm NHM 198/FAa reel 1285, Norwegian Resistance Museum, Oslo, Norway.

19 The British intensions and war effort against occupied Norway are described in detail by Christopher Mann (2012) in: British policy and strategy towards Norway, 1941-45. Palgrave Macmillian. ISBN 978-0-230-21022-6.

20 PG 75881, AOK 20. Gliederung der Küsten-Artillerie in Norwegen, Ia/H.K.Arko. Dated 20th February 1945. NARA microfilm T312-1651, frame 894. This is not a complete listing of all sites, as several torpedo batteries are lacking.

21 German Seacoast Defenses – Report by Seacoast Artillery Evaluation Board. Dated 20th December 1945. Record group 498, item 5821479, NARA. The report is not accurate in number of guns and sites, but give an overview of the German coastal defence organisation and equipment used.

22 In the northernmost part of Norway, the coastal batteries were involved in heavy fire against enemy forces and in particular during the Soviet invasion of Finnmark in late October 1944.



Division of the European coastline in different sectors with responsible navy commanders. With permission from Deutsches Wehrkundearchiv, Germany.

HDM, the Heritage Development Model by bunker

Gerco MEIJER,
Architect, Bunker v.o.f. office for heritage development, restauration and architecture, Utrecht, The Netherlands

Introduction

Decay is a continuous process, everything tends to be dust again. Once erected the fight against the elements starts. Maintaining a building or construction through the process of conservation is therefore an ongoing process too. As long as we use the buildings we see the maintenance as a normal obligation and take it for granted. Once the use of the object gets economically difficult or even ends, the maintenance will become insufficient to outrun the decay. The mentioned dusty dystopia will become more and more a reality.

To guarantee maintenance, usage of the object is a first requirement. If an object cannot be used it should be able to adapt to facilitate. This adaptation is an recurring process. It could be seen as an impulse that would prolong its existence.

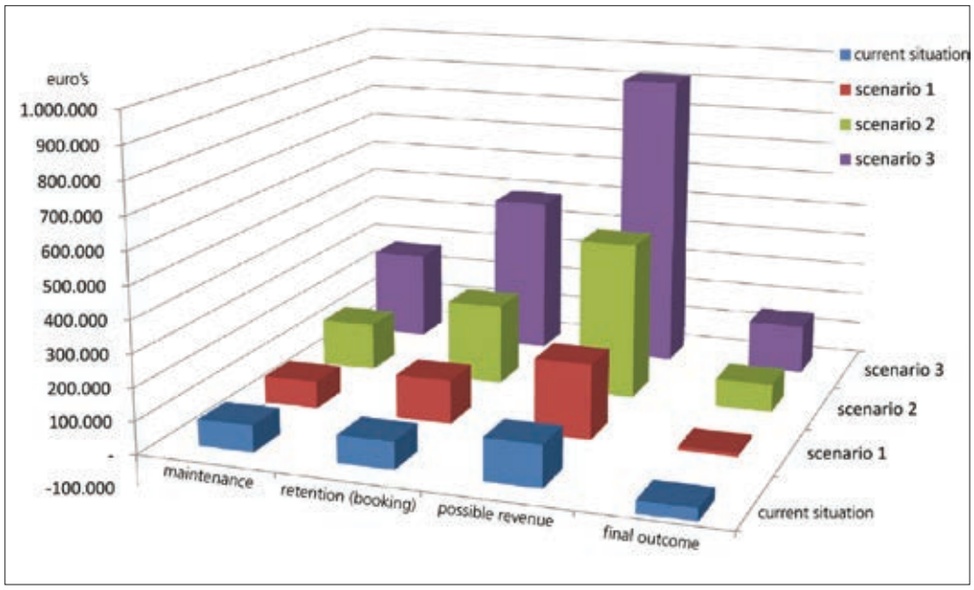
Thinking about the development in this way will results in a different material manifestation of the impulse, different to a more static traditional approach.

Conservation versus Development

Traditionally, buildings would be declared heritage and would be restored. Damaged parts are repaired and actions are taken to prevent further decay. The main argument for doing so is that they are monuments and therefor important to society for their outstanding beauty and/or reflection of an historic event.

Until recent heritage objects were analyzed, carefully listed and put under sometimes very protective and rather limiting constraints. The world of conservation became a very closed world. Small group of people had the ability and means to gain the required expertise and the connections to the network. The greater mass was spending their time in the tabula rasa developments of residential and commercial areas. Heritage was on a distance.

But why do we need to preserve our heritage? Heritage is a communicator, a message from the past. Ideas and policies once got materialized in buildings and artefacts. These products ones represent the society who created them. They are open, out in public, for everyone to reed. But it is the immaterial, the cultural narrative, that it is the most inspirational for us. The historic substance is nothing more than the carrier of this message. These messages contain esthetical and ethical values that could make society in-



Comparing scenarios, © bunkerQ

tellectually richer and therefore give meaning to live, enhance wellbeing and boost creativity.

Understanding of this cultural narrative and its value can give us a freedom to alter object function and its physical aperients and still be beneficial to the expression of its narrative.

The best way of maintaining the object is using it. Usage is by a definition related to the current society. This relation is formed by the communication of entrepreneurial and personal interest of the user. When these interests meet the cultural narrative of the specific object, they can both benefit. The better the fit, the more certainty towards a long-lasting relationship between user and monument.

In order to facilitate usage, the stakeholders should spark the adaptation impulse.

The practice of conservation should change to a practice of designing the material consequences of these moments of adaptation, the impulses.

Heritage conservation should be replaced by heritage development. Not the past but the future should be the relevant theme. Combining the preservation of the historic substance and expressing its cultural narrative with modern day adaptive solutions is a very challenging task.

Action Arena

How to design the best solution for adaptation with respect to the historic substance and the cultural narrative?

As stated, the main focus of conservation professionals should change from conservation to the development. The object should never be seen as a stand-alone but as a part of the area development. De value of the single monument is related to the combined value and appreciation of the area.

In an area development many stakeholders will and must be involved. These stakeholders are actors in the so called 'action arena' (Ostrom 2007) and together they define their collective action. Heritage experts should be aware of this prosses. The role of the heritage experts is to help formulate the collective action. They should inform and outline the policymaking

bandwidth to partner stakeholders.

The policymaking is based on arguments. In case of heritage, arguments are founded on values of authenticity, esthetics, ethics, social, economic and ecological impact. To get a grip on the discussion various technics are available. For example, the Q-sort method (McKeown & Thomas 1988) uses frames. By formulating frames, appreciation of the various aspects of heritage can be valued and various scenarios of development could be defined.

But how can we know which scenario is the best for given specific development? The Heritage Developments Model is a format which produces economic indicators of the projected exploitation based on analyses of modeled development scenarios. It can be described as a consensus-based assessment method. In a quick and highly structured way various parameter of each scenario are combined with the modelled real estate.

Heritage Development Model (HDM)

The HDM is a scientific model which deals with strategic and economical dilemmas in middle sized and large heritage conservation projects. It is a structured relational database for areas, sites and objects, differentiated by typology, size, quality and ambition. Based on a detailed administration of the existing situation and of the new development scenarios, the database returns an:

- relevance index of the objects within the modelled development scenario
- current demand for investment
- expected yearly maintenance costs
- impulse period
- yield potential
- annual reservation impulse investment

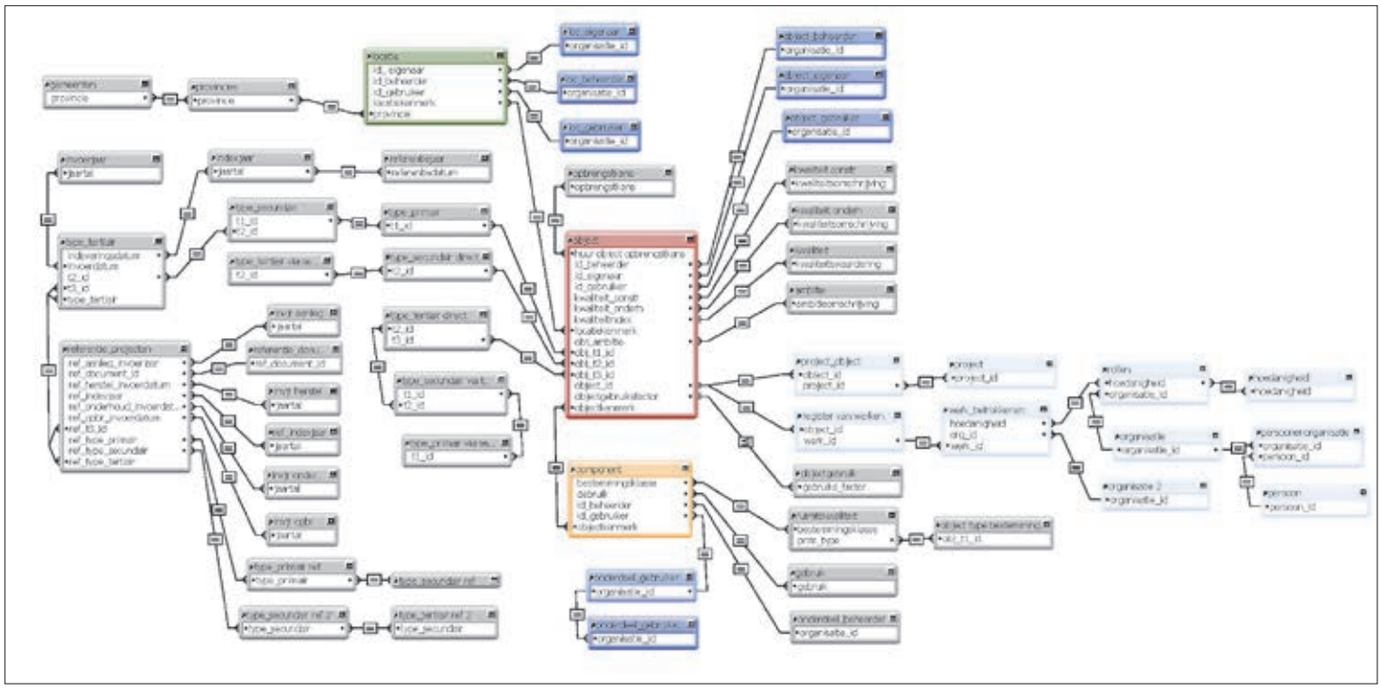
By applying the model consequently, you can direct proper investments and have the control over yield. The HDM results can be used in quality enhancement, clever sustainability and broad preservation of cultural heritage. The calculated results can justify future actions and verify the results of these actions.

The method can be used as an argument generator in policymaking proses. It is the first input for business case scenario's. It can be helpful in planning of future functions in the existing real estate. It can be an economic reference an administrative base for the future site management.

The HDM is a relational database. Every registered aspect of the project is captured in a specific table. These tables are connected through shared parameters. The outcome will be based on equal preconditions. Every user can make his/her own selection of information to be processed and the way that these results are presented.

The process starts with modeling the physical and geographical situation in its existing form. Objects and sites are modeled by location, size, quality and typology.

The most relevant table is the objects one. Objects are named, numbered and geo-tagged. They are grouped on a locational level and detailed in the component level. Each object is categorized by typology specified as: buildings, civil structures, infrastructure and landscape. For each typology



Relational structure data-base HDM, © bunkerQ

two more layers are added to define material and morphology.

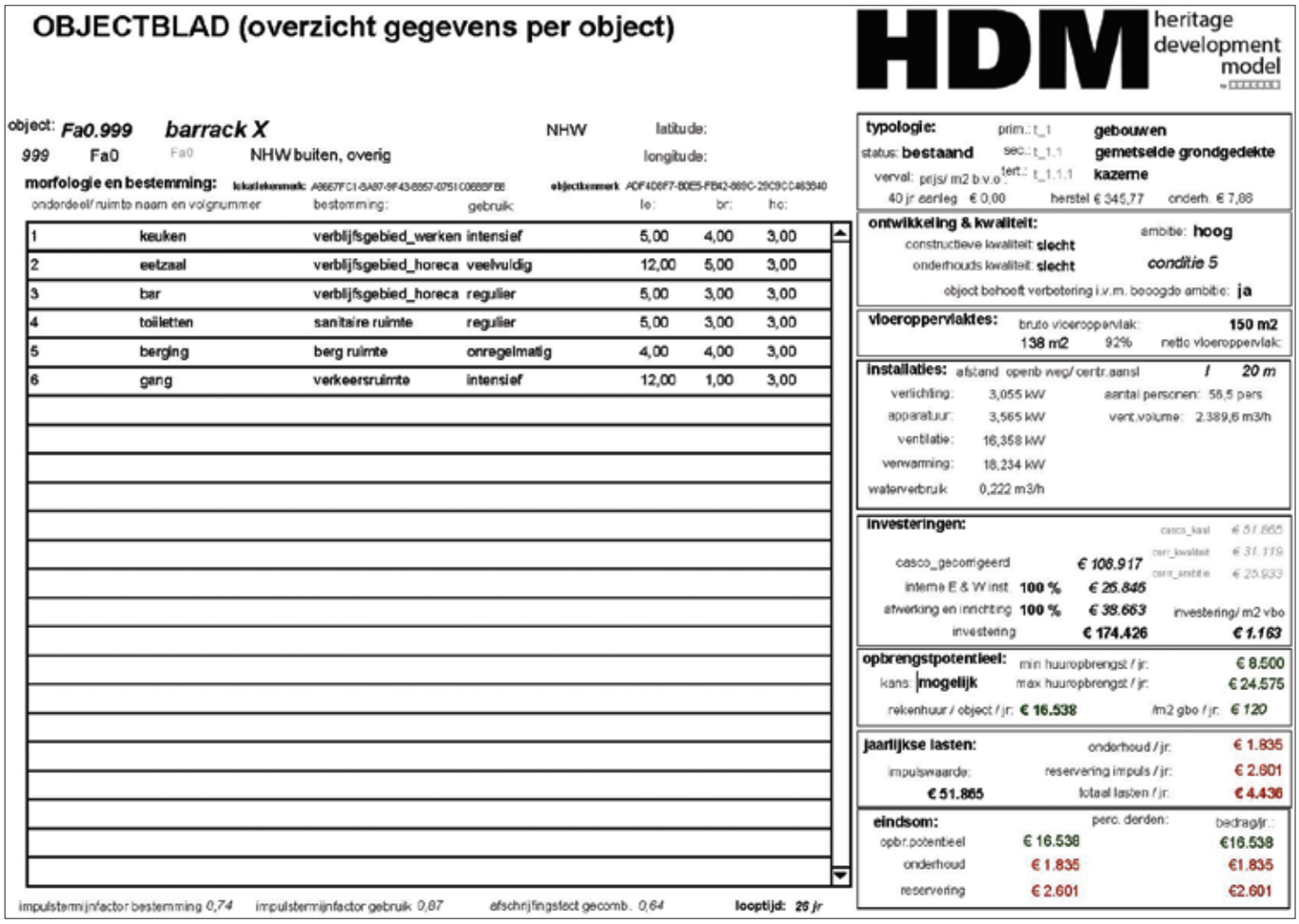
Example: barrack X belongs to the location of Fort Waakzaam and consists of four separate rooms/ components. Typology: building; morphology: small barrack; material: brick.

The parameters for the size of the object and current quality are fixed. Future ambition parameter is relative to the modelled scenario and variable. Combining these 3 parameters will result in a relevancy of the specific object within the total group. The critical objects within the group will surface. Further investigation should focus on these objects.

Some assumptions towards the annual economics for maintenance and investment demand are generated by comparing the objects to typological similar reference objects. The assumption is that similar typological projects share the same average unit price. The investment is calculated by multiplying the gross surface with the found unit price, corrected for quality level and ambition of the new project. The correction rates are set in a separate table and should be discussed amongst the stakeholders.

Example: The preservation of barrack X at Fort Waakzaam will cost on average; 150m2 (gross surface) x € 345,77(/m2) = € 51.865,-. But the barrack is in a bad shape and its new function as a restaurant will require a high utilization level. The ambition is high and therefore the investment will become higher. The model will generate the result of € 174.426,- . needed to develop barrack X in to the high-end restaurant.

To estimate the impulse period and yield potential, more detailed administration is required. Estimation of impulse period is primarily based on the type of object. A wooden construction will be cheaper to build than a stone one, but the impulse time is much shorter since the stone is much more durable. A second parameter is the



OBJECTBLAD (overzicht gegevens per object)

HDM heritage development model

object: Fa0.999 barrack X NHW latitude:
999 Fa0 Fa0 NHW buiten, overig longitude:

morfologie en bestemming: lokatiekenmerk: A6667FC1-8A87-9F43-8857-0751C0B8BFBE objectkenmerk: ADF4D6F7-B0E5-FB42-869C-29C9CC463940

onderdeel/ ruimte naam en volgnummer	bestemming:	gebruik:	le:	br:	ho:
1 keuken	verblijfsgebied_werken	intensief	5,00	4,00	3,00
2 eetzaal	verblijfsgebied_horeca	veelvuldig	12,00	5,00	3,00
3 bar	verblijfsgebied_horeca	regulier	5,00	3,00	3,00
4 toiletten	sanitaire ruimte	regulier	5,00	3,00	3,00
5 berging	berg ruimte	onregelmatig	4,00	4,00	3,00
6 gang	verkeersruimte	intensief	12,00	1,00	3,00

impulstermijnfactor bestemming 0,74 impulstermijnfactor gebruik 0,87 afschrijfingstect gecomb. 0,64 looptijd: 25 jr

typologie: prim.: t_1 gebouwen
status: bestaand sec.: t_1.1 gemetselde grondgedekte
verval: prijs/ m2 b.v.o. tert.: t_1.1.1 kazerne
40 jr aanleg € 0,00 herstel € 345,77 onderh. € 7,88

ontwikkeling & kwaliteit:
constructieve kwaliteit: slecht
onderhouds kwaliteit: slecht
ambitie: hoog
conditie 5
object behoeft verbetering i.v.m. beoogde ambitie: ja

vloeroppervlaktes:
bruto vloeroppervlak: 150 m2
138 m2 92% netto vloeroppervlak:

installaties: afstand openb weg/ centr.aansl 1 20 m
verlichting: 3,055 kW aantal personen: 55,5 pers
apparatuur: 3,565 kW vent.volume: 2.389,6 m3/h
ventilatie: 16,358 kW
verwarming: 18,234 kW
waterverbruik 0,222 m3/h

investeringen:
casco_kaal € 51.865
corr_kwaliteit € 31.119
corr_ambitie € 25.933
casco_gecorrigeerd € 108.917
interne E & W inst. 100 % € 26.845
afwerking en inrichting 100 % € 39.663 investering/ m2 vbo
investering € 174.426 € 1.163

opbrengstpotentieel:
kans mogelijk
min huuropbrengst / jr: € 8.500
max huuropbrengst / jr: € 24.575
rekenhuur / object / jr: € 16.538 /m2 gbo / jr: € 120

jaarlijkse lasten:
onderhoud / jr: € 1.835
impulswaarde: € 51.865
reservering impuls / jr: € 2.601
totaal lasten / jr: € 4.436

eindsom:

		perc. derden:	bedrag/jr.:
opbr.potentieel	€ 16.538		€16.538
onderhoud	€ 1.835		€1.835
reservering	€ 2.601		€2.601

Objectpage HDM, © bunkerQ

function of the components within the object. A kitchen for example would need a new refurbishment much quicker than a storage room.

Last parameter is the intensity of use. When a room or component is more intensively used the wear will be more severe. This shortened the period between the points of maintenance and adaptation, the impulse period.

Yield potential is generated by estimating a yearly 'rent' of the clear floor space depending on its function. Each activity (function) is valuated for possible revenues within a bandwidth. The minimum and the maximum of yearly income per square meter is set in the function table. On the object level the income probability parameter is set within the projected scenario. How certain is it that the yield will be effectuated? The higher probability will result with higher yield.

Example: A restaurant in the barrack X has a minimum revenue of € 62- / m2/yr. and a maximum of € 178, - / m2/yr. The chance parameter for this revenue is 'feasible', so the database will pick a price level at 50% off the bandwidth, equals € 250, - /m2/yr. The yield for barrack X at Fort Waakzaam would be 138m2 x € 120 /m2/yr. = € 16.538, - a year!

As the impulse period is known an estimation can be made for the next impulse investment and regular main-

tenance costs. These funds can be translated to a yearly reservation.

