Post-medieval to early modern military landscape of Bohemia

Earthworks and buried monuments in the view of air survey

Martin Gojda

Post-medieval field fortifications, the majority of which today survive, if at all, only as low earthworks, are a neglected aspect of the national heritage in the Czech Republic. Only a complex study of the historical landscape, supported by aerial survey has made the identification of many of these features, mostly forgotten even by the local people, possible. This paper summarises the current state of the aerial identification documentation of postmedieval military monuments in Bohemia to date and gives examples of the processes through which these features have passed after being abandoned.

KEY-WORDS aerial archaeology, landscape, field fortifications, ancient military maps, Bohemia

When, after the long period of communist rule, freedom of the air was regained in 1990 the Institute of Archaeology, Czech Academy of Sciences in Prague and its North Bohemian branch in the town of Most took up the challenge and began a programme of archaeological aerial survey. The Institute, however, had practically no experience in this method of remote archaeological survey, although some of the experience gained in neighbouring Moravia, where archaeologists had been involved (in a limited scale) in taking "flights into the past" since the mid 1980s, was used as a guide. Moravian archaeologists had also been allowed to consult, the then closely guarded, ortho-photos deposited in the Military Topographical Institute. However it was only the collapse of the communist regime which made possible the progressive use of remote sensing methods within archaeological heuristics and data compilation as a means of understanding the history of the landscape. Only then was it possible, without any substantial administrative restrictions, to use aerial survey techniques with which to prospect for new sites and monitor the condition of monuments leading to the publication of the data through the mediums of text, photographs, films and videotapes. Without exaggeration it can be said that the only impediment to the further development of the fieldwork component of remote survey from the air was the lack of funding. resp. the ability of the pioneers of these methods to persuade domestic scientific community and grant agencies about its effectivness and importance for understanding and protecting cultural heritage (Gojda 1997).

The main aim during the early 1990s was to explore the potential of crop- and soilmarks in Bohemia, which had been familiar to western European archaeology over the last 80 years and was commonly used to identify various forms of archaeological sites from the earliest times up to and including sites of the Second World War. In 1992 the first season of systematic aerial photographic research, based upon the simple general strategy of accumulating as many photographs of new archaeological sites as possible. With this evidence it was hoped to prove the possibilities of aerial photography in the Bohemian context and not unsurprisingly it was immediately revealed that the Bohemian environment was just as productive as that of any other part of Europe. Aerial photography and remote survey at that time also prooved to produce better results by volume than traditional archaeology by excavation in the research of settlement density, continuity of settlement areas and the topographical nature of settlement activities within large landscape units. The results of aerial photography are greatly enhanced when blended with a combination of other non destructive methods, such as field walking and geophysical techniques as well as targetted evaluation excavations (Gojda 2004 and Gojda ed. 2004).

Topographically the Bohemian basin belongs to the group of European regions that have a greater variety of landscape types. This fact is reflected archaeologically in variable settlement intensity within individual areas of this geographicaly enclosed unit. The variety of natural conditions and their exploitation reflects also in the degree of preservation of the various monument types. In the primary settlement zone, within fertile lowlands, which have been cultivated more or less continuously since the Eneolithic practically all of the above ground elements of the prehistoric, medieval and post-medieval monuments were significantly reduced if not totally erased. These monuments are more often preserved within the Czech forest regions where the banks and ditches of prehistoric hillforts, burial mounds, deserted medieval villages, medieval and post-medieval communications and other industrial works have not been subjected to the destructive processes involved in the intensive and aggressive agricultural methods that were and still are employed in the open landscape.

In this context a less substantial form of post-medieval to early modern (17th – mid-19th cents.) military fortification built in the field, that is away from the large, more permanent fortification complexes constructed with brick and stone (Fig. 2), was also subject to the action of natural erosion processes induced by agricultural attrition, mainly hill-slope soil erosion. After the structures had been abandond by the military they were also often subject to manipulation by farmers who were mainly interested in clearing away any up-standing obstacle from their fields. This often involved taking soil from the ramparts and spreading it onto fields or for infilling old river meander hollows creating level areas for further potential field. In some cases long term repeated ploughing and resulting natural erosion was instrumental in levelling these former military earthworks.

Since field fortifications were ususally built *ad hoc* as a counter to a predictable line of attack or for defending captured positions, their location depended on short term strategic needs. This required an accurate knowledge of landscape topography and geomorphology. To fullfill this need the first large scale detailed maps began to be produced in the 18th century by military surveyers and cartographers. In Bohemia the first military maps are those of the so called Emperor Josefs' survey, which dates from the 1760s to 1780s. These maps confirm that most of the field fortifications or redoubts were in positions where aggresive military action was predicted and are a characteristic part of the baroque landscape of those areas, but due to their insubstantial construction and their short term use they were often soon forgotten (see Fig. 3: part of a redoubt cluster depicted on the sheet 26 of the Josephs' survey).

