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WHAT DO WE KNOW ABOUT CASTLE KITCHENS AND THEIR MANAGEMENT? FORTY YEARS OF EXCAVATIONS OF ROKŠTEJN CASTLE

JANA MAZÁČKOVÁ – PETR ŽAŽA

Abstract: *Castle kitchens represent specific features of fortified residences, along with their management and operation. This article focuses on the contemporary understanding of this topic. The methodological case study is represented by Rokštejn Castle which has been excavated since 1981, and which allows observing the evolution of castle kitchens, not only in relation to time, but also to the dynamic remodelling of the castle following the changes in castle ownership. The archaeological features with artefactual and ecofactual material represent the functioning of the kitchens and the consequent waste management of the castle that might contain evidence of the dining culture of its inhabitants.*

Keywords: *castle kitchen – lordship economy – kitchen waste analysis.*

Co víme o hradních kuchyních a jejich provozu? Čtyřicet let archeologického výzkumu hradu Rokštejn

Abstrakt: *Hradní kuchyně představují specifické objekty opevněných sídel, stejně jako jejich provoz. Tento článek se zaměřuje na současné poznání této problematiky. Metodologická případová studie je zde představena na příkladu hradu Rokštejn, který je archeologicky zkoumán již od roku 1981; jeho kuchyňské provozy mohou být zkoumány v souvislosti s přestavbami hradu během držby hradu různými majiteli. Archeologické situace a v nich obsažený archeologický i ekofaktový materiál dokládají nejen samotný provoz hradní kuchyně a následné zacházení s odpadem, ale i kulturu stolování obyvatel hradu.*

Klíčová slova: *hradní kuchyně – ekonomika panství – analýza kuchyňského odpadu.*

1 Introduction

Food preparation, and thus kitchens, belong to everyday human activities across time and space, yet on many occasions, archaeology has a very limited opportunity to study these activities (cf. Beranová 2005; Graff–Rodríguez-Alegría edd. 2012; Metheny–Beaudry 2015; 2015a). Castle kitchens on the other hand represent few instances when archaeology can shed light into medieval cuisine, as the whole operation around food preparation is taking place in specially selected areas/buildings, and they themselves are delineated by the castle walls. This also indicates the general area of waste management, together with the daily life of castle inhabitants. Castle kitchens were firstly archaeologically studied mainly from their architectural aspect with no connection to the kitchen's daily operation or kitchen waste management. Czech archaeology has mainly presented individual case studies of castle kitchens (Menclová 1972; Cejpová 1987; 2003; Durdík–Bolina 2001; Slavík 2008), yet a complex analysis of kitchenware, osteological material and spatial dispositions is still lacking (cf. Durdík 2010, 47). The state of research in the rest of Europe is very similar to the Czech situation. Syntheses are often focused on evaluating the castle site itself, its construction and management changes (e.g., Brown–Pluskowski 2011; Sikora et al. 2019). Only a few of these studies are considering the reconstruction of the kitchen management, operations and waste management and are usually focused on construction and architectural aspect of the kitchens, or basic analysis of osteological material (Fisher–Thomas 2012; Chantran 2018; Lallau 2019; Šimunková–Beljak Pažinová 2018). In contrast, the question of waste management in archaeology as a whole has been complexly studied mainly in prehistoric archaeology (cf. Kuna et al. 2012; or in general view more recently Sosna–Brunclíková ed. 2017). In medieval archaeology, the focus lies predominantly on towns and their waste management (e.g., Čapek et al. 2015; Tichý–Lisá–Dohnálková 2010; Orna–Dudková 2016). Yet towns pose a different way of waste disposal, as garbage is discarded mainly in cesspits, as opposed to managing waste from castles,