The value of the running maintenance parameter is derived from the reference projects. The total of impulse reservation is calculated by multiplying the gross surface with the average impulse costs.

The project is considered sustainable when the potential yield covers both maintenance and the impulse reservation. In that way the object becomes autonomous.

Example: Converting barrack X returns the following results. The investment needed is € 174.426, - and the yield is € 16.538, - a year. The impulse period is 26 years. The annual maintenance costs will be € 1.835,- and the reservation for future impulse will be € 2.601,-. The surplus will be € 12.102,-. A very profitable investment.

Application of the HDM

Development of the New Dutch Water Line was organized by a National Project agency, a group of the state professionals delegated from various ministries and provinces. Together with other stakeholders they were responsible for the creating and managing of the governance models and management plans.

One of their first actions was to develop a plan for the recognition and safeguarding of the NDWL as the biggest monument in the country. Not only big in the historical and potential value, but foremost big as a structure with more than 70.000 m2 of build surface. In the same time they started working on a development plan. This resulted in the ´Panorama Krayenhoff´. A plan where the future ambition of the NDWL and its individual forts was set.

Fort bij Vechten, © NDW governmental agency

In 2003 bunkerQ, office for heritage development was commissioned by the National Project agency to combine the results of various investigations and generate a clear assumption of the investment demand for the conservation of the objects of the NDWL. bunkerQ used the Heritage Development Model to generate the estimation. Based on this calculations the National Government of the Netherlands decided to invest 75 million euros in the conservation and development of the former strategic defence line. This investment was doubled by the provincial governments along the geographical line of the New Dutch Waterline.

To illustrate the use of HDM in practise two examples are given: Fort bij Vechten (FbV) and Fort het Hemeltje (FhH), two neighbouring forts in the middle of the strategic defence line of the new Dutch Water Line.

Fort bij Vechten had the highest ambition. As an ecological reservation

Fort 't Hemeltje, © NDW governmental agency

Fort het Hemeltje had a lower ambition. The estimation for the conservation of the existing structures on Fort bij Vechten was € 9,5 million and for the Fort het Hemeltje € 0,75 million. New additions to the existing objects were excluded from the calculation.

Subsequently the estimation of investments and possible yield ware added to the HDM data-base. By 2008 new calculations were published where the ambition parameter of the projects was revaluated and the investment needs were compared with the possible yield.

For Fort bij Vechten the calculated needed investment came to a € 20 million and for the Fort het Hemeltje to a € 4 million. The results were higher than the first estimate from 2003. This was a result of addition of new build area of 4.500 m2 on FbV and 500 m2 on FhH. FhH was also put to a higher ambition level as it was to become an office place.

It is estimated that the annual income could be € 1.000.000 on FbV and € 230.000 on FhH, which gives a return on investment of 5% on FbV and 5,7% on FhH. A profitable outlook but compared to the market normal of 8%, investments were proclaimed not sure enough. The National government considered this gap between the investment and return as their public responsibility and gave a large subsidy to the plan. The work on the forts could start.

Now at the end of 2016 both projects are finished and in use for more than a year. A definitive list of expenses can be made. On FbV € 21 million and on FhH € 2,5 million were spent. The smaller investment on the FhH is due to the fact that not all of the planned extension of the build area was realized.

FbV earns money on renting spaces for parties and gatherings, to subtenants, events and public entrance to the pavilion. Roughly calculated it could accumulate to an amount of € 400.000,- a year. FhH earns money by renting office spaces in the central barrack to tenants. The income there is € 80.000,-. As a return on investment FbV scores 1,9% and FhH 3,2%. Income for FbV is more at risk because it largely based on a public spending. FhH has a long-term tenant and therefore low risk of failing to generate an income in the future.

In both cases the actual income is subsequently lower than originally estimated. What could be the reason that these income targets are not met? Is it the result of wrong assumptions in calculating the expected income? With the implementation of the work lots of energy and control is put to the execution of the spending. Managing the income side of the project has had less attention. It also could be stated that FbV was

managed from a public body where as FhH from a private point of view. Managers of the public projects tend to have more distance to the economic side of the project since the money is not theirs.

Managing and stimulating money spending by visitors have a low priority at the investment lists and project design. In most cases people start thinking about it when the projects are already build. Extra investments must be done to safeguard more income.

It is not our view that development of monumental sites should be only the commercial one. The examples on FbV and FhH, although very different in size and approach, prove that the spending is not the problem but the income is. The results show that it is very important that projects earn some income within a bandwidth of ethical and esthetical values and constrains. If it is possible they should become economically autonomous and therefore sustainable. If the income side is neglected there is no point of spending money.

Both studies on FbV and FhH also prove that the costs of utilisation of the monument exceed the costs of simple conservation, by far. So, if the goal is to safeguard the monumental substance, simply do so. But if you want to communicate and be inspirational to society be very aware of what you are doing. It is accepted to physically change a monument and broaden up the ways of use or to communicate the narrative more clearly. But if because of this spending exploitation is destined to go bankrupted, no monument in the physical sense will gain from it.

Thoughts and considerations

Generally speaking and for better understanding the HDM could be seen as a computer game. You start modelling the situation as it is and by testing various development scenarios you will get a sense of the actual potential of your heritage site. The most balanced strategy for development will step by step become clearer. The strategy where both, the heritage and the user could gain, without the costly mistakes in the field.

Impulse period and reservation

In the Heritage Development model the calculated impulse period is very important. It defines the yearly reservation for impulse investment. The yearly impulse reservation is the most relevant factor in the sustainability of investment.

Sustainability

The objects are economically sustainable if capable of funding annual cost of maintenance and reservation for future impulse investment. In that situation no additional investment from third parties are required. If the whole area development can be economically autonomous the ultimate goal is reached.

Limitation

There is always a danger that by developing the commercial utilization will take over the monumental quality of heritage sites and objects. Overdevelopment should be seen as non-appropriate and harmful to the monumental value.

With modeling in the HDM we can calculate what would be the turning point in development, the point where income outreaches the financial de-

mands of the heritage. It gives a limit to the possible development.

Interpretation

A lot of a parameters in HDM are not factual and have to be set by expert judgment. Therefore, the model parameters should be evaluated by experienced professional.

Using the HDM, you….

- know what you have
- think before you act
- avoid tunnel vision
- do not spend money where you shouldn´t
- earn yield where you can
- split budgets on accepted principles
- generate arguments for collective action

Future

The Heritage Development Model is, as its subject, developing continuously. New relationships are made with international partners. Universities, public and private companies in Holland, Belgium, Poland, India and Indonesia are asked to use the HDM and review its potential.

Hopefully, this will result in a cooperation of heritage parties committing themselves to communicate and develop shared strategies on large scale heritage conservation projects. When potentials are energized, our heritage and therefore our future generations should benefit.

A Facebook group is formed, https://www.facebook.com/groups/1773573426227585/?fref=ts as well a web domain, www.HDM.nu. The website will be online soon and become a base for communication and cooperation for Heritage Development Professionals.

Literature

Brons, R., Rodermond, J., & Wallagh, G. (2005) Ontwerpen aan Geschiedenis. Rotterdam, Stimuleringsfonds voor Architectuur.

Dommelen, S. van, & Pen, C-J. (2013) Cultureel Erfgoed op Waarde Geschat. Den Haag, Platform3.

KPMG Advisory N.V. (2010). Duurzame Financiering van Landschap. Amstelveen, KPMG.

Luiten, E., Hezewijk, J. van, Joosting-Bunk, E., & Witsen P.P. (2003). Panorama Krayenhoff: Linieperspectief. Schiedam, De Eendracht.

McKeown B., & Thomas D. (1988). Q methodology. Thousand Oaks (Califonie), Sage.

Meijer, G (2003). Kostenraming Instandhouding Nieuwe Hollandse Waterlinie. Bijlage stuurgroepvergadering 18-09-2003. Utrecht, archief Projectbureau Nieuwe Hollandse Waterlinie.

Ostrom, E. (2007). Institutional Rational Choice; An Assessment for Institutional Analysis and Development Framework, In: Sabatier,P. (Edt.), Theories for the Policy Process. New York, Westview Press. Pp 21-64.

Raats, K. (2016). De Herbestemming van de Nieuwe Hollandse Waterlinie. Groningen, InPlanning.

Rosenberg, F. Wever, E., Schulenberg, R., & Damen, M. (2008). KKBA Nieuwe Hollandse Waterlinie. Amsterdam, RIGO Research en Advies BV.

Staatsbosbeheer. (2010). Standaardkostprijs directe werkzaamheden Terreinbeheer voor gezamenlijke TBO's. Amsterdam, Staatsbosbeheer.

Verschoor, M.(2009). Conceptontwikkeling voor Creatieve Broedplaatsen. Eindhoven, Technische Universiteit.

Will, C. (2002) Op Sterk Water. Utrecht, Uitgeverij Matrijs.

Architecture and Landscape: Recovery of Fortresses in Lessinia, Italy

Fiorenzo MENEGHELLI
Architect, President of Istituto Italiano Castelli, Section Veneto, Italy
Andrea MENEGHELLI, Architect, Freelance

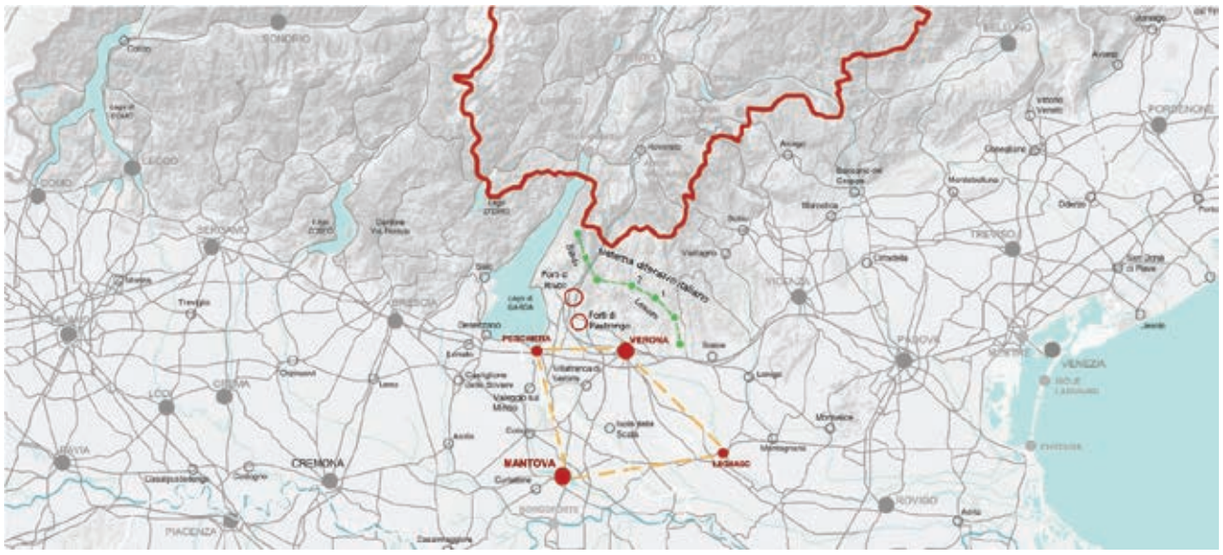
Abstract

The preservation projects of the military buildings should be based on "compatibility and sustainability" criteria in full respect of the context in which we act with the goal of safeguarding all the existent historical and environmental/landscape heritage. The role of the preservation of fortresses should be the expression of the local community needs: Environmental, safeguard and landscape and environment; touristic and educational, promote the touristic value of the place by offering cultural and environmental itineraries and services; local development, conservation and development of the local typical manufacturing aimed to promote an unique receptive offer and cultural interest.

Key words: compatibility and sustainability; landscape; local development.

From the Austro-Hungarian Empire to the Italian Kingdom

The city of Verona in its strategical geographic position acts as a fundamental crossroad between Italy and the North of Europe. During the centuries, the city has maintained a crucial strategic role of control on the Lombardy plain ("Padania") and the Alpine area. During the Austro-Hungarian Empire (1814-1866), Verona became the main fortified town of the Quadrangle, by developing a defence system that overtakes the urban nature and expands on the area, known as "entrenched field", with the fulfilment of a double belt of detached forts (1848-1866). After this very first phase, in the area was development of a wide defensive plan called "fortified region" which connected the morphological nature of the area (Garda lake, Adige, Mincio and Po' rivers, pre-Alpine elevations) with the ways of communication (mostly rails and roads) and the fortified system. In 1866 Veneto is hand-over to the Italian Reign. The border with Austria then moved to the current borderline between Veneto and Trentino Alto Adige. The Italian defence considered the "closure" of the numerous ways of communication, coming from the Alps, with a system made of blockage forts, in order to guarantee manoeuvre's freedom to the Padania area's troops between the two banks of river Po. The Italian military Corps of engineers modified (1880-85) the Austrian fortresses of the Rivoli's blockage (Rivoli and Ceraino's Forts) which was closing the Adige plain (Valdadige), and realised new Forts such as S. Marco (1883, renovated in



Defensive system of Verona at the beginning of World War I. In red, the border between the Kingdom of Italy and the Austro-Hungarian Empire. 1 fort Santa Viola. 2 fort Monte Tesoro (graphics F. Meneghelli)

1913), Masua (1880-85, and 1900), or gun battery array of Rivoli Fort (1884), the "Tagliata" of Incanal (1884) and the Cimo Grande and Noale armoured arrays at the beginning of 1900. On the North-East side of Verona, at the bottom of the Lessinia's mountains, Castelletto Fort (1885-1900), San Briccio Fort (1885) and the Monticelli array were built, while the armoured Forts of Monte Tesoro and Santa Viola were developed between 1908 and 1911. The pre-Alpine militarization led the territory to deep changes. The agriculture area was replaced with the construction of infrastructures that can be summarised in new roads, bridges, aqueducts with fountains and tanks, telephone lines, devices for light signals, etc.. and troops' logistic support such as barracks, commands, hospitals, bakeries, warehouses, barns, gun-powder magazines, etc...; fortified system, such as blockage forts of the valleys and trenches' network. The choice of the Italian defence in building barricade structures on the Alps with the aim of controlling the entry passages to the plains and halting the enemy action on the border, required a change of mind on the defence works made until that moment. At the end of 1800, the use of high-potential explosives marked the end of polygonal-plan masonry forts covered in soil. Therefore, the Italian military corps of Engineers begun to investigate other fortresses in Europe, where large fortified systems were built in an anti-German function, for e.g. in Belgium in the city of Antwerp, Liège, and in France. The Italian military corps of Engineers developed a model of armoured fort which has been adopted between 1905 and 1908 in the Alpine barricades of the North-Eastern boundary. The new forts were designed to have concrete thick walls and were provided with artillery protected by cast-iron and steel casemates. The blockade fortification is no more conceived as an isolated building, but as a group of infrastructures deployed over the area able to conduct complementary function in a defensive action. The fort had, thanks to its reduced dimension, a good integration in the environmental context, but its structural limits left it as a vulnerable target. In respect to the fast-technological evolution of fire-arms, the defensive building result-

ed after few years inadequate or even obsolete to fulfil its defensive role. Some years ago, thanks to historic research regarding the fortified buildings fostered and disseminated by publications and exhibitions, a widespread interest and value recognition that this historic heritage possesses have arisen in the population, therefore nowadays there is a growing awareness on the necessity of safeguarding it by appraising the territory. With this new attitude and consensus, actions led by some Municipalities together with the Lessinia Mountain Community and the Lessinia Regional Park were noticeably carried out. Thenceforth, the recovery of these buildings cannot be considered only from the local point of view, but also because it is involved in a wider territorial concept. All the case studies which are briefly introduced below share a common vision on the valorisation on the fortified heritage.

Fort Santa Viola with aerial view. Photo: F. Meneghelli

Santa Viola Fort

The project of recovery of the Fort of Santa viola is fostered by the Municipality of Grezzana and the Lessinia Mountain Community. The project is placed in a vaster territorial context aimed to increase the value of the defensive system realized by the Italian corps of Engineers in Lessinia at the beginning of 1900s. The project provides the recovery of the fort, which is owned by the Municipality itself, that could become the "entry door" to the Lessinia's Park. The location of both the fort and the whole defensive line marks, indeed, the transition from an urbanized and humanized environment to an area which still preserves a natural value bound to High Lessinia, corresponding with the Park's protected area. All this portion of land represents a valuable territorial landmark, from a local flora and fauna and from an orographic perspective, that allows a 360° sight of all the area around, ideally connecting to the panoramic viewpoints already identified in the Lessinia's Park

The fort recovery will permit the realization of a place, that at the same time will be utilised as receptive and museum centre for tourism activities, especially orientated to the younger segment. In this area of relevant landscape and environmental value, the fort's location can constitute an added value for the development of a signifi-

Fort Monte Tesoro, recovery project by. F. Meneghelli

cant role also from a tourist hospitality, by realizing low cost receptive services and focussing mostly on young people, whose demands cannot find currently an efficient offer in Verona's Mountains. Another important possibility, beside a proposal of individual usage, is to involve the Youth International Associations which are yearly organising working and formation camps, with a following offer positioning on the European market. The intervention has been carried out according to two main criteria: the restoration and architectural integration, that respect to the decay condition of the fort's different parts. For e.g., the restoration took place for the exposed stonework section and the well-conserved historic segment. The architectural integration has been realized: on the semi-demolished stonework with the addition of exposed concrete castings; with the insertion of steel structures inside the destroyed portions of stairs, attics and roofing. The inner works followed a double intervention modality: an appropriate finishing touch at the ground floor for the rooms destined to food service and reception of small groups of visitors; the conservation of the upper story's existent untreated stonework realizing only small interventions of inner finishing, such as the positioning of metal doors and glazed windows on the external walls, which will be addressed to temporary exhibitions and museum centre. The electrical system has been made by exposed pipes of steel and a linear development of luminous body with opaline glass shaded neons-lighting. The air-conditioning system (only for the ground floor) is composed of a micropore steel circular channel. Work's data: Area surface: sq m 10.226; total covered surface: sq m 1.284. Volume cubic metre 9.887. The intervention occurred in respect to loans and in consecutive moments: 1st moment (2005-2007); 2nd moment (2007); 3rd moment (2011-2013); 4th and last moment in 2014. The amount of the realized works was about 1.170.000 €.

Monte Tesoro Fort

The fort has been used as military area until 1980, then it has been handed over to the Government Property, and

now on the basis of the State Property Federalism it has been transferred to the Municipality of Sant'Anna d'Alfaedo thanks to an increasing value programme presented by the Municipality divided into several points.

Asset identification: the real estate existing in the area of sq m 154.640 are the fort, the barracks, the keeper's house and the buildings for other services; A general description: the features and morphology of the places are well identified by the fortifications and catch all the useful elements to the defence; their construction gives to the location a new role and identity in the territory. If we think about the area with these theories in mind you can see the essential relation between the man work and the natural environment, which allows you to imagine the forts as protections for the defence of the surrounding landscape from further changes. The forts' recovery can no more appear as an isolated phenomenon and competing with the recovery of other historical structure of recognised and strengthened value, such as churches, villas and/or old town centres. Forts should be considered as integral part of an historical, architectural and environmental heritage whose value involves the entire territory.

The Program's Summary

The increasing of the value of Monte Tesoro is inserted in a wider regional context, which sees the enactment of the first recovery activities of the defensive system composed of the Santa Viola Fort and the Lessinia's trenches. Moreover, the recovery of Monte Tesoro has to be inserted in an historical, cultural and environmental itinerary that has as main points the localities of Molina (the Waterfalls and the Botanic Museum), Sant'Anna d'Alfaedo (the Prehistoric and Paleontological Museum, the Veia's Bridge, the Corno d'Aquilio's Mount), and links with other Lessinia's areas: Alpine huts, hill countries, woods, etc... In this framework the food and artisan local products of the area has an important value;

The increase in value program develops on different levels: Territorial level- Monte Tesoro, as a location of remarkable historical and naturalist interest of the Verona surrounding mountains, links with Trentino and the area between Garda and Valpolicella; Local level- Monte Tesoro is the centre of the network for places of historical, cultural, environmental interest and of promotion of productive typical handicrafts in the Lessinia's Regional Park.