Most of the best preserved field redoubts are within the forest regions of the Czech Republic where they have been least exposed to the possibility of re-use or leveling after their abandonment (Fig 4.). The erosion processes acting on their banks and ditches were not so dynamic as those in an open landscape. One of the best known and most significantly well preserved of these monuments dates from the period of the Thirty Years War (1618-1648) and is located in southern Bohemia close to the town of Volary (Fig. 5). Possibly the most complete survey of field fortifications has been undertaken in western Bohemia in the region of the town of Planá (Matoušek 2006). This area was the focus of a collision at the very end of the Thirty years war between the forces of the Habsburg Emperor and Swedish armies at Třebel, a village with a ruinous castle. This area was one of the primary regions surveyed within that part of the aerial photography programme aimed at the identification and

documentation of post-medieval fortifications and it is still a significant part of that programme.

An interesting fact can be observed in the case of forts built in open field areas traditionally used for arable agriculture. In these areas almost all of the smaller forts have been ploughed away and their earthworks have been irreversably erased from the surface of the land. Large, usually polygonal fortifications, with both foot garrison and/or field artillery (a redoubt fortification in current terminology. i.e. a fully enclosed), were on the other hand often left for natural processes to obliterate their earthworks, since taking the substantial ramparts apart and infilling the comparable ditches after their abandonment was too demanding. Some however were levelled, often in a single operation, at a much later date and almost always for agricultural reasons. An example of one of these large field fortifications is a linear fortification system which was built on the northern bank of the Labe river sometime after 1850 as a salient to the large brick and stone fortress of Terezín (Figs. 6 - 10). It was cut on a distinct terrace bank between the eastern edge of the town of Litoměřice and the village of Třeboutice. Individual redoubts for artillery batteries were designated on the original plan as Werk 1- Werk 6 and were formed by ditches over 20m wide with ramparts 2 to 3m high made from the excavated ditch soil. Whole system was supplemented by a fort positioned on Křemín hill to the east of Třeboutice and further small redoubts situated close to and on both banks of the Labe river. This position is labelled on some maps as "Under the ramparts."

Maps from the 1970' still display redoubts 3 and 5, including the connecting trenches, as objects preserved in the field. In contrast redoubt 4 has been completely levelled and returned to its former state of an arable field and its ground plan, together with connecting double trench, show only as crop marks, which have been documented by aerial photography during aerial survey since 1997 (Figs. 8-9). Partway to erasure is redoubt 3, with a quarter of its earthworks levelled and identifiable only as cropmarks (Figs. 7-8). An old path is visible on the photographs, south of the redoubt system, but on the same east-west alignment. Starting from the south side of redoubt 5 it runs west to an almost square enclosure (in the centre of Fig.9), which does not appear in the original 19th century fieldwork plan and is therefore probably of a later date and not connected with salient of the Terezín fort. Crop marks also place redoubt 10 (Fig. 10), which is on the original general plan of the fortification system (Fig. 6, here numbered as X, below redoubt 4), in the alluvial area of the right Labe riverbank

In those pioneer beginings of aerial archaeology in Bohemia in the first half of 1990s the professional public expected from the practical apliccation of this kind of landscape survey mainly the identification of a number of unknown prehistoric and medieval monuments. That resulted after all from the fact that in those days research was still dominated by excavations of archaeological heritage from prehistory and Medieval Ages. So-called postmedieval or industrial archaeology only started to develop promisingly, apart from other things thanks to a new interest in landscape archaeology (Meduna 1990). The birth and development of remote survey methods (resp. aerial photography) induced by archaeologists oriented in this direction resulted into natural monitoring and photodocumentation of all components of historic landscape of whatever period and origin during the survey flights.

The institutes in Prague and Most, mentioned above, are thus creating an archive of aerial photographs, which document the history of the human impact upon the landscape in all its various aspects, including; settlement evolution and change; production activities; ritual and burial practices and many other facets spanning the time from the earliest Neolithic to the present day. The areas involved are composed, usually due to a long period of occupation and

use, of features from many different periods. They are either standing monuments (for example urban centers, castles, churches and hillforts) or features no longer visible on the surface, but identifiable only by ecofact characteristics. The most important identifying factor of these erased structures is the disturbances to the sub-soil caused by their construction. This is normally visible as a difference in soil colour between the surrounding naturaly undisturbed soils and the structurally altered soils of the monument. The nature of the infilling or construction elements causes not only changes in the soil colour, but also, where the ground surface is covered by plant growth, differences in the height and density of crop and natural vegetation growth between those plants above an infilled feature or a wall foundation and those plants to the side of such features. This difference between growing plants in landscape was first noticed by Georg Agricola in the 16th century and first associated with the activities of prehistoric people, by the English antiquarian W. Stukeley in the 18th century. These identifiable variations in soil and plant are called the landscape memory, since once the landscape has been marked by human activity it bears forever the evidence of that act. There is therefore a kind of landscape memory that exists illustrating events that have occured from several millenniums ago to the most recent times.