Objective and strategies

Although the area is equipped with meaningful places of interest for history, nature, etc..., it has not developed an adequate promotional and fruition program of this outstanding heritage. The increase in value of Monte Tesoro is aimed to represent a new opportunity for the mountain area to develop a balanced socio-economic advancement looking out for the territorial peculiarity. The main points of the intervention are: the synergistic increase in value of the Lessinia's fortified heritage, which provides for the forts' salvage and the construction of the trenches' Eco-museum; the creation of a local network of all the places of great historical, cultural and environmental interest with common pro-

Monti Lessini (Verona), the trenches of Malga Pedocchio integrated into the landscape. (photo F. Meneghelli)

grams of increase in value and fruition; the recovery of the fort as place of memory of the First World War in the Lessinia area and, at the same time as expositive space where to present the territory nature under an historical, archaeological, architectural, cultural, environmental and landscape point of view (fig.3). This place will see the introduction of valleys' traditional local products; the Barracks and the enclosed buildings will turn into the reception, rest stop and services' setting for cultural, environmental and free time tourism, becoming the benchmark for hiking in the surrounding mountain area. "The Lessinia's wood", which includes the wide wooded area of the mount, will become the environmental educational and formation centre aimed to the research and conservation of biodiversity.

Modalities of the program's fulfillment: the realization of the plan will be managed by the Municipality together with the Lessinia's Mountain Community and the Lessinia's Regional Park. The fulfilment of the program can occur both with the direct intervention of the Municipality and by using the program agreement, and/or other agreements between public and private subjects; Economic sustainability of the plan: Regarding the economic sustainability of the increase in value program, a plan of loans has been defined: from European announcements to the regional ones, banks foundations, etc... In 2016, the recovery of the fort has begun with an expected cost of about € 1.5 million. The project is expected to be completed by 2017.

Recovering Lessinia's trenches

The Lessinia's fortifications expand on more than 18 km, with 8.000 metres or so of trenches, 50.000 metres of grids, more than 30 pieces of ordnance, hundreds of machine gun's placements, 60/70 cavern refuges for man and supplies, hundreds of wooden barracks for hosting the troops and their officials, and thousands metres of walkways, roads, etc... At the beginning of hostili-

Santa Viola Fort, aerial view. Photo: F. Meneghelli

ties, it seemed as the First World War should be a dynamic and fast war where only the new war machines would have determined the conflict's result. However, it turned into a static trench war, just bloody and terrible. Only anonymous fortifications, excavated in the ground or in the rock and delimited by a lot of barbed wire, followed the refined military architecture. For the Lessinia's Mountain Community I have elaborated a recovery project of the Malga Pedocchio's trenches, under the Erbezzo Municipality. The intervention has occurred only in full respect of the historical, environmental and landscape contex of the place. The soldiers created in the rocky block a grid of walkways, trenches, tunnels, stationings for small artillery inside the caves, etc... To protect themselves from the snow or rain, the soldiers covered the trenches and their quarters with stone sheets supported by wooden truss stuck in the rock. That kind of "signs" which still are in the rocky block but that time and nature have in part ereased, have been recognized and rendered readible in the restoring intervention, avoiding any kind of rebuilding artificialities. The salvage interventions of the military buildings should be based on "compatibility and sustainability" criteria in full respect of the context on which we act with the aim of safeguarding all the existent historical and enviromental/landscape heritage .

The objective of the Lessinia's fortifications salvage come form the need that the local community can declare itself as part of the values and history of the place, which can be synthetically described as:

Environmental - Safeguard and increase in value of the landscape and environment;

History and memory - Conservation and recovery of all the concrete and intangible proofs;

Touristic and Educational - Increasing the touristic interest in this place by using cultural and environmental itineraries and services, bounded to the inter-regional and European reference network;

Local development – Conservation and development of the manufacturing activities, local topicalities' promotion, boost of the receptive offer and cultural interest.

In conclusion, these examples demonstrate how it is appropriate to develop a masterplan, that recognizes the historical, architectural and landscape value of the fortifications built for the First World War. The masterplan should help to define the principles of preservation and intervention that should indicate the possible uses compatible with the historical-cultural heritage. The recovery of the defensive systems of the First World War should be considered an opportunity to foster the development of a larger

valorisation of the whole territory with a unitary program.

In this context, the mountain area can implement a model of sustainable development, which is an opportunity for the population of a new and balanced socio-cultural and economic development.

Bibliography

Meneghelli F. 2004. Forte Gisella, un forte per la città, Verona, Cierre Grafica.

Meneghelli F. 2006. Le mura e i forti di Verona, Verona, Cierre Grafica.

Meneghelli F., Valdinoci M. 2010. Il sistema difensivo della Lessinia, Oriongraph.

Meneghelli F. 2012. Verona un territorio fortificato, Crocetta del Montello (TV),Terraferma edizione.

Formation of Scenic Place by way of Exploitation of Former Military Exercise Field in Hokkaido

Case Study of Biei in Hokkaido, Japan

Riichi MIYAKE
Visiting Professor, Tokyo University of Science, Noda, Japan

Landscape of Biei

Background

The Japanese Imperial Army used to possess, all over Japan, a number of military exercise fields, which covered more than several 1,000 ha, but after the World War II, most of them were conceded either to local municipalities or to private sectors as lands for public facilities or agriculture except some which were transferred to the Ground Self Defence Force. Biei, which gathers approximately 1.5 million tourists a year as the most frequented place in Hokkaido, experienced its history in such a process. The fact that the 7th Division of the Imperial Army occupied a great portion of the surface of this town as an exercise field defines its pre-war flourishment depending on military economy and population. The systematic development of exercise fields was planned around 1900 when Japan faced the menace of Russia, which led the strategic strengthening of artillery and cavalry by using the topography of Biei area. So far no research has been accomplished in terms of military exercise fields in Hokkaido while the reality of the concession of these military lands after 1945 was scarcely studied. Still, it should be known that the scenic view of Biei which attracts a great number of tourists has originated from such lands for exclusively military purpose. This paper aims at the clarification of the process of the formation of the military exercise fields in Meiji and Taisho Periods as well as the exploitation of such land after the concession in the post-war period.

Purpose

Following 3 points are specially intended to be clarified:

- Acquisition and development of military exercise fields from the end of the 19t century to the early 20th century, especially the case of Biei
- Planning and design process of military facilities such as barracks in exercise fields as well as its architectural details
- Transfer of military exercise fields to the civilian sectors and immigration of new comers, including returnees from Karafuto (Sakhalin)

Research Area

Biei, in the central zone of Hokkaido, is chosen as the research area as this place is well appreciated as one of the most frequented landscape spots in Japan. The transformation of the former military land to well-tempered agrarian land signifies the existence of a great reserve of natural landscape over undulating topography. This place is around 25km distant from Asahikawa City, where the 7th Division of the Imperial Army stationed.

Location of Biei

Methodology

The research is based on the bibliographic survey in archives and libraries such as National Archives of Japan, Diplomatic Archives of the Ministry of Foreign Affairs and the National Institute of Defence Studies as well as topographic document survey in the Geospatial Information Authority of Japan and so on. Survey on the preserved buildings and other military heritages in the designated area is another method to have been taken. This field survey was done in June-July 2016.

Enlargement of Military Exercise Fields

Military exercise fields, unlike drill courts, aim at the practise of deployment military force, shooting and shelling in the manner of actual warfare by operating troops, from the strategical and tactical point of view, in vast plain or mountainous lands. As the troop is obliged to stay there for several days, large-scale construction program for logistics including barracks should be set up. Japanese Mikado Army officially started as the troop of the emperor (Mikado) in 1871 with 4 divisions which initiated their exercise fields by themselves, but the surface was limited to 50-60 ha. It came to exceed 1000 ha only at the beginning of 1900's in the period of the Russo-Japanese War, which required the Army total but flexible manoeuvre in the scale of the battle in the Continent.

The surface of the exercise fields can be detected in the Army Statistic Book every year after 1913. Data prior to this year were scarcely found except in 1900, in which the total of the exercise fields all over Japan counted 5,956 ha. After 13 years it was enlarged to 53,763 ha (excluding Korea and Taiwan), nine times more. In the former case it corresponds to 10 % of all the Army lands while the latter was 25 %. The acquisition of exercise lands was thus accelerated in these years.

The Army Statistic Book of 1913 shows that all the 18 divisions, except the Imperial Guard Division, kept exercise fields up to 8 fields. Difference of the surface was extreme as the smallest was the 14th Division in Takasaki (225 ha) and the largest was the 7th Division in Asahikawa (27,282 ha). In fact half of the surface of all the exercise fields in Japan belonged to the 7th Division, situated in Hokkaido,

which was considered most convenient for this kind of military manoeuvre due to its nature as vast but scarcely populated uncultivated lands. Biei, among others, was endowed with undulating topography which enabled various types of military operations. This made this place extremely suitable for military exercise. Its surface was 6,628 ha, second biggest exercise field after that of Toma which also belonged to the 7th Division, counting 12 % of the total surface of military exercise field in Japan. As the land was considered very large, a certain portion of this field was rented to private enterprises.

Acquisition of Land

The process of land acquisition of Biei was well recorded in the official documents of the Ministry of Army around 1900, which are preserved in various archives in Japan. The 7th Division, founded in Asahikawa in 1896, started its facility construction such as barracks, headquarter building and exercise fields in and around this city from 1900. It was decided to transfer a land of 5,078 ha in Biei from Hokkaido Prefecture to the Ministry of Army, changing its land category from forest to military exercise. The reason why this area was specially selected was that the first acquired exercise field in Toma, northwest of Asahikawa, had faced obstacles because of densely grown trees and sasa bamboos as well as by its distorted land form which allowed only single-direction shooting and shelling. Since the acquisition of Biei was finally approved in 1903, the Ministry of Army started negotiation with Hokkaido Prefecture at once.

Biei is situated 25 km southward from Asahikawa, just one day march from the military camp in Asahikawa. A railway station already constructed in 1899 to complete Tokachi Line, which would connect Asahikawa and Obihiro, allowed good material supply to this area. In addition, several rivers flown out from the foot of Taisetsu Mountain, including Biei River, shaped undulating landform without dense forest. The fact that the water quality inspection undergone during the preliminary survey proved good and clean water quality also favoured the final decision for acquisition. The selected land of some 5,000 ha covered the area which extended from the southern bank of Biei River to the municipal border between Biei and Furano. Toward the north-west, it formed semi-lunar curve around the already cultivated fields. The railway (Tokachi Line) which came to stay within the northern part of this field was considered an obstacle, but, strangely enough, the decision of the Division was “no problem as the frequency of the train is quite low and even when the train passes, one have to shoot carefully”.

The memorandum by the 7th Division written on this occasion dictates that Biei at that time was “a small village with less than 80 households”, and that “its industry has not yet grown up and the people here are still depressed”. It concluded that the advance of the Army would enrich the local population. When a military exercise was held, approximately 500-1000 soldiers gather at once. Biei was expected to be a supply base. In fact, the municipality of Biei made efforts to attract the Army by using all its resource in such a way that they re-

Map of Biei (1917) with Military Exercise Field (red)

turned without compensation all the lands within the targeted area which had been leased from the Prefecture. Besides, the history of exploitation of this area was very recent. The first settlers entered in this area in 1894, and after 6 years, in 1900, the municipality of Biei was established with 455 inhabitants and 110 households (in Biei Centre). These figures do not contradict the memorandum of the 7th Division. The railway station had been already inaugurated in the previous year, but the road connecting Asahikawa was so primitive that carriages got easily stuck in mud in rainy days.

The document for the acquisition of 1903 dictated that the 7th Division expected, in future, enlargement of the exercise field by adding some 1,500 ha. It was in 1912 when the Army obtained 1,384 ha in the form of retuned leased land from the Prefecture. This volume was kept until the end of the World War II.

Facility Planning for Exercise Fields and Priority Given to Biei

Military exercise fields require specific facility planning. In Biei's case, its purpose was rather specialized in comparison with other exercise fields in the main land of Japan. Towards the end of 1890's the necessity of manoeuvre was acknowledged much bigger than the former period in front of the growing menace of Russia, which targeted Manchuria and Korea. Clashing between the two powers was already unavoidable. In order to prepare for the war against Russia, Hokkaido was considered the most suitable exercise place for artillery and cavalry. Wide and undulating lands would allow flexible operation for these disciplines.

After the start of Mikado's Army at the beginning of Meiji Period, newly established Japanese cavalry pursued completely different direction from the traditional equestrian samurais, whose tactics had been based on independent actions. Systematic training was initiated by the French military mission dispatched to Japan in 1870's. Their contribution to Japanese Army was enormous as they transferred various systems including the military organization, facility planning, fortification and production of arms. Cavalry and horse stud administration were also initiated in 1870's so as to implement the construction of stables and covered riding grounds. The first generation of this military branch was regularly sent to France in 1880's and 1890's. The role of General Yoshifuru Akiyama (1859-1930), above all, was crucial. He was dispatched to Saint-

Cyr between 1887 and 1891 as captain in cavalry and mastered contemporary French cavalry tactics and logistics. At the dawn of the Russo-Japanese War (1904-05), he was appointed as commander of the 1st Cavalry Brigade to be sent to Manchuria. Akiyama's idea was to utilize Hokkaido, the climate of which is similar to Russia, for the training of cavalry. In 1902, the 7th Cavalry Regiment was thus established within the 7th Division, based in Asahikawa. Recruiting good cavalry soldiers was not difficult in Hokkaido as a large number of farmers in Hokkaido were accustomed to ride horse as they cultivated vast agricultural lands with horse and other animals. The topographic conditions of Biei were ideal for the training of cavalry.

Still the construction of the facilities in such exercise fields had to wait for the end of the Russo-Japanese War as the 7th Division was mobilized to Manchuria, which did not allow them to pour their energy to the construction of new facilities in Biei. It was only 2 years after the end of the war that the construction was started.

Planning of Barracks

For the camping of the soldiers in an exercise field, barracks are needed to accommodate at least one regiment for several days. Today only a few buildings of that period are left in the central district of Biei, integrated into the actual townscape around the railway station. The investigation of the existing old official documents, however, enables the reconstruction of the full image of such barracks at that time. They are not situated within the exercise field, but in a separated site in the town neighbouring Biei River. This site for the barracks was to be independently arranged near the station for the convenience of logistics. A land of 14 ha was accordingly donated to the Ministry of Army by a landlord for this purpose in 1906. Following this donation procedure, the facility department of the 7th Division started the planning and the design of the buildings. Capacity to receive an infantry regiment and an artillery or a cavalry regiment (this makes 2 regiments in total) as well as the good access to the station was the basic requirement. The plan shows the existence of 2 rows of 6 barracks in the front yard, a row of 6 stables (64 horses) and a stable for officers (36 horses) in the back yard, and the regiment headquarter near the main gate as well as 3 kitchens and 3 bathrooms to the south. This compound unfolded across from the town hall and the elementary school beyond a street. Referring to other exercise fields in Japan, the pattern of 12 barracks and 6+1 stables seems to the standard. Hirosaki University team, which investigated Yamadano Exercise Field for the 8th Division in Aomori Prefecture, has reported the existence of a row of 12 barracks and 6+1 stables. Such was the case in Narashino Exercise Field of the 1st Division in Chiba Prefecture.

One barrack corresponds to the size of a company in a rectangular plan of

Townscape of Biei "History of Biei Village" 1917

Barracks at Fuji Susono Military Exercise Field, photos of 1930's

4 ken x 40 ken (1 ken = 1.8m) with the surface of 162 tsubo (536 m²), capable of housing approximately 120-150 soldiers. In fact, in 1903 the capacity of an infantry company was fixed 136 soldiers in peacetime. As a regiment consisted of 12 companies (or 3 battalions) in Japan, 2 rows of 6 barracks equal the size of a regiment. On the other hand, a cavalry regiment around 1900 consisted of 5 companies with 800 soldiers with nearly the same number of horses. The capacity of stables in Biei (420 horses) satisfied only the half of this number. Drawings such as plan, elevation, section and detail for the facilities of several exercise fields are preserved at the National Institute of Defence Studies in Tokyo. Those of Maebashi, for instance, show clearly the basic idea for the planning although the length of the barrack is shorter than Biei. This project was executed in 1922 for the purpose of the repair and consolidation for the old buildings erected in the middle of 1900's.

The barrack building is of a simple wooden post and beam structure with a long rectangular plan. Roofing was a wooden truss system with a triangular section. It was designed with only functional goals and without any ornament. Some barracks in the mainland had wooden buttress to support the main structure, but in Biei's case no buttress was to be seen. The same type of wooden structure is found in Yamadano (8th Division) and Fuji Susono (1st Division).

The building plan belongs to the central corridor type. A corridor of 1 ken width with earth floor is laid in the centre while both sides of the corridor are raised floors as soldiers' sleeping place with the depth of 1.5 ken. The entrance is situated in the middle of the building as well as on the gable walls of both extremities. The stables follow the same system, but one single stable counts 184 tsubo (608 m²) or a rectangular plan of 5 ken x 37 ken, comprising separate stalls for 64 horses. The stable for officers is smaller as it takes in only 36 horses. A kitchen of 38 tsubo (126 m²) and a bathroom of 20 tsubo (66 m²) are installed outside for the service of 2 barracks. Toilets are separately set up next to each barrack. 2 headquarter buildings, one (4 x 25 ken) for regiment another (4 x 20 ken) for battalions, are located in front of these barracks, leading to the main entrance.

Standardization and Exception

The survey of the actual buildings as well as the official documents reveals that the planning of the above-mentioned buildings is subject to standardization. In fact, the appropriate surface

per person was clearly defined by military rank. For instance, the space for a soldier must be 2.2 m², a non-commissioned officer 3.5 m², an officer 4.5 m², and a company commander 9 m². For the stable, the size for a horse stall should be 1.7 x 3 m². Such specification was given by the Ministry of Army in Tokyo and conveyed to each Division, which then interpreted this standard according to their local condition such as climate, topography and the availability of materials. What are crucial factors to define the size and the capacity of the facility is the nature of manoeuvre and the type of military branch. If the exercise fields were specially destined to the artillery or the cavalry, the size of stable should be big enough, but even in Biei, the number of stables was not enough to answer the need of one whole cavalry regiment.

The facility construction in the exercise fields started systematically just after the Russo-Japanese War. Biei and Yamadano belong to this boom. The increased number of facilities became a financial burden to the Ministry of Army, which finally made a decision to allow exceptions by manipulating the standard. This war brought about temporary construction of numerous hospitals and even prisoner-of-war camps in various places in Japan. When the war was over, most of them came to be no longer necessary. In order to economize the construction cost, the Ministry of Army gave the permission to use these temporary facilities to be relocated to the exercise fields so as to be used as barracks and other buildings. Still, in the case of the 7th Division, they sold off the dismantled pieces of such facilities to the private sector against the instruction from Tokyo in order to obtain cash which should be used for paying for the extra cost caused by the specific treatment for cold and harsh climate. That is one of the reasons why the "genuine" pattern for the military barracks in the exercise field was well realized.

Relation with the French Barrack Model

Japanese Mikado's Army received benefits from the French military system from the early period of its history. Not only military organization, but also facility planning owed much to the French model formulated in the course of the 19th century. In terms of the military exercise fields, the early textbook on this topic was the translation of the French one entitled "Instruction pratique sur le service de l'infanterie en campagne" (1876), from which Japanese Army develop its own system by adding specific subjects. The textbook "Field Exercise Instruction (Yagai Enshu Kiten)" of 1882 was thus acknowledged as the fundamental for field exercise. In 1889, 5 years before the First Sino-Japanese War, a new manual for manoeuvre was edited by reference to European "grand manoeuvre". From 1892 onward Grand Manoeuvre was to be carried out every year except in the war time under the supervision of the emperor (mikado) himself by each division in alteration. Still, no grand manoeuvre was held in Biei until the end of the World War II.

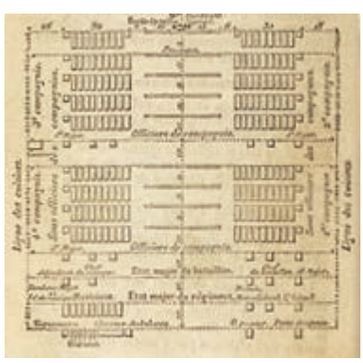
The comparison between the French exercise fields and the Japanese ones is very suggestive. Although the number of exercise fields exceeding 5,000 ha is quite limited, those found in

Old Barracks for Coetquidan Military Exercise Fields, exterior and interior, date unknown

Hokkaido share similar characteristics with the exception of the fact that Japanese buildings are totally made of wood. In France the wooden barracks appeared only at the dawn of the World War I with sophisticated structural system for rapid construction while in Japan Army's construction depended on wooden structures from the beginning. However, its planning system shows a certain reference to the French precursors. For instance, Coetquidan Camp near Rennes, in Bretagne, provides a good example. Stretched over the site of 5,200 ha, this camp contains a built-up compound with barracks of the same type, which date back to 1870's. The building complex is represented by 2 rows of 7 barracks and 6 stables behind them. The structure is of masonry with rough stones, covered by timber truss roofing. Old pictures reveal explicitly both exterior and interior views, which show the same tendency with those of Biei.

There is a clear distinction between the military camp and the exercise field. The former signifies the permanent base of the military troop, mainly situated in a city (casernement), while the latter is a temporary place for the purpose of exercise, situated in a rural or mountainous area (baraquement). Referring to the manual used by the French officers in the second half of the 19th century, the troop rather used to bivouac-camp within the exercise field. In such a case, battalion is the unit for the operation. Each battalion must bivouac-camp by company either in double column or in single file. During the Second Empire, one can recognize the construction introduced so as to construct barracks in the manner of bivouac-camping. The manner of bivouac was, accordingly, well succeeded to the layout of the barracks, which represented the spatial organization by company in double column

Therefore, French military camps evolved from the old caserne-like closed type layout to the double col-



Old Barracks for Coetquidan Military Exercise Fields, Site Plan (left), Aerial View (right), date unknown

umn type layout in the course of the second half of the 19th century. Actually only a few military exercise fields in France maintain this double column type because they were subject to frequent alteration and construction from the beginning of the 20th century. Japanese barracks in the exercise fields just referred to the French model toward the end of the 19th century and maintained its planning system until 1920's.

Reuse of Military Fields after the World War II

At the end of the Pacific War, 6 million Japanese, both military and civilian, were supposed to return back from abroad. 8 million people within Japan lost their home because of the air raids by the Americans. In addition, 0.5 million military personnel staying within Japan had to find home due to the dissolution of the Imperial Army and Navy. To ensure home and occupation was the most urgent issue for the new post-war government, which declared 3 months after the end of the war in 1945 "Emergency Exploitation Program" in order to provide home and food by cultivating unused land, improving the damaged lands and reclaiming the sea or lakes. This program expected the agricultural exploitation of 15,400 km², which corresponds to 4 % of the total surface of Japan, as well as the provision of 1 million housing units. Among the total surface of 2,668 km² which used to belong to the Army and the Navy, 1,858 km² (69.6 %) were to be used for this purpose. Exercise fields, which were situated in non-urban and less populated areas, had a priority for this change of land category.

Accordingly, the military exercise field of Biei, which counted 6,798 ha in 1945, was decided to be transferred to Hokkaido Prefecture. In Biei, another national land, the Imperial Estate (goryochi) for Forestry, was also transferred to Hokkaido with its surface of 2,716 ha. Adding other lands of 2716 ha, more than 10,000 ha were assigned for receiving the returnees for future exploitation.

The first immigrants of 56 households reached this area from Tokyo and Nagoya in August 1945, as these cities were fiercely devastated by the air raids. After that, returned military personnel, returnees from abroad and the affected by the air raid arrived one group by another at Biei, where they were assigned these unexploited lands by the municipality.

The statistics between 1945 and 1975 says that 755 households with some 2400 people immigrated to Biei and were given lands. Among them, 446 households (1,417 people) settled within the boundary of the former military exercise fields. After 30 years approximately 4,500 ha was cultivated, but 462 households (61 %) were obliged to leave from Biei.

Returnees from Karafuto (Sakhalin)

Before the end of the war, Karafuto (Sakhalin) was a northern territory of Japan, but the Soviet occupation in 1945 forced all the Japanese citizens living in Karafuto to be sent back to Japan. It is said that approximately 100,000 people escaped from Karafuto when Soviets started invasion in August 1945, but as soon as the whole island was conquered, the communication with Hokkaido was completely

Actuality of Former Barracks in Biei, Barrack (left), Stable (right)

shut down until the Allied came to conclude an agreement for post-war clean-up procedure. The number of these refugees during the Soviet invasion time is not exactly dictated. On the contrary, the returnees who were sent back to Japan systematically from the end of 1946 were well listed and followed up in detail. In 13 year until 1959, the total number of these returnees raised up to 311,452. Among them 279,356 (90 %) landed Hakodate, a port city on the south edge of Hokkaido. 35 % of them had neither relative nor acquaintance in Hokkaido, but they had to find place to be accommodated. Approximately 45,000 households or 170,000 people decided to stay within Hokkaido and scattered to various "emergency exploitation lands" all over Hokkaido. Those who reached Biei were exactly such returnees. In fact, in Biei, nearly 80 % of the immigrants were from Karafuto.

How did such new colonists settle within the local community? At first, they were received by the municipal office upon arrival, and then assigned the former military barracks, which were used as temporary asylum for receiving these returnees. Although these buildings belonged to the municipality, the rent was free. The immigrant divided the building by adding partitions, raising floors and putting entrance door, so as to transform the former barrack into a kind of a row house. The financial assistance by the local government for the purpose of encouraging the construction of their own houses helped them to move to their new home in the farm lands. By 1960 most of the colonists had left from these temporary housing units, but still some families kept the life in the former barrack even up to now. One barrack among 12 and one stable among 7 are still used as housing units and warehouse.

It should be noted that some barracks were relocated to the surrounding area where they were assembled and rebuilt as an elementary school. It was very common all over Japan to use former military facilities as school buildings because of the lack of facilities caused by the rapid growth of birth rate after the war. Such was the case in Biei. The peak of the population was in 1960 with the population of 21,743, which is 41 % higher than that of 1940. Since then the population curve has declined gradually down to 10,370 (2016).

Scenic Landscape for Agriculture

Today, Biei is internationally appreciated as a place of beautiful scenic landscape. It should be known that half of its agricultural lands used to belong to the Army as a military exercise field. It was exploited and cultivated only after the World War II. This means that the returnees from Karafuto have been the main players for creating such sce-

nic agricultural landscape. The difference from other cases in Japan is the fact that these new immigrant farmers possessed rather big pieces of land. The average surface in 1955 was 7.4 ha / household. In the course of time, small land owners tended to leave from Biei, so that the average surface of the agricultural field per household came to be increased in the later period up to 27.6 ha. To cover such wide agricultural fields, mechanization by way of tractors and other machines was introduced in an early period. The undulating topography, which used to be the characteristics of the military exercise field, has made the agricultural landscape much more dynamic and grandiose.

Besides this scenic landscape, other touristic resources were gradually developed in Biei since 1950's. Following the discovery of Shirogane Hot Spring in 1950 on the foot of Mount Tokachi, tourists from Asahikawa and other cities were encouraged to visit this area. Establishment of ski slope was another factor to attract them. Since early 1970's, the reputation of Biei as scenic spot has grown all over Japan, and even in the world, thanks to the campaign of professional photographers and journalists, who picked up the scenery of Biei for various media. After a quarter of century from the end of the war, the former military lands changed its nature completely due to the efforts by the immigrants, the majority of whom were returnees from Karafuto.

Conclusion

Hokkaido was specially exploited to strengthen the industry and the military force in the second half of the 19th century despite its harsh climate. The establishment of military exercise fields in this norther territory was symbolic as the area around Biei was endowed with ideal topographic conditions for the training of the soldiers, especially for cavalry. The fact that such vast lands were left "vacant" without densely grown forest until the end of the World War II has contributed a lot to create extensive agricultural fields for the returnees from Karafuto (Sakhalin). The chronological understanding of such landscape as continuous history since the end of the 19th century gives us different interpretation of the military lands in reference to the Japanese modern context. Both land use and facility planning aspects in the last 130 years are well interrelated, suggesting radical transformation of the given lands as well as those who utilized them. Comprehension of land from its hidden historical strata would help to add another socio-cultural meaning on the basis of its aesthetic value. The findings in the case of Biei are typically representing this approach.

Traces in the landscape

Hanne Langhoff MORTENSEN
Architect in Restoration, Stavanger, Norway

Abstract
Everything created by people can be dated in history. Time, and by extension history, is the horizon within which people act, think and live. Buildings are capable of outlasting their creators and their purpose and function can change from what was originally intended. This is the case with all of the bunkers left over from World War II. This paper examines the architectural characteristics and qualities of the bunkers and discusses methods for approaching the bunkers based on case studies.

Keywords: narrative, cultural heritage, value, intervention, bunker.

One can think of history as the transmission of tradition. This transmission is what the past hands down to future generations. Historia, in the word's original Greek meaning, includes both the event—what is explored and what is examined—and the narrative, or the story of the event. History as a transmission of the past comprises both what once took place and the contemporary narrative of past events. Literally, you can say that history as a narrative mediates itself, like the building as an architectural work conveys its own meaning.

"From a Point of View", Tungenes lighthouse, Viel Bjerkeset Andersen.

The inherent characteristic of all bunkers is that of a camouflaged shelter. Accordingly, the location and the bunkers have to be considered together as one. The landscape and the diminutive traces of the bunkers create an important interaction.

The typology of the bunkers should be considered through generations of standard series (Regelbau), beginning with series 100. Series 600, the last standard series was introduced in1942, just after the Directive on the Construction of The Atlantic Wall was issued. These new bunkers were designed to be manned coastal batteries. The German army, air force and navy all actively contributed to the design of the bunkers. In particular, the navy contributed to the design of the bunkers with knowledge obtained from shipbuilding.

The Atlantic Wall is defined by all

the individual bunkers, which together create a line. However, at the same time, each bunker is one point on the line. This relationship between the line and the point creates an interactive tension. The presence of the coast line and the line of the horizon creates a double exposure of the bunker line.

In addition, geographical and topographical conditions play a significant role in the composition of the bunkers. The bunkers and the landscape form interference. The outer appearance of the bunkers is apocalyptic, solid and closed in form, in contrast to the landscape that opens towards the horizon and empty space.

One of the architectural qualities of the bunker is their monolithic character, which is manifested through the homogeneous materiality of the concrete. The dense and massive dimensions of the material make the spaces seem as though they were carved out from one mass. The essence of the bunker lies in its texture of solidified time; a layer of history that cannot and will not be recreated. The rough, raw surfaces create scale, while the shuttering, uniformed wooden planks make a repeating pattern.

The modern, functionalistic architecture of the bunkers has inspired post-war architects such as in Le Corbusier's Unité d'habitation in Marseille, where he describes the material as béton brut, raw concrete. Reyner Banham named it "New Brutalism" . The influence of the bunkers on architectural history and their major impact on the idiom of architecture gives them value from a cultural heritage perspective.

The spacious and textural qualities of the bunkers, such as mass and the presence of the past, contribute significantly to the experience on the coast. They meld into the landscape, visitors discover them and they bring unique value to the coastal landscape.

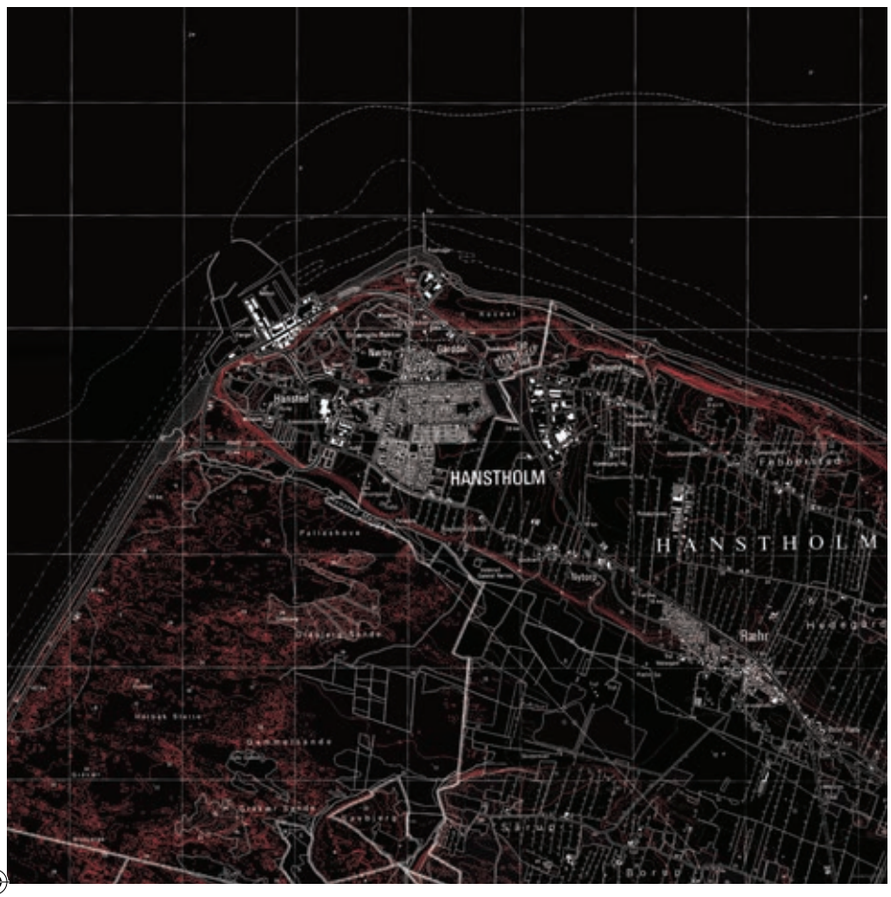
Below are descriptions of methods for approaching the bunkers. The question we must answer is: how to use them but at the same preserve their cultural value?

1."Freeze" the bunker in order to preserve its originally intended purpose, so that it can function as a museum for tourists. Today, many of the most interesting bunkers are in use as museums. However, it is both impossible and uninteresting to reuse all the 15,000 bunkers as museums.

2. The Atlantic Wall bunkers can be described in the words of Paul Virilio as "an aesthetics of disappearance", where the bunkers are objects of beauty that will slowly vanish. In The Lamp of Memory, Ruskin says: [… that it is again no question of expediency or feeling whether we shall preserve the buildings of past times or not. We have no right whatever to touch them. They are not ours. They belong partly to those who built them, and partly to all the generations of mankind who are to follow us.]

3. Intervention: Give the bunkers new life with a new function. Then it is important how the intervention of the bunker is carried out. It must be done in a manner that will respect and maintain the integrity of the bunker and the site.

I have used a diagram to outline the procedure used for an intervention of a bunker in general. Finding the



Hanstholm Fortress, was part of the Atlantic Wall, Denmark

bunker's new function is the first step and we must begin by documenting the historical background of the bunker, its typology and architecture, the material (reinforced concrete), its location in the landscape and the evolution of fortifications in general. We must gather background material from books, texts and photos, and determine the impact of the bunker on post-war architecture, the art scene etc. All of this is necessary in order to understand the essence of the historically important traces of the bunker, which must be respected when planning new a purpose. The next step is to perform a site analysis to identify and clarify the future-oriented potential of the site, i.e. what are the needs of the site? Finally, in order to create the framework for the bunker's new function, we must define and draw conclusions about the bunker's architecture, qualities, value in terms of cultural heritage, aesthetic value, floor plan and sections.

The bunker's new function is determined using a range of professional tools. By understanding the cultural-historical context through documentation. This creates a platform of values for further work and preserves important information for future generations. The site analysis serves to clarify the needs of the local area: What functions can create value in the local area? We must understand the resources and qualities of the site and then conclude be determining how to further develop these factors in line with historical qualities. The bunker's architecture is a defined framework with a given functionality in terms of size, space and aesthetic qualities. The goal must be to change as little as possible in order to preserve the cultural and historical values. Consequently, the planned function must accommodate the bunker's architecture.

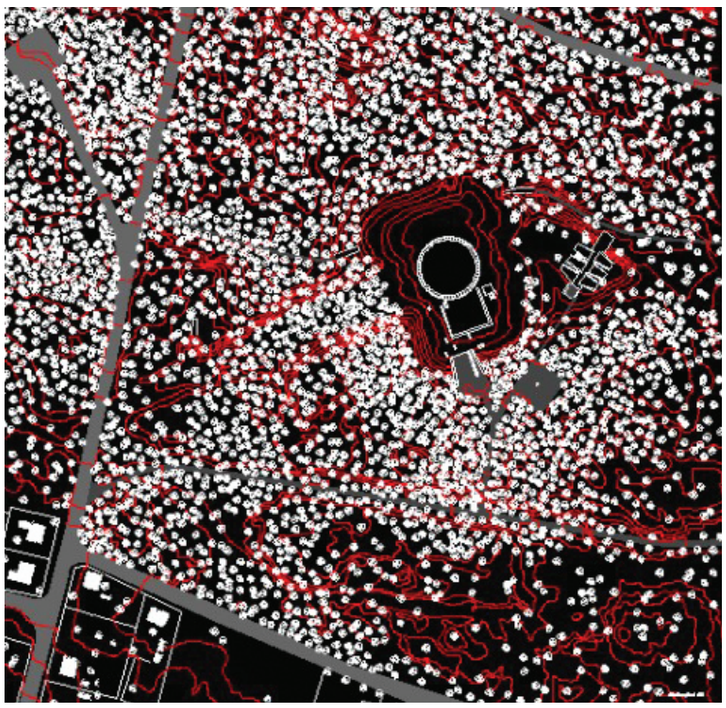
Examples of bunker interventions:

1. Case study: Intervention of a bunker that was converted into a diving school. Northern Europe's largest fortifications from World War II are located in Hanstholm, Denmark and comprises approximately 500 bunkers. In Hanstholm fortress, there are four 38 cm artillery bunkers, with a floor plan covering about 3000 m2. Today, one of them is a museum bunker, with parts of it restored plus a second bunker that is accessible to

the public. The other two bunkers are not in use they have been filled with sand to prevent people from exploring them. This entails an opportunity for an intervention of one of the 38 cm artillery bunkers that currently has no function, in order to save it from further destruction and thereby preserve the cultural heritage narration in another way than the museum bunkers do. The new function is determined based on several factors, including the location near the sea and ease of access from the nearby tourist town of Hirtshals.

The bunker consists of three main parts: the ammunition room, the cannon well and the crew and engineering department. The project will respect the bunker's main structure. The main architectural concept is to cover the cannon well with a cover formed as a truncated glass cone, where the surface of the roof is cut on an incline. The form of the cover is affected by the sun, so that the inclined roof surface faces the sun and shields it. At the same time it opens towards the sea, creating a visual connection to the element that is the goal of the divers. The part that faces the south is covered with adjustable slats, which act as shutters and create a stable indoor climate. The slats cause the cover to change character depending on where the sun is in the sky. This is reflected the time rhythm of the building. There are solar cells on the surface of the roof, which contribute to warming the pool and the bunker.

A new layer is added inside the bunker so that it can function as a diving school. The bunker is considered a skeleton structure, as it has been stripped of everything. To make it usable again, pre-existing layers must be restored in the bunker, but it is easy to see what is authentic and what is new. While the new additions to the bunker respect its intrinsic value. Similar to the method employed by Carlo Scarpa on Castelveccio.

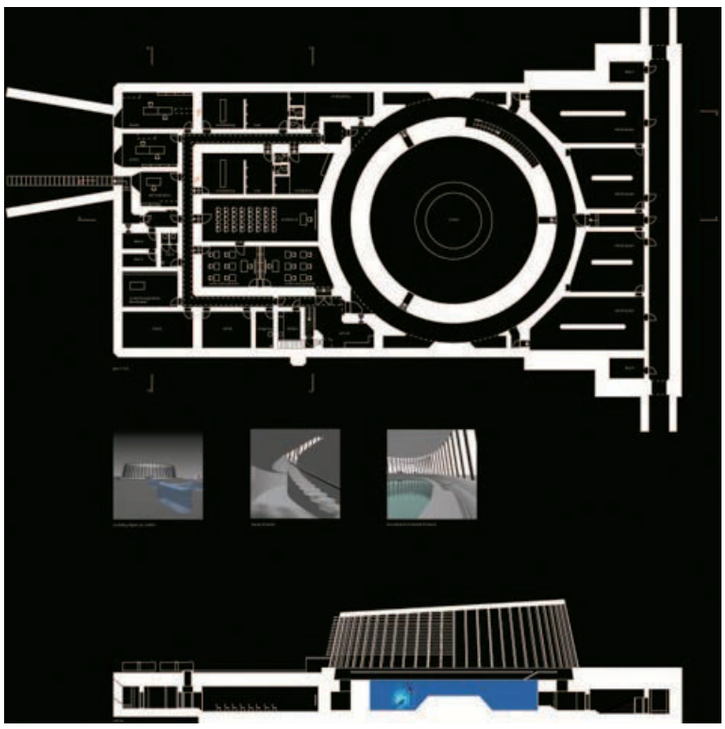


Plan view of one of the 38 cm guns's emplacement

The new layer added to the bunker is carried out with respect for its original styling and stories. As little as possible is changed in terms of its tactile surfaces and the cultural and historical traces in the landscape. The main focus of the project was the conscious preservation of the cultural-historical narratives and keeping the architectural qualities intact.