Aerial survey therefore has great potential to increase our knowledge of the topography of post-medieval field fortification earthworks. Existing praxis aimed at identifying field fortifications in crop marks has shown to date that these long abandoned clay and timber structures are to be found in concentrations in some regions of the Czech Republic. Such a region is in northwestern Bohemia, where most of them identified so far have been concentrated around the Ohře river valley (Smrž - Hluštík *in press*). Some partial remnants of fortification systems are known from the area of the town of Třebel in Tachov region (see above), and from the area of the confluence of the rivers Elbe and Moldau at Hořín near the town of Mělník (Fig. 11), and from the town of Louny (Fig. 12). This data concerning the spatial accummulation of fortifications is based on specific conditions of certain areas corresponding with remote survey methods, which is generally aimed at compliable landscapes. More of these reduced remnant features may therefore also exist, in larger or smaller concentrations, hidden in less compliable landscapes elsewhere. Such monuments would have to be identified using different methods in conjunction with a search of official and narrative historical documents, and the old military maps.

After fifteen years of systematic aerial survey in Bohemia it is almost certain that under the land surface there are many more hidden deserted redoubts, ramparts, batteries and other military earthworks of the post-medieval period than was presumed. These can be discovered through aerial prospecting or by analysis and interpretations of remote survey data (see map in Fig. 1 for sites mentioned in this paper). The future task of historic research within the field of postmedieval warfare is to integrate the various fragments of data into general synthesis.

Acknowledgements

My thanks are aimed at L. and P. Foster for translating the Czech text into English.

- Beneš, J. et al. 1995: Soubor militárií z počátku třicetileté války z Volarských šancí, *Archeologické rozhledy* 47, 461 – 480.
- Gojda, M. 1997: Aerial Archaeology in Bohemia. Prague: Institute of Archaeology.
- Gojda, M. 2004: Prehistoric Bohemia: landscape and settlement in the heart of Europe, *Landscapes* Vol.5/No.1, 35-54.
- Gojda, M. (ed.) 2004: Ancient Landscape, Settlement Dynamics and non-Destructive Archaeology. Prague: Academia.
- Matoušek, V. 2006: Třebel. Obraz krajiny s bitvou. Praha: Academia.
- Meduna, P. 1990: Morphology of field fortifications of the 17th 19th centurie. A contribution to surface research. In: Z. Smetánka J. Žegklitz (eds.), *Studies in Postmedieval Archeology* 1. Praha: Archeologický ústav, 75-86.
- Smrž, Z.- Hluštík, A. in press: Polní opevnění z roku 1813 mezi Postoloprty a Budyní nad Ohří: výsledky letecké prospekce a historického bádání

Figure captions

- 2. Terezín, the so-called small fortress. Example of a brick (and to a lesser extent stone) fort constructed as a part of a huge town (the so-called great fortress) fortification north of Prague dated from the 1780's. This fortified town complex has been later complemented by a linear system of artillery redoubts across the river Elbe (the Třeboutice area, see Figs. 6 10). All photographs (apart from No. 4) by the author.
- 3. Redoubts set into a line, in north-west Bohemia (70 kilometers far from Prague). The first military mapping (the so-called Joseph's survey named after the Austrian Emperor Joseph II.), sheet 26, from the 1760' – 1780'. Courtesy by Geolab UJEP
- 4. Hradčany. Corner part of a postmedieval small fort. Its rampart and ditch are well preserved due to its location inside forest whose trees were recently cut (Photo: V. Daněček).
- 5. Plan of a field fort (redoubt) near Volary from 1618 1620 (after Beneš et al. 1995).
- 6. Bridgehead/salient of Terezín on the right (north) Labe river terrace bank between Litoměřice and Třeboutice on an original plan from 1860s. Courtesy by Military Historical Museum, Prague.
- 7. One of the redoubts (Werk 3) on the original plan from 1866. Courtesy by the Military Historical Museum, Prague.
- 8. System of field fortification of the northern Terezín salient depicted by crop (barley) mark and first identified in 1997. Looking from the west. Numbers of individual forts correspond with labels on the original plans (see Fig. 6). All aerial photographs were taken by hand held camera at an altitude of 300 m.

- 9. Detail of redoubts 4 5 (and a part of a redoubt 6) strung along the line of a double ditch and road (?) running parallel with the ditch from the southern edge of the redoubt 5. Looking from the southwest.
- 10. Redoubts 10 (signed as X on Plate 6) situated immediately on the right bank of the Labe River and south from the redoubt 4. The groundplan is visible by differential crop colour and growth covering the outer ditch.
- 11. One of a group of redoubts identified during aerial survey in the vicinity of the Labe and Vltava river confluence near the village of Hořín. Due to badly legible crop mark on the photograph the grounplan of the redoubt has been enhanced by computer adjusted colour intensification.
- 12. Louny: the outer, northwestern edge of the town. One of the latest discoveries of a post-medieval field fort. Found in June 2005 during the summer course in aerial archaeology, which is a part of compulsory student praxis for The Department of Archaeology at the University of West Bohemia. The polygonal ditch is visible as a darker pointed line on lighter background (crop: oil seed). It is almost certainly dated to the final period of the Napoleonic era (1812-13). Small features showing inside the fort may be some element of the fort, but they are most likely of prehistoric origin (pits, sunken floor houses).