2. Case study: The "From a Point of View" bunker, by Viel Bjerkeset Andersen, at Tungenes Lighthouse for the European Capital of Culture, Stavanger 2008. She transformed a small bunker into a private, quiet space for contemplation.

"From a Point of View" shows how we can disseminate the bunker's cul-



Intervention of a 38 cm artillery bunker converted into a diving school

tural heritage and architectural values through a work of art. The bunker's location beside the lighthouse is already an established cultural landmark that attracts visitors. This proves that through intervention and reuse of the bunker and the landscape where it is situated, both are activated and thereby given a new life in a respectful and meaningful way for the cultural heritage site.

Conclusion: thesis

Adding a new function to a bunker can harmonise with its cultural-historical value and result in new life and new content to not only the building but also its surroundings, thereby increasing its value as a cultural heritage site because the building is saved. This is supported by the fact that it covers the criteria of the EU Council resolution on architectural quality in urban and rural environments, which welcomes "the European Spatial Development Perspective (ESDP), which evokes the concept of 'creative management of the architectural heritage', including contemporary architecture, in an approach to preserving the cultural and architectural heritage" and expresses attachment to "the fact that good quality architecture, by improving the living context and the relationship between citizens and their environment, whether rural or urban, can contribute effectively towards social cohesion and job creation, the promotion of cultural tourism and regional economic development."

Today, the bunkers stand as an abandoned, unused backdrop of ruins in beautiful countryside, ready to be used for a new function, like castles that once served a purpose as strong defences have now become museums. A masterful example of one such intervention is Castelvecchio in Verona, Italy.

When decaying bunkers are activated through a new function, the building and its surroundings are given new life, ensuring its survival for future generations.

Bibliography

Anthonisen, Bent Bågøe. 1985. Hanstholm-Fæstningen. Bollerup Boghandels Forlag, Ringkøbing,

Christensen, Per Thorning. II. 1998. Verdenskrigs Kulturspor. Miljø- og energiministeriet, Skov- og Naturstyrelsen.

Council Resolution of 12.02.2001 on architectural quality in urban and rural environments (2001/C 73/04)

Farmer, John. 1987. Battered bunkers. Architectural Review, 181, January, 60-65.

Kunstkritikk, Trond Borgen. 2008. On the Edge.

Rolf, Rudi. Atlantic Wall Typology. Fortress Books.

Rosenberg, John D. 1998. The genius of John Ruskin selections from his writhings. University of Virginia Press.

Virilio, Paul. 1994. Bunker Archeology. New York: Princeton Architectural Press.

German Underground Defensive Positions at Southwest France

José Manuel PAÑEDA RUIZ
Engineer NCO, MA in History from UNED, Spain

Abstract

On December 14th 1941, Adolf Hitler mentioned, for the first, time the term Atlantikwall, which was supposed to defend the European coast against the threat of invasion. This enormous constructive effort-not only in materials but also in personnel-was realized by means of a series of standard structures, which were applying as a general rule to almost the totality of the locations. The exception to the above mentioned norm was reflected in those non-standard designs, some of them being unique to one emplacement.

This paper focuses on the last ones, more precisely on one unique design. Into this category fall the works which are going to be studied later; all of them have been constructed in what in the German nomenclature is known as Kaverne, cave, or Stollen, tunnels, both of them proper designations. So it was not surprising that when German engineers had to strengthen Biarritz and Saint-Jean-de-Luz, they spent great efforts in both locations with elaborated underground designs, with the missions of protecting command post, vital for the operations of the coastal batteries, or as defensive positions. There were many complexes under the cities, facing the coast, some housing artillery, machine guns or even flamethrowers, while others have numerous installations such as power plant, caserns, etc.

Other interesting issue of these fortifications is the perfect use of camouflage: because of the building into the cliff face, most of the batteries were almost impossible to identify from the sea.

In this paper it is shown a rare typology, among the great numbers of Atlantic Wall constructions; underground constructions in southwest France. This singularity is the one that turns out doubly important; firstly, in order to raise awareness, and secondly, to preserve it as a unique Heritage.

Key words: Atlantic Wall, underground construction, artillery casemate, southwest France.

Introduction

On December 14th, 1941, Adolf Hitler mentioned, for first time the term Atlantikwall which was intended to defend the European coast against a possible invasion from the West[1]. On March 23th, the following year, in the Führer Directive Number 40,

1 BAMA RW 4/v. 563 Fol. 23-27.

he officially called for the creation of the Atlantic Wall. Just a month earlier, Albert Speer succeeded Fritzt Todt, who died in a mysterious plane crash, as head of the organization that kept its name, the Organization Todt (OT). This conglomerate of administrative elements, private companies, technical experts and force labour received the mission to build more than 15,000 fortifications for the summer of 1943, which would be defended by 300,000 men[2]. The Allied invasion in June inevitably brought the construction to a halt, when the objective was almost reach, with a slightly amount above eleven thousand fortifications.[3]

This huge constructive-effort not only in material but also in personnel-was made by means of a series of standard procedures, which were applied as a general rule to almost all the constructions. The exception to this standard is reflected in those structures that were integrated into the landscape in a specific location, which is performed then a unique model and out of the rigid constructive chain.

This paper focuses on the last ones for several reasons. The first one is that to know any fortified system it should be advisable to identify its defenses, its typology, which function played each of them, the evolution, as well as the construction techniques. However, as it will be seen later, a deep study in the typology of the Atlantic Wall defences is completely out of the scope of this paper. Although the German fortification engineers intended to create a series of standard models to increase the speed and efficiency in the construction of defenses, this did not happen. With more than 700 standard designs and many more models based on local adaptations, it seems that the renowned efficiency of the German engineering was being overcome by a rigid and centralized bureaucracy. Another reason are the increasing touristic interest, both for historical reasons and for what is known with the term of bunker archaeology in the rest of Europe, it has been created around this fortified line. Knowing that some remarkable exceptions like the Normandy area continues being ignored by most of the population, and that it has been put in value and made known to the great public by the productions of the seventh art, mainly American films.[4]

In addition to the previous introduction, it should not be forgotten that they are remains of threatened historic heritage. Although built to resist heavily attacks, the step of the time, the abandonment and especially the demographic expansion are finishing with the constructions of the Atlantic Wall. It is easy to visit the beaches looking for the remains of those fortifications, but they are slowly succumbing to the industrialization and oblivion. Therefore, it is necessary to give awareness to those works while we still have time.

2 Führerrede zum Ausbau des Atlantik-Wallesam, Op. Abt. (IIa), 3 de octubre de 1942: Bundesarchiv Abteilung MilitärArchiv (BAMA) RH 2/v. 551.

3 Oberkommando der Wehrmacht. General der Pioniere und Festungen. Abt. L (III) Az. 39 (techn).

4 It can be mentioned as more important movies where this defences are shown, The Longest Day, filmed in 1962, in some actual locations, as the Longues battery or Pointe du Hoc, however the reconstruction and localization of the defences although quite approximate to the reality, it suffers from historical errors. Another example where the fiction tries to recreate this work, it is Saving Private Ryan, 1998. In this last example, the localization of the landing beaches is in Ireland, where they showed defences very far to those in fact found the troops that disembarked in the Omaha beach.

Kaverne tunnel in Biarritz on Chabre d'Amour beach

Underground defensives positions

The different positions that are being described next were deployed by the different sectors included in the First Army. This occupied a coastal area of 817 kilometres, being under the command of General Kurt von der Chevallerie whose headquarters was established in Bordeaux[5].

It was of great value for the Germans since its defense protected the mouth of the Garonne's estuary and, with it, the access to the great port of Bordeaux; maybe the occupation of German troops until the last days of the war in the sector shows the importance that the southwest French coast had for them.

Some of the reasons could be the presence of the ports of Bordeaux, Bayonne and St. Jean de Luz, of great strategic interest. The first one, because housed a submarine and gun boat base; the second, although it was not accessible to great tonnage ships, it was well equipped and easily defensible. Also, in Bayonne, the aerodrome of Parme, which was created in 1922, allowed the establishment of an air base. The bay of St. Jean de Luz, on the other hand, was well protected; it constituted a wide and sure roadstead. Another of the facts that could influence was the maintenance of the commercial relationships with Spain, products so varied as fruits or iron; in fact, this last left the port of Bilbao, arriving in big quantities in the occupied France. As well as to maintain important communication arteries or electric lines of great strategic importance, without forgetting the option of an Allied landing operation in the gulf of Biscay. All these factors can help understand the permanency of German troops in the sector, as it was previously mentioned.

Biarritz

In the heart of Biarritz city, famous in other times as being a rest centre of the French imperial family, due to their luxurious spas and palaces, the Germans installed several defensive positions, to protect their magnificent beaches against the threat of an enemy landing. Most of the fortifications fell into some standardized models, which simplified the build-up of elements and their installation, as well as the drafts of the blueprints and the calculations of the costs of the necessary materials. The landscape, which played an essential role in the German defensive program, allowed at the Einsatzgruppen execute special projects at their own initiative, Sonderzeichen, which only remitted to the OT for their approval.

Inside this classification are the works we will deal next, all of them have been built in what is known as Kaverne, cave, or Stollen, tunnels, in

5 (Pañeda, 2009).

The kaverne tunnels in Biarrits have dozen of rooms excavated in limestone rock

the German nomenclature, both denominations are correct.

The first one is located on the northern side of Biarritz, on Chambre d'Amour beach. Coded Ba 34 is a position composed of two gun casemates for 76.2 mm guns and a machine gun position equipped with an armoured protection plate. The complex is completed with dozen rooms dedicated to both staff and logistics[6].

This resistance nest is currently on private hands, so access is not available.

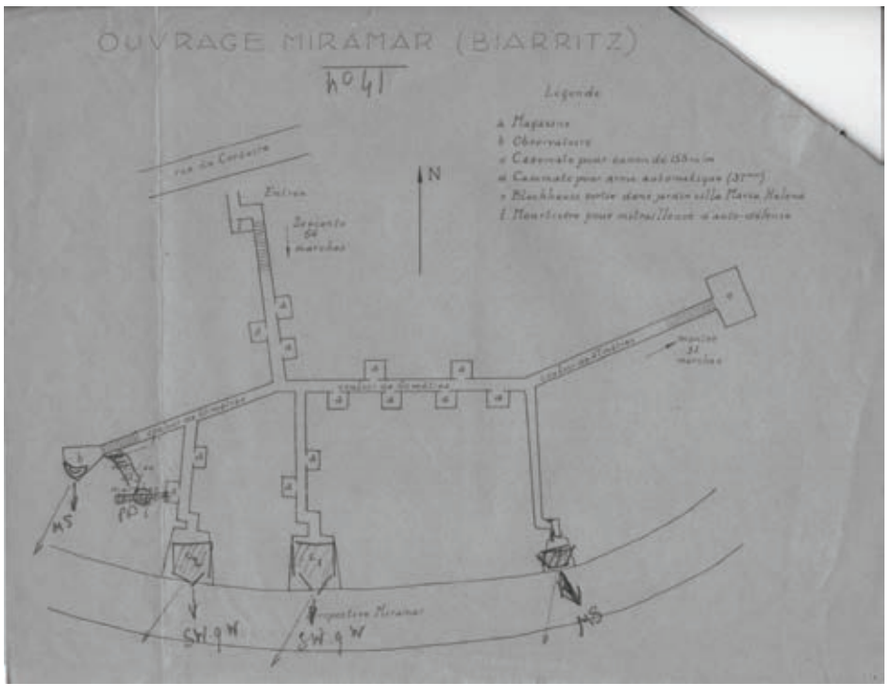
Continuing the tour around the city, we arrive at the area of the watchtower where we have two important points: Ba 39 and Ba 40. For the construction of both, the German engineers had to carry out important excavations, since virtually all their facilities were underground. Ba 40 in the east, was made through a tunnel in the limestone rock of the city were installed various elements of observation and command of HKAR 1287[7]. In the west of the observation post, the Ba 39 complex was built to house the command post of the navy coast artillery in charge of the defence of that sector. A command post type M152 was built here, accessible through a gallery in the tunnel that connected the lighthouse with the city. Both positions were endowed with a large number of underground constructions with the mission of protecting the vital command organs of the German units[8].

In Miramar, the occupiers performed another important underground work in March 1943, the last of its kind in Biarritz. With code Ba 41, it is composed of two artillery casemates for two Russian captured mountain guns and another position for a machine gun. As it is usual in this type of constructions, there is an important display inside the galleries which presents a double

6 (Sallaberry, 1988).

7 Heeres Küsten Artillerie Regiment **n° 1287**.

8 (Chazettte, 2008).



The Kaverne of Miramar built in 1943, Biarritz

entrance to this complex for security reasons.

Saint Jean de Luz

The small town of St. Jean de Luz was also densely fortified by German troops. As mentioned earlier, the harbour of that town, anchored to the bottom of its bay and protected by two dikes, occupied a strategic place for its port infrastructures allowing the Kriegsmarine to repair their warships that sailed by the Bay of Biscay. To defend the port, a battery was built into the cliff face with access via tunnels bored through the rock. On the Pointe de Sainte Barbe, coded Ba 51, it is one of the most impressive remains of its type. Based on two artillery casemates for 83.5 mm guns, which protected the right flank of the access to the port and another casemate for machine gun, which defended the beach, the latter having an armoured plate for protection of this weapon. The tunnel system connected these combat stations with a series of rooms whose use could have been as ammunition depots or warehouses; in addition the facility had its engine room and ventilation.

Each one of the artillery casemates had small ammunition storerooms; once inside the complex, the construction of the same goes in L shape joining without solution of continuity the two gun casemates with the machine gun position. Starting in the casemate I, the outermost one, the width of the corridor remains at 1.4 metres, with a more or less oval profile, with its walls protected by concrete. This narrow aisle ends in a small room, which serves as a link to the machine gun emplacement[9]. Here, as previously mentioned the casemate had an armoured plate, which still remains; however the machine gun mounting has disappeared.

Conclusions

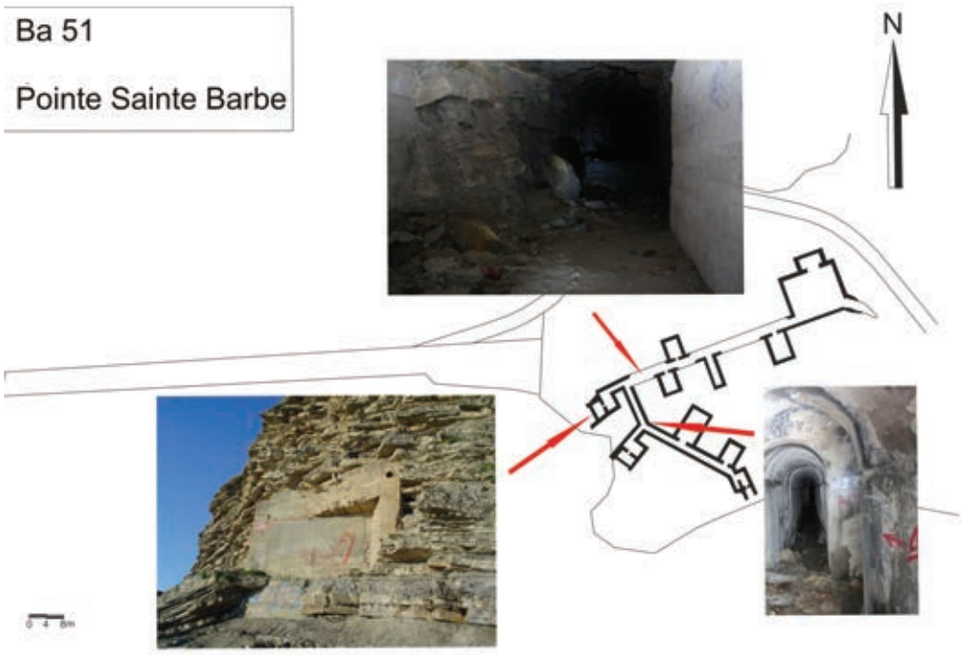
In this paper we have briefly summarized those underground defensive complexes belonging to the Atlantic Wall built in the southernmost area of this defensive line.

As indicated above, the bunker designs were standardized in most cases to simplify the logistic calculations of both materials and time used in their construction. Although in this typology German engineers had reinforced concrete in different thicknesses as early as 1939, they began to study the possibility of reducing the thickness of this material in those rocky sites favorable to the construction of defences[10].

All the positions studied here were all characterized by a high degree of protection both for the weapons,

9 (Lippmann, 1993).

10 Fels statt Eisenbeton, 31 de mayo de 1939: Oberkommando des Heeres 34 f 12 (B) AHA/In Fest III.



Artillery batteri build on the cliff at Pointe de Sainte Barbe

equipment and personnel housed inside, since in addition to the concrete walls with which they were built, they were located under several metres of stone and earth, which increased their protection.

Another common feature is the degree of integration with the surrounding terrain, logically being all underground were practically immune to aerial observation. In the artillery positions of Biarritz and St. Jean de Luz, natural camouflage, together with a site carefully chosen to allow the flanking fire, also ensured that its identification from enemy ships was just difficult.

Bibliography

Chazette, A. 2008. Atlantikwall: Mythe ou Réalité. Éditions Histoire et Fortifications, France.

Lippmann, H. 1993. Die Stützpunkte Ba50 und Ba51 des AW. IBA Informationen 21.

Pañeda Ruiz, J.M. 2009. El Muro Atlántico en Aquitania. Baterías y posiciones defensivas. AF Editores, Spain.

Sallaberry, F. 1988. Quand Hitler bêtonnait la cotê Basque. Éditions Harriet, France.

Saunders, A. 2001. Hitler's Atlantic Wall. Sutton Publishing, London.

Remains of the casemate for 83,5 mm guns at Pointe de Sainte Barbe

Protecting the Remains of War and Hostility - Recent Discovery of an Important Past

Anne-Karine SANDMO
Archaeologist, Head of Department at Troms County, Norway

Recent discovery of an important past

The visible remains of World War II and the Cold War are bunkers, prison camps, gun positions and observation posts spread across the landscape. These physical traces were for many years of no importance to the cultural heritage management and to local communities. The physical remains posed unpleasant memories of five hard and sad years of the country's history, and was something most people wanted to remove. So why have public authorities found it important to protect the traces after World War II and the Cold War here in Troms? I would like to introduce a personal approach to this topic.

Meløyvaer fort, Harstad

During the Cold War, the Norwegian Defense found reuse of many of the German facilities, and new installations were surrounded by secrecy and restrictions on public traffic. It was only when the Armed Forces abandoned the facilities around 2010 that the cultural heritage administration had to decide if these installations had any cultural and historical value. In Troms County Council, we established a project in 2011 to look into this matter. For us in the administration this turned into an awakening that changed our attitudes and gave us new knowledge. Even though we had realized that Northern Norway had great military strategic significance, it was not until almost all the traces had been demolished that we began to understand what had happened here in the north during World War II and the Cold War.

Norway is a long stretched country. I grew up near the southernmost point of Norway, in a small town where everyone knew each other. There we knew who had been on the wrong side during the war (WWII) and who had been fighting for the resistance movement. In the library, we bor-

rowed books about the war heroes who fought the Nazis. We knew their names and knew which hardships they had been through. Our heroes were all from our part of Norway, the south, some had even been operating in my hometown.

What had happened in the rest of Norway during World War II, we learned little or nothing about in my school. More than ¾ of the country's war story was left out in the history classes. It was as if the war had only taken place in the far south of the country.

When I was 25, I moved to Tromsø, northern Norway, and eventually got work in Troms county municipality. My work led me to work in all the county's municipalities, and also across the border with neighboring communities. I could not help seeing the many military facilities spread across the landscape. Some were left in decay, while others were surrounded by high fences and in full military use. In many places in North Troms the military presence would not be so visible, only small metal pipes piercing the ground - apparently air ducts to something below our feet. At the beginning, I did not think so much about all this. From my upbringing, I had an attitude that everything that reminded us of the war should be removed. Then I began to listen to those who live here, especially those who had experienced the war in the north.

Just outside Tromsø are the remains of the Tirpitz battleship, which was sunk in 1944. The locals remembered how the children had hidden themselves in basements and under barns when 32 British bombers came out of the Balsfjord on the morning of November 12th. They remembered the explosions and tremors of the 29 tallboy bombs that were dropped over the little bay at Håkøya where Tirpitz lay. More horrifying, they remembered the screams and hammering by the crew of Tirpitz who were caught in the hull after the ship had gone. 971 sailors lost their lives. Those who lived in the area never forgot that they could not save them.

Adolf-gun, with a barrel diameter of 40,6 cm, Trondenes Fort, Harstad

Then I attended a gathering with colleagues from all over the country, where a colleague who originally came from Finnmark told a little story. As a child, she and her family had to leave their home and flee south when the German forces pulled out of Finnmark and North Troms setting fire to their farm and the village. As an adult, she had only one single physical memory of the family history in Finnmark - a small metal box. The box, which contained important papers and valuables, had been dug down in the ground before they had to flee. They

Remains of a German barracks, Trondenes, Harstad

found the box when they returned, but then someone had dug it up and it was empty. This empty box was all that was all that was left to document her family's history. And I thought about what I have - a 19th-century house built by my great-grandfather, full of objects and papers telling me about my family history generations back in time.

These stories opened my eyes. I started listening to other stories and looking at the many military installations in a new way - in the north there had to have been a huge military presence during World War II. People throughout Northern Troms and Finnmark were expelled from their homes. What happens to a population who experiences this?

What happened was the Cold War. Not long after the German occupation was over and people in North Troms had started rebuilding their homes, the Norway joined NATO and a new defense buildup started. The armed forces upgraded many of the ex-German facilities as well as building up their own. In particular, they were visible in the small town of Storfjord, where the occupying power had also been very active last part of the war. Then the Cold War passed, and from the beginning of this century, the Armed Forces were undergoing a major downturn. This also resulted in the abandonment and demolition of the installations.

One day in 2011, I received a telephone from the mayor of Storfjord municipality. The Armed Forces were in the process of removing all the traces of military activity in his municipality - what could cultural heritage management do to stop it?

The mayor of Storfjord had understood something that cultural heritage management should have understood a long time ago: An occupant or the country's own defense forces for that matter moves in in such magnitude that the population's living conditions and history are altered forever. Military facilities occupy land, restrict civilian use and change the impression of the village, they are

surrounded with secrecy and restrictions, and people easily get the feeling that they are not free to move on their own property and live their own lives. But when they go out of use, they are unique sources of the story of how this village belongs in a national and international context, about how individuals' lives are influenced by international politics and events far beyond the country's borders. And another important acknowledgment – it is only when you stand in this landscape and see how the facilities lie in the terrain that you understand the massive presence of military, both during the war and peace, and the military strategic thinking behind. And not least - what hardships the many thousand prisoners of war underwent in this barren land through the dark Arctic winter.

This was the beginning of Troms County Council's commitment to gain an overview of WWII and Cold War remnants in the county and to preserve a selection of these as sources of a very important part of Norway's history. In 2015, Norway celebrated its 70th anniversary for the liberation, but in 2014, we actually celebrated both the 200th anniversary of our constitution and the liberation of Troms and Finnmark. Finally, the stories came from the evacuation of Finnmark and North Troms, and of tens of thousands of prisoners of war and the slave workers who were living under inhumane conditions in the country. The Riksantikvaren has conserved parts of the state-of-the-art cold war facility in the county - Meløyvær Fortress. Troms County Council agreed with the national government about the conservation of an area in the mountains of northern Troms and The Riksantikvaren were in the process of conserving several plants in Storfjord– until the Armed Forces recently decided to reuse the area for defense. A new cold war seems to be on.

Conflict Landscape, Storfjord

Many of the traces of World War II and the Cold War have been removed in the county. But around the municipalities, there is growing interest in taking care of their own history. Northern Norway's military strategic importance is no longer a secret. But the most important thing is that the people of the communities in the north have made visible their place in the international game through World War II and the Cold War.

Beyond the Bunker: Challenges and Confrontations in Cold War Heritage

Summary

John SCHOFIELD
Archaeologist, Head of Department in Archaeology, University of York

John Schofield is a well-known member of the ICOMOS scientific committee on Fortifications and Military Heritage, ICOFORT, and he is responsible for its Charter on Fortifications. Professor Schofield works at the University of York where he is Head of Department in Archaeology, Director of the Cultural Heritage Management MA programme, and Director of the Centre for Applied Heritage Studies. He was previously an archaeologist with English Heritage, where among other tasks he was Head of Military Programmes. He also teaches at several universities in Britain and Finland.

US National Security Agency listening station on the top of Teufelsberg, a man-made hill, Berlin, 1971

Beyond the Bunker, Challenges and Confrontations in Cold War Heritage

Schofield started by defining some conceptions which are common to our science:

Archaeology is a way of looking at the past; a suite of methods and ideas developed over some 250 years.

Heritage is the way we think about the past and manage cultural resources. Heritage is a process, not a thing.

Historic environment is the past all around us. There are no gaps: buildings, archaeological remains, the changing landscape - ancient and modern.

Schofield maintained that archaeological fieldwork can create an arena for dialogue. In specific application, archaeological fieldwork can interface with residents in impacted spaces and include memories of their Cold War experiences. These stories in turn can add a human dimension and contribute to changing and completing the history of the affected country during this period.

Schofield also raised the question:

Heritage without Protection: Nuclear bunker, York, England

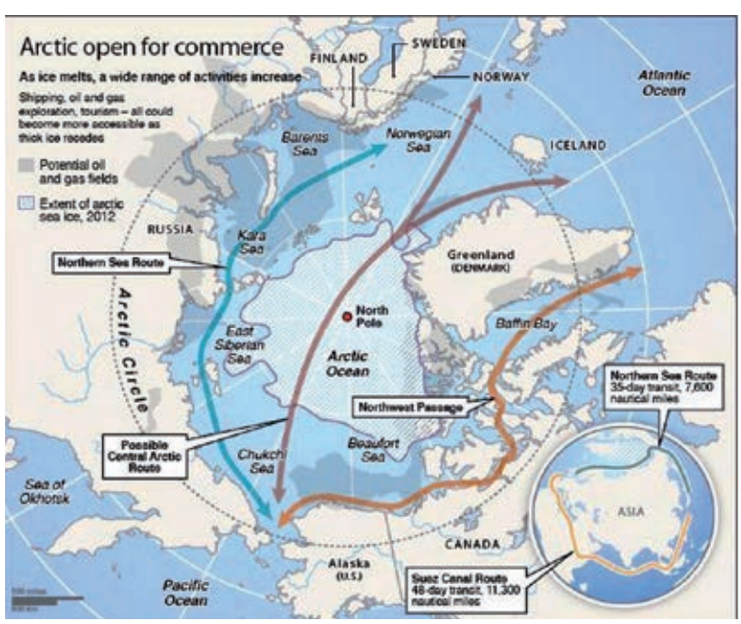
Should we attribute heritage values to Cold War sites now, rather than in 30 year's time? Schofield suggested that in the future, different points of view and perspectives would probably be able to supply more complete and diverse sources. To illustrate this point, Schofield showed pictures of three military sites in Berlin (Germany), Nevada (USA) and York (UK), none of which have legal protection as heritage sites. His conclusion was that cultural heritage is more about the present and the future than about the past. Cultural heritage is just as much about people as about places; and not all cultural heritage sites need legal protection to survive.

Northern Security and Russia after the Cold War
Summary

Kristina SPOHR
Professor of International History, London School of Economics and Political Science

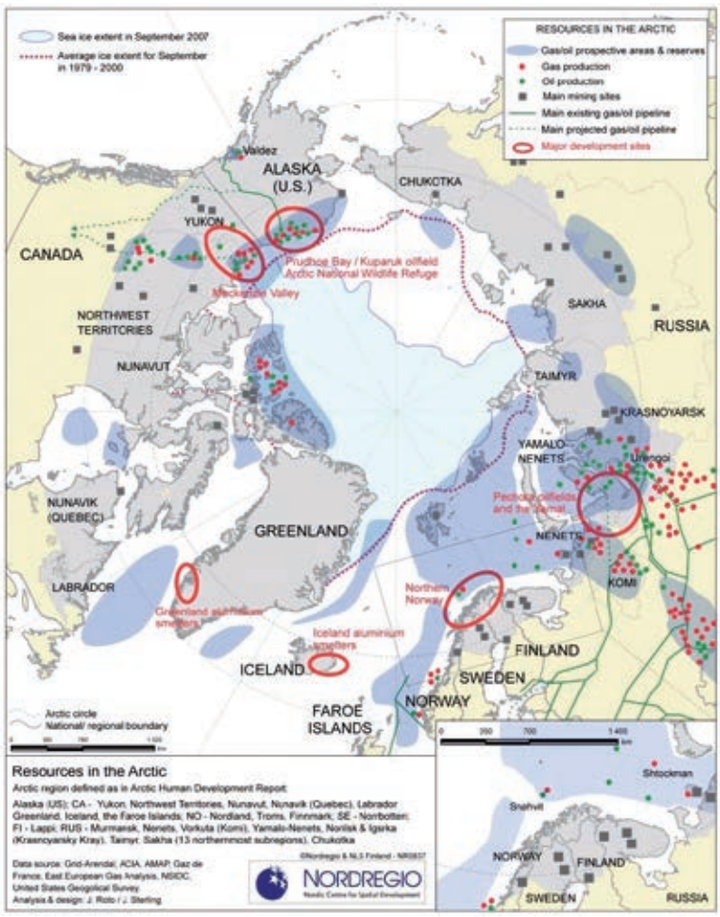
Kristina Spohr is an Associate Professor at the London School of Economics Department of International History. Professor Spohr's areas of scholarship include Germany's international history after 1945 and the Cold War, and she has written extensively in this field. She is the author of several books and articles, including *The Global Chancellor: Helmut Schmidt and the Reshaping of the International Order (2016),* and *Germany and the Baltic Question After the Cold War (2004).* In 2016 she edited *Transcending the Cold War* together with David Reynolds. In the same year, she also won the London School of Economics' Excellence in Education Award, a distinction that recognizes her for her contributions in teaching and departmental leadership.

As ice melts, new routes will be available in the Arctic Ocean



Northern Security and Russia after the Cold War

Spohr's presentation focused on the Arctic and mapping the global balance of power. Focusing on the arctic space after the ice melts, Spohr identified the possibility for many new activities such as seagoing transport, trade and tourism, as well as the exploitation of natural resources such as fish, oil, gas and minerals, etc. These types of activities will be encouraged by economic motives, but beyond economic opportunity, Russia has started reopening and rehabilitating older military bases along the coast, and they have begun building new ones. One can already begin to predict disagreements about sovereignty over territories and control of trade routes in the Artic region. Today, Russia has a fleet of 30 ice-breakers, while Norway has one, Sweden seven, Denmark four, and Canada six. Thus, Spohr gloomily concluded that it is obvious that Russia has prepared itself to take control over future sea routes in the Arctic.



Resources in the Arctic. From: Nordregio

Exploring the unknown – Estonian military heritage of 20th century

Official stand, problems and prospects

Robert TREUFELDT
Art Historian, Freelance Construction and Conservation Consultant, Estonia

Military flour storage for barracks of Imperial Russian infantry and artillery. 1885. City of Tallinn. Photo: Robert Treufeldt, 2017

Abstract

In 1988, the first military structure of the 20th century was taken under protection in Estonia. In 2006, a programme was commenced in respect of the architecture of value from the 20th century. In 2006–2014, no new military structures were designated as objects of preservation.

By 2014, approx 3000 structures were studied, but only few of them were military structures. In 2013, different programmes of giving more recognition to military structures of the 20th century were launched (in view of ca 30 prospective monuments). The final results would be clear by 2018.

Key words: Estonia, 19th century, 20th century, evaluation of military structures, evaluation of prospective officially listed heritage

Concrete base with anchor bolts for 12-inch gun of Imperial Russian coastal battery. 1916. Sääre, Peninsula of Sõrve, Island of Saaremaa, Southwest Estonia. Photo: Kristel Valk, 2006

20th century heritage in Estonia is estimated to cover the objects erected in the period from 1871 to 1991 as it embraces the social, technical and military turn that took place in these years. Railway reached Estonia and the newly adopted legislation concerning civil rights gave the people the freedom to move in the 1860s. The population migrated to the factories established in urban areas and the centuries' long rural way of living broke down rapidly.

Rebuilding the Fort of Kalarand in Tallinn is considered to mark the turn in military structures. The main build-

Barracks for Estonian Infantry near the Headquarter of 1st Division. 1927. City of Rakvere, Northeast Estonia. Photo: Robert Treueldt, 2009

Observation bunker in the Estonian artillery proving ground. 1939. Kaber-neeme, Jõelähtme municipality, North Estonia. Photo: Robert Treufeldt, 2010

ings of the fort, unique in Estonian military architecture were erected during 1820–1840 following the polygonal system. In 1869 the artillery power of the fort were dropped and the main buildings were reconstructed as barracks.

The period from 1871 to 1991 is divided into Russian (1871–1918), German I (1915–1918), Estonian Republic (1918–1940), Soviet I (1918–1919), Soviet II (1939–1941), Estonian resistance (1940–1991), German II (1941–1944) and Soviet III (1944–1991) periods. The present period covering the restored Estonian Republic (since 1991) is not yet a research object.

For the first time in Estonia, a military structure of the 20th century was listed already during the Soviet occupation in 1988, a seaplane hangar of Imperial Russian navy designed and erected by Danish specialists 1916–1918. It was one of the first large concrete thin shell structures in the world and still remains a showpiece of the Estonian built heritage of global significance. Today, a department of the Estonian Maritime Museum is located there.

The majority of the 20th century Estonian military heritage was listed during the 1990s. The new sites were not studied thoroughly nor was their complexity assessed. Therefore the listed sites from the 1990s differ regionally, typologically as well as chronologically. They are mainly divided between 6 regions: North-East, Tartu and its

Built as a lighthouse, but during the wartime turned into the central fire control tower of Estonian coastal artillery. 1939. Lubja, Viimsi municipality, North Estonia. Photo: Robert Treufeldt, 2013

surroundings, Tallinn and its surroundings, North-West, islands of Hiiumaa and Saaremaa in the West.

Burial grounds, battlefields and memorials are scattered rather evenly across Estonia. Military monuments with more direct warfare functions are located almost exclusively in Tallinn and Hiiumaa regions; in other regions there are in maximum 5 such sites.

Twin 180-mm gun tower in the Soviet coastal battery guarding the Gulf of Finland. Island of Osmussaar, North-west Estonia. Built 1940, finally armed 1941. Photo: Robert Treufeldt, 2013

This difference is explained due to the different persons involved in the process – both these who carried out the inventory of the heritage and who formalised the heritage into listed monuments.

The majority of monuments are either Russian or Soviet heritage. It was not only numerous, but also the awareness of such objects during the Soviet occupations was widespread as it did not contain that much grudging elements to the Soviet regime than the heritage from the Estonian Republic or German occupations.

A lot of military heritage has been destroyed after Estonia restored its independence, mainly from the Soviet 3rd occupation period. The main reasons are ignorance and disregard, although the Soviet occupations are considered the biggest atrocities in 20th century Estonia. The main reasons for destruction are ignorance concerning the nature of these structures but also shortcomings in the bureaucracy. Destroying such structure is not a deliberate act, but demolishing is often seen as improving the environment through liquidating ruins.

The destroyed heritage includes technically and militarily remarkable objects, such as Kikepera long-range radar base, Pääsküla air defence command centre (alternate centre for the whole North-Western part of the Soviet Union that included up to 5-storied underground bunkers) and Tinu underground medium-range ballistic missile base.

Tartu long-range bombers airbase and large-calibre railway gun positions on the Pakri peninsula are currently under the threat of destruction. All these structures were/are unique in

Underground bunker of Estonian anti-Soviet resistance, hidden in the forest. Built 1944, destroyed in the battle 1945, restored 2010, set in fire 2016, now under reconstruction. Ennuksemäe, Raas-silla Village, Viljandi municipality, South Estonia. Photo: Bruno Jänes, 2011

Estonia, but in terms of the former Soviet Union they represent more common solutions.

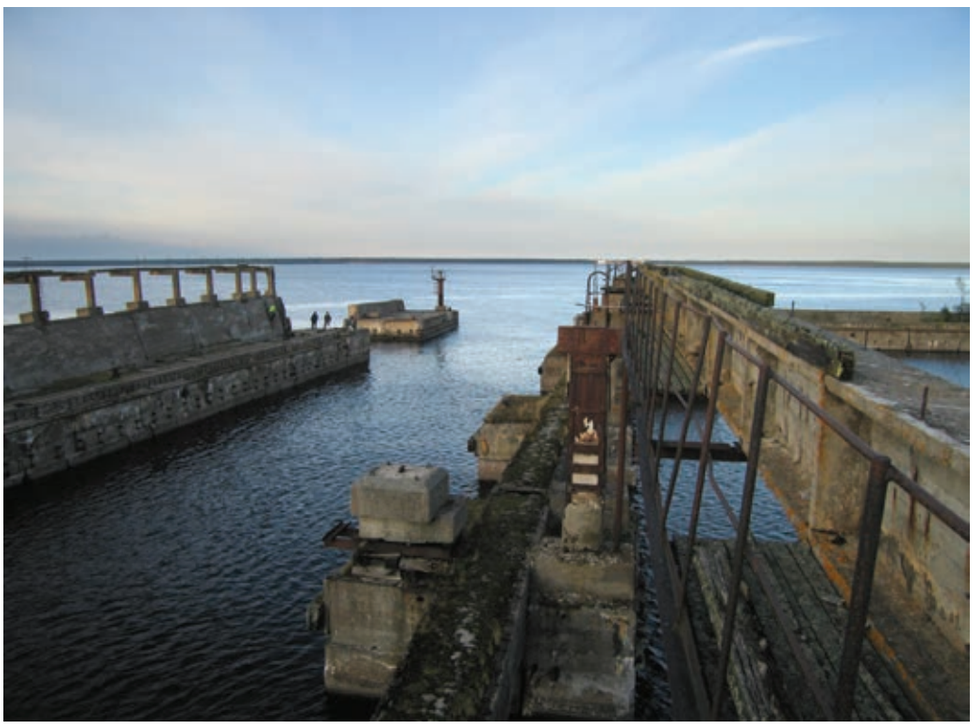
One case brought along a major change into how 20th century heritage is perceived. A special shop located in the centre of Tallinn was erected in 1983 for Western tourists where only hard currency was used. Local people were even prohibited to visit the shop on their own. The building was planned to be demolished in 2005, but was listed as a monument in 2006.

The pro private ownership stance of the new government brought along a complaint concerning the decision to list this building as a monument and in 2010, with a court decision, it was delisted. The possible demolition of the building led to establishing a research programme of 20th century architecture and its values.

Altogether 3000 structures were considered by 2014, but the share of military ones was very small. Only 45 military structures were considered, but no concrete suggestions concerning their future were put forward. Nonetheless, the number 45 is a frightfully small share of Estonian 20th century military heritage and it should be rather 45 000. This doesn't mean that they all are valuable, but this covers the number of structures that should be investigated to find out valuable sites among them.

During 2006–2014 no military heritage was listed in Estonia. Since 2014, three new military structures have been listed in Estonia – although re-

German station in the small island for Würzburg anti-aircraft radar, part of the Kammhuber Line. 1942. Island of Naissaar, North Estonia. Photo: Robert Treufeldt, 2011



Soviet Navy testing ground for the magnetic fields and noise of the vessels. 1950s. Hara, Kuusalu municipality, North Estonia. Photo: Robert Treufeldt, 2016

spective recommendation was made already in 2008. The recommendation was not the result of the abovementioned programme, but was filed by the municipality (City of Tallinn) where these structures are located.

114 potential sites were selected from a large bulk to be listed as monuments, involving bureaucratically a rather complicated process. None of these structures were military ones. Therefore a new programme was launched in 2013 that included a small pilot project.

This project aimed at investigating all military structures of the land front of the Peter the Great Naval Fortress (1916–1917) located in one municipality (Rae municipality close to Tallinn, 207 km2, 15 000 inhabitants). Officially there are two military monuments in the municipality; the investigation process resulted in information of about 120 military structures.

This showed the difference between our knowledge and the state of play concerning the actual military heritage. A similar project covering the whole of Estonia was launched in 2014, but due to a small budget and only a half-year duration it ended with an interim report.

A new programme was designed in 2016 lasting for a year and having a budget of approximately 8.5 bigger than the previous one. The programme should end in 2018 and it is aimed at investigating the whole 20th century military heritage. This is of course not realistic, but one of the outputs based on the collected data is to list approx 30 new military monuments.

Considering the history of Estonia, these prospective monuments of different periods should be divided as follows – about 25% from the Russian period, 35% from the Estonian period, 10% from the German occupation period and 30% from the Soviet

Soviet nuclear warhead storage for long-range antiaircraft missiles. 1970s. Türisalu, Harku municipality, Northwest Estonia. Photo: Robert Treufeldt, 2014

occupation periods. It's a pity that such an unambitious objective has been set up – actually 300 instead of 30 monuments of the 20th century Estonian military heritage should be involved.

Nonetheless, this is an important step to increase the awareness of military heritage in Estonia, based on sufficient investigation and judicially waterproof arguments. Although the National Heritage Board has stated that no further military heritage will be listed, hope remains that the current project will someday be prolonged.

The Values of Coastal Military Heritage in Kinmen and Its Conservation

Yi-Jen TSENG, Professor, National Quemoy University, Taiwan
Hsin-Ying HUANG, Professor, National Quemoy University, Taiwan
Sheng-Fa HSU, Professor, National Cheng Kung University, Taiwan

Abstract

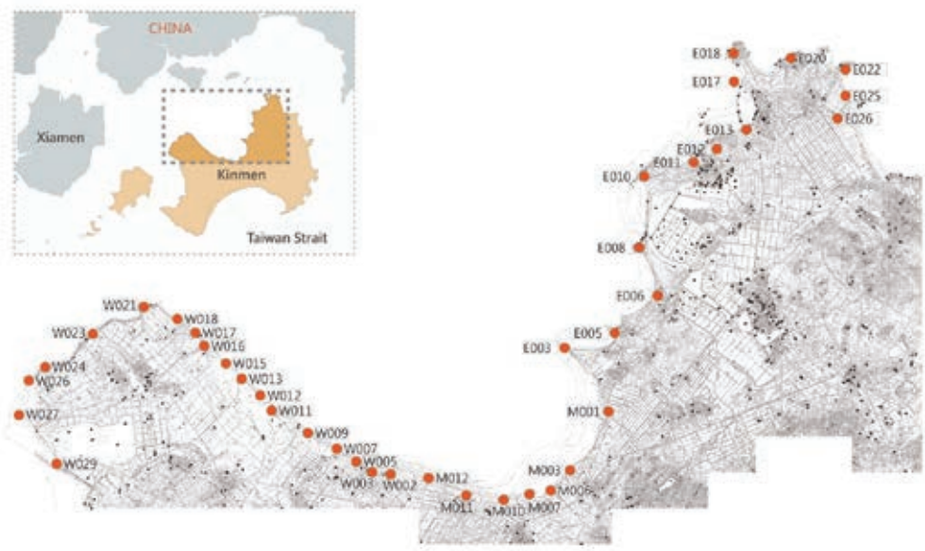
The island of Kinmen, formerly known as Quemoy, was made famous during the Cold War as the scene of the Quemoy Crisis and as a base, from which the Nationalist Chinese resisted the invasion by Communist Chinese forces. Kinmen's northern coast is directly across from mainland China and the island was where the Battle of Guningtou unfolded in 1949. Since then, it has been a point of confrontation between the Communist Army (People's Liberation Army, or PLA) and the Nationalist Army (Republic of China Army, or ROC Army). In order to prevent the PLA from landing, the authorities constructed densely-concentrated coastal fortifications, which consists pillboxes, bunkers and barracks, as well as other facilities on the beaches and estuaries, in line with the local landscape and terrain. After 43 years of military control, and the martial law was finally lifted in 1992, these defence mechanisms phased out and many gradually crumbled away. Although in recent years the government has turned some of the fortifications into tourist attractions, many have not been properly preserved or protected. Environmental and economy changes and natural and human-drive destructions are directly threatening the existence of these military heritage sites.

Kinmen's militarized northern coast is the best representative of the Cold War history. Its values can be found in these military facilities and fortifications, which form layers of coastal defensive lines. This paper aims to present the characters of these military facilities, to explain the concepts of the coastal defensive strategies, to discuss the possibilities of community development through the conservation of military heritage, and to suggest the future of Kinmen's military heritage.

Keywords: Cold War, Quemoy Crisis, Fortification, Stronghold, Reuse

Introduction

Kinmen is Taiwan's largest offshore island. It is located along the southern coast of China's Fujian Province and has a total area of 150 square kilometres. At low tide, it is only 1.8 kilometres away from the nearest Chinese-controlled island. Large numbers of immigrants gradually habituated the island since the beginning the 10th century. Because of Kinmen's special geographical location at the



The Map shows the Defence Strongholds of the Kinmen Northern Coast

mouth of both Xiamen and Quanzhou bays, it is a strategic location that ships sailing along China's coast must pass through, and a place where soldiers have had to contend for hundreds of years. In the 16th century the Ming Empire established Kinmen Town and five coastal fortifications for defence against pirates. The 17th century saw Koxinga (Zheng Chenggong) use the island as a base in his attempt to fight the Qing Reign and to restore the Ming Empire. Despite continuous warfare, Kinmen has maintained a good relationship with the Chinese mainland, both culturally and economically for a thousand years.

However, as civil war raged in China Mainland, and the Nationalist Government (ROC) led by Chiang Kai-shek retreated to Taiwan in 1949, Kinmen became the front line in the battle raging between China and Taiwan. The Korean War erupted on June 25 1950, and U.S. President Truman deployed the Seventh Fleet into the Taiwan Strait to keep the area neutral, to prevent hostilities from spreading, and to protect the ROC regime in Taiwan[1]. The Communist army continued to shell Kinmen in attempts to destroy its defences. One such attempt, the 823 Artillery Bombardment, so named because it started on August 23 1958, lasted until October 6. More than 440,000 shells landed on Kinmen; the devastating casualties and intense bombardment caused the incident to become known as the Second Taiwan Strait Crisis or the Quemoy Crisis[2]. Kinmen became the first line of defence against Communism and an important part of the policy of containment during the Cold War. This led to continual military construction on the island and 43 years of martial law.

As to the island Kinmen lies close to the Chinese mainland, a battle took place in Guningtou when the Communist army tried to took over the island in 1949. This battle secured the Nationalist government, and held the USA's First Island Chain. Afterwards, the coastal line of Kinmen was strongly fortificated by pillboxes, bunkers, trenches, tunnels, and forts. The distance between them could be as close as 360 meters. To effectively defence the coast line, the lo-

Rail Obstacles (left)

Costal Fortification W003 (right)

cations of these facilities was set at river mouths, sandbanks, and high grounds, and the planning of them were hidden underground, or fit in the local landscape. A variety design of these fortifications was designed according to the landscape, the function of weapons, and the strategies of defence. These defence facilities show an unique value of a military landscape, in which a perfection of military strategies, and a symbiosis between human and the nature can be discovered.

After decades of military control, martial law was finally lifted in 1992. Recent years have seen relations improve and peaceful developments on both sides of the Strait. The number of troops gradually lessened due to force reductions at every level of the ROC army. Large numbers of military facilities were either abandoned or sealed off. Falling out of use, they are shadows of their former selves. Only facilities under Kinmen National Park Services (KNP) jurisdiction or taken over by the Kinmen County Government were turned into tourist locations; however a majority of the fortification were not preserved and are gradually eroding away. These military heritage sites from the Cold War time could have become an important environmental and cultural resources for Kinmen.

Coastal military heritage

Because of its proximity to mainland China, most of Kinmen is within the range of the PLA artillery. In order to prevent the PLA from landing and causing damage with shelling, the ROC army used the natural terrain and granite plates to construct multi-level military fortifications, as well as underground tunnels and facilities. A majority of military camps and troops were hidden inside these secret tunnels. Kinmen Islands (Kinmen and Lieyu) face China's coast on three sides: east, north, and west. The slopes on the northern coast are gentle at low tide. In order to prevent landing operation during high tide, a plan was set to fill Kinmen's coast with military fortifications that kept tight control over the coastline.

Coastal Defence Strategies

The then strategies in coastal defence are to "stop the enemy at sea and annihilate them on the shore", and all coastal lines of defence needed to be able to "annihilate the enemy within 200 meters[3]". Therefore, coastal defences relied on a variety of defensive structures and weapons such as "rail obstacles" (spiked steel rail anchored into a concrete base), landmines, sisal (and other plants), barbed wire, broken glass, and a variety of firearms. They were placed where the oppo-

Stronghold that sits on a protrusion (left)

Fort W011 fits in the costal terrian (right)

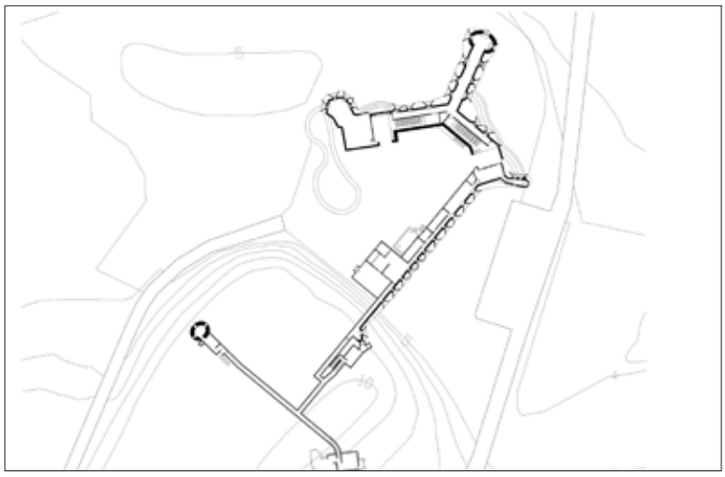
nent was most likely to land, in order to form a zone of denial and to maximize effect. These obstacles and defensive facilities are divided into five lines of defence.

The first line of defence was rail obstacles, located in the intertidal zone, where the civilians also used to farm oysters for centuries. These obstacles were constructed by anchoring a spiked steel rail into a concrete base below. The obstacles form a defensive barricade, one to four lines deep depending on the characteristics of the intertidal zone and the terrain; this prevents ships and landing crafts from taking advantage of high tide to approach the shore. This is followed by a wire fence on the beaches, designed to keep the enemy out; these fences completely surround the encampments. The third line of defence was formed by the numerous landmines planted outside of the camps, on the beaches, and even on the rocks. The fourth line was the trenches dug outside of the camps and surrounding walls. Inside, thorny vegetation such as sisal and thistles were planted, or broken glass was affixed to the surface of rocks. The local terrain and surface features were used to prevent the enemy from climbing to approach. The final line of defence is made up of machine guns, artillery, and other weapons[4].

Coastal military fortifications were designed in consideration of the surrounding landscape and terrain, such as differences in height, rocks, and cliffs. Considerations of crossfire from the different strongholds and the effective ranges of different weapons were taken into consideration in the design of the various pillboxes and gun slits. Vegetation was planted next to artificial structures and the tops of buildings were covered with soil to blend in with the surrounding environment, thus creating concealed and underground fortifications. These concealed military bases were all capable of storing food, water, and ammunition. The natural terrain, artificial obstructions, and weapons combined to form a dense and formidable coastal defence.

Selecting locations for coastal defences

Coastal defences need to be solid battle stations that can be self-supporting. Therefore, they were built on key locations in order to control the enemy's lines of approach[5]. These locations were strategically located in order to form solid central fortifications. Several major beachheads were selected as independent fortifications to control the high ground, monitor movement on the ocean, and delay the enemy in the



Fort W007 that is designed and built to take the advantage of the lanscape

event of an attack[6]. The collective purpose of these fortifications is to block, deter, and prevent the enemy from advancing — to act as the front of island defence[7]. Therefore, coastal defences on Kinmen must take into account tactical considerations and make the most effective use of their locations.

The high ground

The high ground acts as a vantage point from which to survey the surroundings clearly and take strategic command. Although Kinmen's coast is mostly made up of beaches, there are still plenty of places that have elevated terrain. Guningtou is one such area. The cliffs of Beishan (North Mountain) are approximately ten metres above the sea. The vertical height and dangerous terrain make for easily defensible coastal terrain. The Communist and Nationalist armies clashed here in 1949 over three days, with the defending Nationalist army successfully repelling the attackers[8]. Ever since then, the military has constructed an extensive array of coastal fortifications on every vantage point and coastal hilltop to closely monitor the surrounding ocean and coast.

Locations on the sandy coastline or at mouths of rivers

In order to prevent the enemy from landing on gently-sloping sandy coasts and rivers with wide mouths, and to further prevent them from following rivers inland, the army built military strongholds on these potentially vulnerable locations. With the wide fields of view afforded by coastal land, pillboxes and bunkers were built from which soldiers can fully survey their surroundings and enjoy a wider field of fire. Nearby facilities can also cover each with crossfire to prevent the enemy from being active on the broad beaches. Since beaches have little natural terrain that can be utilized for the construction of military fortifications, coastal pillboxes built during the 1980s have all been reconstructed with modern reinforced concrete. Bunkers have thick reinforced concrete walls and reinforced concrete floors thicker than 60 centimetres; sisal and turf have been planted to act as camouflage, and the buildings are surrounded by landmines and trenches for defence.

Locations on coastal protrusions

Kinmen's coast has many bay mouths, forming the region's bays and protruding reefs. These protrusions extend deep into the bays and are connected to land at only one place. From a military point of view, they have great fields of view and can easily control the surrounding area with firepower. Therefore, all of these protrusions on the coast have barracks, bunkers or pillboxes built on them. They act as important bases from which firearms can lay down fields of fire. Fortifica-

Barracks were demolished so as to returned the land for the civilians

Pillbox whose foundation are ruined by the tide

tions remain hidden and safe because the majority make use of coastal granite reefs and blend into the surrounding terrain. Pillboxes are also interconnected to each other underground fortifications via underground tunnels.

Blending into the natural environment

In order to achieve effective camouflage, many coastal fortifications utilize their surrounding terrain and natural vegetation. They are built from local granite and reinforced concrete, and covered with earth and vegetation such as sisal, bougainvillea and Australian pine so as to blend into the coastal terrain and reefs. These military fortifications coexist with their surroundings. Gun slits face the ocean and the backs of structures are inaccessible slopes and reefs. Living quarters are enclosed within concave terrain or concealed underground and in tunnels, ensuring a high level of security.

Planning and spatial configuration of coastal defensive fortifications

Coastal defences are crewed by battalions/companies or platoons/squads, based on their location. Combating quarters have different spatial characteristics due to the different troop sizes, military layouts and the nature of weapons. For example, for platoons and squads the emphasis is on creating safe defences using fortifications and the environment, in the shape of trenches, ridges, and pile walls. The pillboxes or bunkers are equipped with nests and slits for machine guns or rifles; tanks, or 90 mm and 57 mm guns are housed behind walls for anti-ship fire cover; and foxholes for surveillance. The distribution of personnel and weapons also differs according to the goals and firepower aims. Squads that only provide firepower support occupy smaller areas and mainly assist neighbouring fortifications; ones that crewed by platoons and companies to provide artillery fire occupy larger spaces, and are equipped with heavy artillery such as direct fire, indirect fire and high-angle indirect fire howitzers.

The fortifications on the north coast, for example, were earthen forts at the beginning of 1949. They were civilian residences fortified quickly with rocks, wood planks, bricks, and clay in order to defend against the invading PLA[9]. Afterwards, defences were greatly strengthened by utilizing underground construction. The Fort W002, built in 1960, was a large coastal camp with an area of nearly four hectares. Tunnels connected coastal pillboxes or bunkers to one another and the

Oil painting showing the 1949 confrontation in the Fort W013

Daily life in a fortification is drew in the Fort W027 as demonstration

majority of buildings were housed underground. The renovation summary for the site stated,

"The renovation of the base was ordered by the commanding officer in order to heighten combat readiness and ensure that the necessary fortifications are constructed and integrated into the existing tunnels, to form an encompassing defence system and in order to be able to support friendly units and halt the enemy on all fronts"[10]

Although the structures were reinforced in the later years, fortifications subjected to erosion by tide water, rain, and wind are still easily damaged. The majority of the coastal fortifications that still stand are those renovated with reinforced concrete from 1983 to 1984. The 1984 renovation summary of the Fort W011, located on the sandy banks of a river mouth, stated,

"The defensive capabilities of the original base were inadequate. Gun slits were too small, which meant artillery could not achieve maximum effect; facilities were poor and inconvenient, and failed to allow for integrated fighting. Therefore, the base has been ordered rebuilt."[11]

The W011 is located at an estuary. Its low-lying position means the base accumulates water easily and can be buried in sand blown in by northern winds in winter; water also invades the site at high tide. The camp was rebuilt in 1984 using reinforced concrete, creating stronger wall and floor structures. Gun slits were redesigned so they could control the sea and beachhead with artillery fire, and support neighbouring bases with supporting fire.

Coastal defensives such as these were the front line of defence against a PLA landing. In addition to defence concerns such as firepower, these spaces needed to meet the basic needs of officers and soldiers. Bases needed to be stocked with things such as ammunition and food in order to hold off an attacking enemy. These were known as the six reserves and seven defences. The six reserves included stockpiling water, sand, oil, food, munitions, and medical supplies; the seven defences required the space to be safe from fire, poison, assault, shelling, missiles, NBC (nuclear-biological-chemical), and air assault. The combating quarter of a fort may be entirely underground, entirely above ground, or half-above, half-below ground. This includes artillery emplacements, machine gun nests, ordnance keeps, ammunition depots, trenches, and pillboxes; living quarters include political warfare rooms, barracks, kitchen, bathing facilities, and warehouses[7]. Forts also have out-

door fields/spaces for assembly and training. These facilities and spaces create strongholds for resistance with lasting combat effectiveness, and can engage independently or become defensive positions.

Current state of military heritage sites and their regeneration

At its peak, there were more than 100,000 troops were stationed on Kinmen, in order to strengthen the island's fortifications and counter-attack capabilities. On the eve of the August 23, 1958 artillery attack, the army had stationed six infantry divisions, eight artillery battalions, five anti-aircraft battalions, and three tank battalions[12], as well as army engineers, special forces, and units from the navy, air force, and intelligence under the Kinmen Defense Command. Strategic areas were all placed under military control, and troops were stationed throughout the island.

After 43 years of military control, the end of the Cold War signalled a thawing of cross-strait relations and the island was handed back to the public in 1992. After this point, the number of Kinmen troops gradually decreased over year. When the Three Little Links were agreed to in 2001, the garrison was downsized even further. Before martial law was lifted, the number of soldiers on the island was approximately 60,000; it was downsized to 20,000 after the agreement. In 2015, numbers were further reduced to only 4,000 troops. The original military camps and fortifications have largely been abolished and the land handed back to citizens. They have been transferred to the Kinmen County Government or Kinmen National Park Services, or undergone regeneration and converted into public institutions, memorials, sightseeing/tourism attractions, etc. As of 2015, the military has handed 181 of the original 512 military facilities back to the public[3] and are continuing to review sites to determine which should be returned out of absence of military necessity.

Only a portion of the dense jungle of coastal fortifications is currently crewed due to the overall reduction in troop numbers and the modernization of weapons and strategic thinking. A number of facilities have been handed over to coastal patrol units. Many sites have been shut down and the camps abandoned.

Current status of fortifications handed back to the citizenry

As mentioned earlier, coastal fortifications exist on important and strategic locations and are hidden from view near the shore, reefs, and the surrounding environment. Kinmen is located in the subtropical zone, and the changing of the seasons and the weather greatly affects its climate and vegetation. In the spring and summer months, trees, weeds, and vines grow rapidly; if a site is not managed properly, it will be covered in vegetation within a short time. If the growth is not cleared within a few years, the camp will deteriorate and break down rapidly. In the winter, strong north-easterly winds and tidal ranges of up to six metres will quickly destroy front line fortifications that are not properly maintained. They become covered in sand, or are destroyed by tides.

After the return of coastal fortifications, their treatment can be divided

into the following three categories. First, all above-ground structures are demolished and handed back to the public. Once a piece of land is designated to be handed back, in the case of all private lands forcibly occupied by the army during the war to build camps, the army must demolish all above-ground structures before handing the land back, assuming the owners do not want them. This includes burying all underground fortifications and tunnels. But for some sites, such as W002, above-ground structures were demolished while underground structures were preserved. Second and for the most common cases, sites are abandoned without maintenance. This is the result of a lack of funding or planning, and includes sites handed back to the Kinmen County Government, Township Offices, or the KNP. This has resulted in sites left to stand idle, lacking proper maintenance, or becoming damaged, as in the example of the W001 stronghold. Third, sites are regenerated with proper planning and receive better management and proper maintenance. These sites are then open to visitors, such as E017, W013, and W016, which are under KNP jurisdiction.

Many of the idle sites under the second category have not been properly maintained after being handed back. A majority of them are being overrun by trees, weeds, and vines, and the camp structures are deteriorating quickly. China has been dredging significantly in recent years and has even built an international airport. All of this has affected fortifications and structures along the Kinmen coast. Land is crumbling into the ocean and the coastline is shrinking because sand is being dredged away. Many fortifications along the coast have been destroyed because their foundations have crumbled. The reinforced concrete foundations of the rail obstacles in the intertidal zone are also gradually being destroyed.

Regeneration of the fortifications

The regeneration of coastal fortifications mainly focuses on reusing them in sightseeing, recreational, or commemorative capacities, or converting them into public spaces. Since coastal fortifications are situated on dangerous terrain that offers good views, they can be transformed into exhibition halls or recreation sites, from which visitors can enjoy the ocean and learn about history with information on and pictures of these old battlefields. The Kinmen County Government and the KNP have both planned to build coastal bicycle trails that link together coastal fortifications and specific natural landmarks to become a new tourist attraction.

The Fort W013 was one of the main battlefields in the Battle of Guningtou, 1949. Its artillery emplacements and living quarters are still well preserved. The site has been tidied up and now tells the story of the 1949 battle with oil paintings based upon accounts from veterans, narrating to visitors the memories of a horrific battle. Safety equipment and toilets, necessary for tourists, have been added.

The Fort W016 is a large camp primarily based inside tunnels and is located to the back of the Guningtou War Museum. Tunnels connect the various coastal pillboxes, artillery emplacements, barracks, and conference

rooms (political warfare rooms). There are several dozen ventilation holes above the tunnels. The regeneration project has taken into account the traffic flow from the Guningtou War Museum, and links the two sites together in order to completely preserve their original military characteristics. A picture of Chiang Kai-shek inspecting Kinmen hangs in the original conference room in memory of the island's importance as a former battlefield[13]. In addition, pictorial maps of the W016's original gun slits have been preserved so visitors can look through them and see mainland China.

Walking out of the tunnels, visitors can appreciate the defensive characteristics of coastal fortifications with wide fields of view, and pay tribute to the two armies who clashed here in 1949.

The Fort L036 is situated strategically on the northern coast of Lieyu Island and faces Xiamen City on the Chinese coast. In order to control the beaches and maintain command over the sea, the site has 20 gun slits, 10 for rifles and 10 for machine guns. The top of the building houses a lookout station and many temporary gun slits[14]. Regeneration of the site has focused on reproducing the daily life and living environment of its military days. Statues of soldiers in action have been placed in the barracks, grain warehouse, armoury, and outdoor drill ground so visitors can better understand daily life for the soldiers. In addition to static exhibitions on the history, spatial arrangement, and living conditions of the coastal military facilities, there are plans to convert some sites with good views into bird-watching spaces. For example, W027 and W029 are situated on the return flight path for migratory winter birds (including cormorants) and have the potential to become great bird-watching sites. The E005 site has been regenerated and converted into a community activity centre.

On the maintenance of military heritage

Defences along the coast developed unique characteristics in order to conform to the local terrain. No two fortifications along the Kinmen coast share the same spatial configuration. Spatial planning was done based on the characteristics of each specific location and tactical requirements, in order to maximize their ability to control the beach and the sea as well as to defend each position. Coastal fortifications retain specific characteristics representative of the defensive thinking prevalent during the era of cross-strait confrontation, and their structures are testaments to modern military engineering. Such sites should be viewed as exhibits representative of the Cold War era; their high degree of historical and commemorative value makes them worthy of preservation.

However, the armed forces have been drastically reduced in recent years and the sites given back to the public have been largely overlooked. Even though they are memorials to the Cold War, this lack of appreciation highlights how much more work Kinmen needs to do in order to protect its military heritage. Witnesses to cross-strait military conflicts and confrontation, as well as records of the unique military culture during Kinmen's martial law era, are also gradually disappearing with the shuttering of military

camps. There is an urgent need to consider what actions to take in order to prevent this military heritage from disappearing completely.

Proper understanding of the value of military heritage

The people of Kinmen have suffered decades of military control, and were forced to sacrifice many of their freedoms. This has included severe infringement of property rights, such as not receiving compensation when someone was killed or when property was destroyed by artillery fire, as well as the military took private buildings and land for their own use. After martial law was lifted, many of the elderly look back on these times as a negative, dark, and miserable period of history and wish to destroy the sites that invoke painful memories. This mentality is the greatest obstacle to preservation of Kinmen's military heritage.

From a world history point of view, the Cold War is an important part of human history. The dark heritage here preserves memories of a controversial time. Each site has its own story to tell. The aim of re-examining and preserving this legacy is not to stir up painful memories, but to help future generations get a better understanding of the brutalities of war and the pain and suffering their elders went through, so that the mistakes of the past are never repeated again. True understanding of the meaning behind military heritage means that this dark heritage can be transformed into tools for positive education, and symbols of humanity's universal quest for peaceful coexistence.

Strengthening preservation and records of intangible assets

Coastal fortifications have always been on the front line of Taiwan's defence against its opponent, and have more stories to tell than the military camps behind them. For example, some fortifications along the northern coast fell into disuse because all of the troops stationed there were killed; some suffered tragic accidental deaths. In the past, other than the tensions of war and harrowing military tales, there has been a lack of records and research into how the construction of camps and the planning of coastal fortifications reflect operational thinking for front line fortifications. This has led to a lack of basic information about the original designs for sites that have been renovated and opened to the public; stories of the troops stationed there are not readily available either. In order to preserve these sites, it is advantageous to strengthen the preservation and presentation of intangible assets in coastal fortifications by collecting historical data, recording oral histories, and analysing documents. This will help highlight the value of the fortifications as part of the military heritage, and help them to act as tools for on-the-spot historical education.

Protection of the coastal environment

Coastal fortifications are surrounded by trees, vegetation, and buried landmines to prevent the enemy from penetrating the borders. Many such fortifications monitor the ocean using high vantage points or have low gun slits, so that artillery can be utilized with a high

level of secrecy. However, since the beginning of the 21st century, China has started massive construction projects in its coastal cities. Much of the sand and soil needed for these projects was dredged up illegally from the ocean floor; this has affected Kinmen's shores as well. The destruction of coastal fortifications due to tidal erosion is speeding up. The Kinmen coastline was demined in 2012 and the dense growths of Australian pine and sisal have disappeared. Although other trees and vegetation have been planted, the coastline still lacks the proper amount of plant cover and soil to guard against erosion from the tides.

In order to preserve the military heritage, the relevant institutions should carry out proper maintenance (such as reinforcement or repair) of structures severely damaged by the receding coastline and tidal waves, and continue to plant trees to combat further erosion. Strengthening the coastal environment and ecological management not only helps in the recovery of coastal vegetation, but also reduces damage to coastal encampments and pillboxes. Proactive investigation and maintenance combined with forward-thinking planning is necessary to preserve such sites.

Proper regeneration planning and management

Coastal fortifications offer good views and are situated in unique terrain or geological environments. They have a high degree of regeneration potential, and government departments have steadily singled them out to be converted into recreational and scenic areas. It is currently common practice to preserve the remaining space and structures, while minimizing the amount of new structures built, in order to protect a site's original appearance. But the lack of systematic historical data means that the site's record of history, construction, and utilization cannot be properly presented to the public. A majority of facilities are presented as mere shells, and this makes it hard for visitors to truly appreciate the original coastal fortifications and their significance.

Proper regeneration planning should include research into the site's history and documents, which are used in turn as the basis for exhibition materials such as descriptions of the original weapons and structures. This will ensure that military camps are exhibited alongside their corresponding weapons and histories. The basic principle of reuse is to respect the structure, original space, and authenticity of the military heritage site. If a site lacks quality context and historical interpretations, the regeneration will become boring and lack depth. On the other hand, with excessive transformation, a space will lack a sense of history; new structures improperly constructed will also damage overall integrity and authenticity.

Take the case of the Lieyu Township L18 fortification site. The local government turned the facility into a recreational site and devised its planning from an entirely tourist attraction point of view. Too many new structures and facilities were added, which deprived the coastal fortifications of their sense of secrecy, oneness with the environ-

ment, and authenticity. A lack of military and historical research damages a site's military and operational history. Therefore, planning should be based on the construction of basic historical materials, respect for actual history, and a focus on education to avoid excessive or incorrect usage of sites.

Conclusion

During the Cold War, Kinmen played an important role in monitoring activities along China's south-eastern coast and helped prevent the spread of Communism to the Pacific island chains. In the face of overwhelming military force, Kinmen used the very rock it is made of - granite - to construct a large number of underground fortifications. In line with President Chiang Kai-shek's directive of "conserving the fighting force under the ground to unleash the firepower on the ground", each base used the surrounding terrain and landscape to create protection and develop underground facilities. The densely populated pillboxes and barracks along the Kinmen coast were the front line of coastal defence. They are emblematic of multi-level operational thinking during the Cold War, and retain a high level of military and historical value.

Now, these sites have lost their original functionality. Revitalizing, reusing, and preserving them through tourism requires taking pains to preserve their authenticity. The value of coastal military heritage must be demonstrated by maintaining its structure, form, design, function, environment, historical documents, and other intangible cultural assets. Obviously, current conservation and regeneration planning for coastal fortifications have placed too much emphasis on restoring tangible assets. There is a lack of both basic research and information on individual military, structural, and oral histories. Too much emphasis on tourist requirements will lead to too many new structures and reduce historical authenticity. In the face of threats to the coastal environment, recognition of the coastal fortifications collectively as a single cultural heritage site ought to be considered. This opens them up to existing laws and protections under Taiwan's Cultural Heritage Preservation Act, and makes it possible to take proactive measures to halt further damage. On a values-first basis, cooperation between NGOs, communities, governments, and academic institutions will make it possible to devote more resources towards research and conservation, and move toward sustainable protection and development.

References

[1] Ball, Simon J., The Cold War: An International History, 1947-1991. Arnold: London, 2001.

[2] Liu, Lee-hsuan., (ed.). The 1958 Quemoy Crisis: An Oral History. Armed Force Museum: Taipei, 2009. (In Chinese)

[3] http://www.kmdn.gov.tw/1117/1271/1274/37739

[4] Tseng, Yi-Jen., Military Sites Conservation and Regeneration in Taiwan, Sustainable Regeneration of Former Military Sites. Routledge: London, 2016.

[5] Zheng, You-liang., A Brief Introduction to the Management of Coastal Fortifications. Cited in 2016 Call for Kinmen to Apply for World Heritage Status Project, Kinmen, 2016. Unpublished Manuscript. (In Chinese)

[6] Ding, Miao., A Study of Kinmen and Matsu's Strategic Value and Defense Programs, Chinese Navy, IX (8). Taipei, September 1955. (In Chinese)
[7] Chen, Yun-Ju., The Study of Offshore Defense Post at Nangan, Matsu, In Period of Military Confrontation Between China and Taiwan. Department of Architecture, National Taiwan University of Science and Technology, Master's Thesis, Taipei, 2010. (In Chinese)
[8] Lee, Fujing., The Battle of Guningtou: The People's Perspective. Rice Paddy Publishing House: Taipei, 1999. (In Chinese)
[9] Guan, An-bang., Causes and Effects of the Battle of Guningtou, Army Bimonthly, 507. Ministry of National Defense: Taipei, 2009. (In Chinese)
[10] Stronghold 103 Renovation Summary.
[11] Stronghold W-011 Renovation Summary, Army 7th Infantry Battalion Ban Chao Unit -- Ban Chao Unit, Kinmen Defense Command, 1984.
[12] Military Affairs Bureau., Ministry of National Defense (editors), The Sea Battle of 823, National Army Military History Series, Vol. 4. Military Affairs Bureau, Ministry of National Defense: Taipei, 1998. (In Chinese)
[13]http://www.kmnp.gov.tw/ct/index.php?option=com_content&view=article&id=1322&Itemid=315
[14]http://www.kmnp.gov.tw/ct/index.php?option=com_content&view=article&id=910&Itemid=6

The cultural reuse of the military site of Zsambek, former Soviet Air Defence Battalion near Budapest (Hungary)

István VARGA
Architect-Conservator, National Institute and Army Museum Budapest, Hungary

The Soviet Army occupied Hungary in 1945, as part of the final attack against the nazi German Reich. As we all know, the Soviets didn't leave our country, but stayed for the next 46 years and built up their own headquarters and military sites, which were organized and managed completely separated from those of the Hungarian Army. In some cases, new and isolated small towns had been built for the officers and higher ranked experts, allowing just the minimally needed contacts between the Soviets and the Hungarian population. That was because the Soviet's being here was more to prevent or defeat a possible upraisal of the occupied nations (as it happened in 1956), than to defend the socialist block from an eventual western attack.

After the withdrawal of the Soviet troops and their military equipment in 1992, most of the sites used by them –from large areas in the forests to a lot of bad quality caserns and block of flats – were given back to the Hungarian State. Only a few of these could be used by the Hungarian army, so most of them were (and some still are) waiting for demolishing or maybe a new function.

The case of the special site in Zsambek is the only case, where a complex cultural function was developed, mainly pushed ahead by enthusiast people and with minimal financial investment.

On this 70 ha-s area at Zsambek, - ca. 20 km-s distance from the capital city - was established a middle-range missile battalion, which was part of the Soviet-Hungarian Ground Based Air Defence System around Budapest, active from 1960 till 1992. The system consisted of mixed SAM units, including the "NYEVA" (short-range missiles), the "VOLHOV" (middle-range missiles) and the "VEGA" (long-range missiles) weapons.

After a period of decay, the state owned land was given in the use of the Zsambek Regional Tourist Office, a non-profit organization set up by governmental and local authorities, and – step by step - was shared into two parts: a unique site for open air theatre and an open air military museum – both open and active till today.

The Museum of Air Defence

The Museum at Zsambek opened its doors to the visitors on 22 September 2006, with the help of the Ministry of Defence and of the Military History Institute and Museum.

The special Branch of Service Museum, the first of its kind in Hungary,

is designed to illustrate the history of Hungarian air defence through the equipment on display and also by other methods. The several hectares area of the Air Defence Missile Battalion which used to be based not far from Budapest made it possible for the sizeable air defence assets to be exhibited. The change of regime, the collapse of the Warsaw Pact and our NATO accession necessitated the transformation of our defence forces. During this period battalions were disbanded, garrisons were replaced and a lot of equipment was withdrawn forms service, which could only be saved from decay by the establishment of the Museum.

The Battalion at Zsambek was finally disbanded in 1992 and its abandoned area with its natural and historic assets drew the attention of the Regional Tourism Association.

Many years after the first theatre performances on the - then - abandoned site, upon the recommendation of artists from all over the country and also local enthousiasts, it became a protected historic monument in 2005, the first of that kind, and now it is a 20th century memorial place, as a special element of the Hungarian fortifications. In the line of our historical monuments it represents the fort of modern times after our earth castles, medieval castles and 19th century fortresses.

Air defence missiles can be classified according to their effective ranges as very short range (up to 5km), short range (5-30km), medium range (30-150km) and long range (over 150km).

From the 1960s to the mid-1990s the system serving the defence of the airspace of Budapest consisted of mixed air defence missile battalions which were capable of destroying enemy targets within the range of 500 0 m-s and 257 km-s, at altitudes within the range of 200 m-s to 4000 m-s. Beside the weapons of the same type coming from the Hungarian Army, a large number of additional technical equipment can also be found in the collection of the museum. The historic monument includes the area of the former air defence battalion so visitors can see the fortifications and other constructions of a military installation of this kind from the second half of the 20th century including the command post, the sites of the two reconnaissance radars, the sites of the six missile launch pads, the immediate reaction missile shelters and other buildings and structures. By now, 32 pieces of historic armed equipment are installed and presented to the visitors.

The area, where the Museum was established, was the fighting area of the Air Defence Battalion. We can find here the main stages (command and control point), the centre of the battalion; two reconnaissance points for the RECCE equipment; six launcher area for missiles and supplementary parts. In the first part of the Museum the standard technology of the period between 1977 and 1997 can be seen. In the radar-park of the Museum visitors can see the P-18, the P-19, the P-37 and the P-40 radars as well as artillery pieces and missiles used by the army air defence troops. A wide range of equipment can be found here including the V-750 training missile complete with a launch pad and a transporter-loader vehicle, a UV cabin, the STRELA-10 missile system, the ZSU-57/2 self-propelled gun, the

Plan for new Cultural Activities in the Dismissed Military Site of Zsámbék

VOLHOV, KRUG, KUB, VEGA and NEVA missile systems and a lot more assets that played a determining role in the air defence of the abovementioned period.

The Theatre Festival and Cultural Base of Zsambek

The festival of Zsambek was born back in 1985, when Iren Matyas and her partner artists first time invited avant-garde theatre performances to the open air places of this lovely small town situated among the hills around Budapest. In 1995, when the coming public overgrow the parks and sites in the town, the small - but already international - Festival moved to the neglected military site of the former Soviet Ground Based Air Defence and started to use the strange military elements – bunkers, launching pads and buildings - as their open air stage. Inviting numberless productions of various companies from Hungary and East Europe, the organizers became the local producer of their own performances. By now, on the site there are several open stages with mobil technical equipment, and aslo some closed stages in the large bunkers of the movable missiles, which forms now halls with 100 sqms stage and auditorium for over 150 persons.

Till today, organizers collaborated with hundreds of artists from Serbia, Slovakia, Ukraina, Moldavia, Albania, Mongolia, Italy and Romania. Beside the internationally invited performances and on site built-up theatre performances, the Festival - with two persons professional staff backed by many enthousiast amateur collaborators - organizes concerts, workshops, exhibitions and conferences for (but not only for) professional, mainly experimental theatre. Amongst the outstanding collaborating personalities we can find Maia Morgensten, Beatrice Bleont, Silviu Purcarete, Arpad Shilling and other directors of the young generation, staging their experimental research works in Zsambek.

The philosophy of Zsambeki Festival lays on the principle "fuori le mure": theatre in the inspiring environments for the performances, in the underground bunkers and open air platforms for launching missiles. In 2004, the Festival was project leader in a European Cultura 2000 program.

And here I personally, but in the name of the organizers, I want to express our gratitude towards the Norwegian people, because some projects were partly financed by the Norway Grant.

Nature Park

Finally I have to mention the third element of the Cultural Base of Zsambek, which could be a Nature Park. The protecting area and one third of the 70 hectars military site is still not used, and should be cleaned and refurbished to be a lovely natural forest area for the general public. But this project yet has not the needed background. The main danger to this cultural site, by now, is the interest of investors: the site is very suitable for new hotels and recreation camps.

As a final conclusion, we can say that the use of the Zsambek Military Site is a unique, but also characteristic result of the human and social forces active during the transitional period of Hungary, when upraising public interest, the off-spring of local enthusiasm and the lack of private investments made possible to create this exceptional Cultural Experiment.

See more: www.zsambekinyariszinhaz.hu and www.legvedelmimuzeum.hu