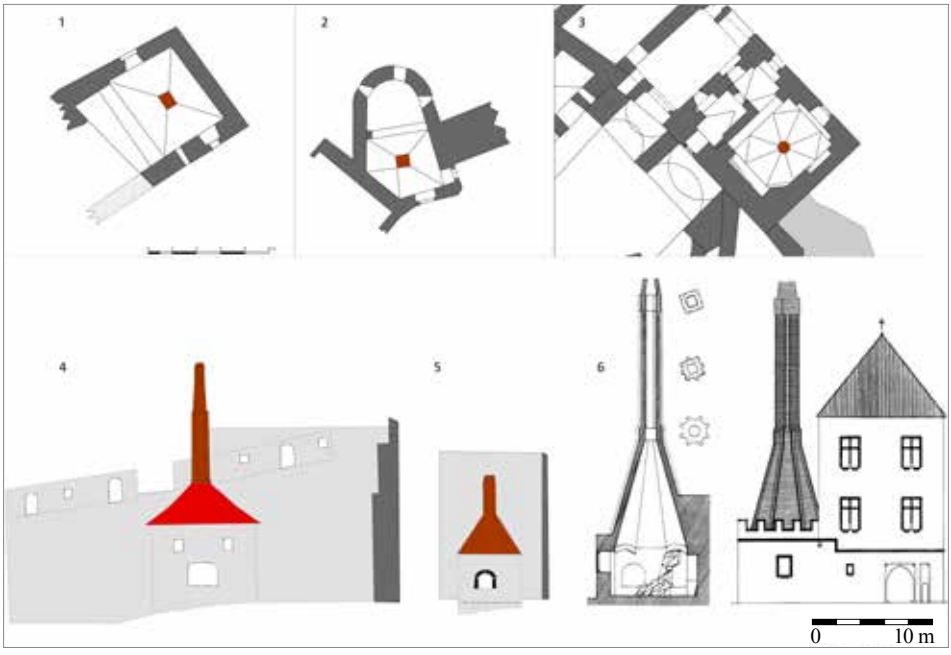

Fig. 1. Castle kitchens with pyramid-like flues. 1 – Lipa, Lower Silesia (after Pilch 2005, 194); 2 – Aggstein, Austria, pentagonal flue (after Reichhalter online); 3 – Roupov, octagonal flue (after Menclová 1972a, 434, Fig. 643); 4 – Malenovice, polygonal flue (after Janiš et al. 2018, Fig. 29; Fig. 238; Fig. 239); 5 – Kurovice stronghold, octagonal flue (after Štětina et al. 2019, Fig. 35); 6 – Roupov, octagonal flue (after Menclová 1972a, Fig. 644).

Obr. 1. Kuchyně s pyramidálním dymníkem. 1 – Lipa, Dolní Slezsko (podle Pilch 2005, 194); 2 – Aggstein, Rakousko, pětiboký dymník (podle Reichhalter online); 3 – Roupov, oktogonální dymník (podle Menclová 1972a, 434, obr. 643); 4 – Malenovice, polygonální dýmník (podle Janiš et al. 2018, obr. 29; obr. 238; obr. 239); 5 – tvrz Kurovice, oktogonální dymník (podle Štětina et al. 2019, obr. 35); 6 – Roupov, oktogonální dymník (podle Menclová 1972a, obr. 644).

as cesspits are generally missing at castles. This indicates different waste management, and most probably represents only moving the waste heaps, and waste in general, around the castle plot.

Another issue is the definition of kitchen waste itself. Usually, it is vaguely defined as presence of mainly pottery and bone fragments, yet it is not considered how the waste management of the castle society transformed individual waste materials, and how post-depositional processes formed the final archaeological layers which archaeologists then interpret as kitchen waste. Osteological analyses have long been a staple method of deducing the composition of meat eaten, yet these are more commonly done for medieval towns (e.g., Nývltová Fišáková et al. 2016), rather than castles. These represent only a minority of studied castles, for example: Veselí nad Moravou (Sůvová 2015), Fürstenwalde (Malík 2014), Krašov and Tetín (Peške 1994), Vízmburk (Dreslerová 2013), Lelekovice (Páral et al. 1994), Orlík nad Vltavou (Grabolle–Hrubý–Militký 2002), Zlenice (Kyselý 2004), Osvračín (Kyselý 2000), Lacembok (Kyselý 2002), Skály (Nývltová Fišáková 2010), Opava Castle (Zezula 2018), or smaller noble house Rumberk (Plaček–Skálová–Šimeček 2010). For a comparison of meat consumption of a noble seat and its intermediate hinterland, even fewer studies can be named (e.g., Konůvky; Páral–Měchurová–Riedlová 1995). Nevertheless, the connection between castles and its everyday operation and life of their inhabitants is missing. The importance of such connection can be shown, again, on medieval town research, where this approach manifested possible links between market-based produce and town-house owners' own production of meat (Nývltová Fišáková et al. 2016).

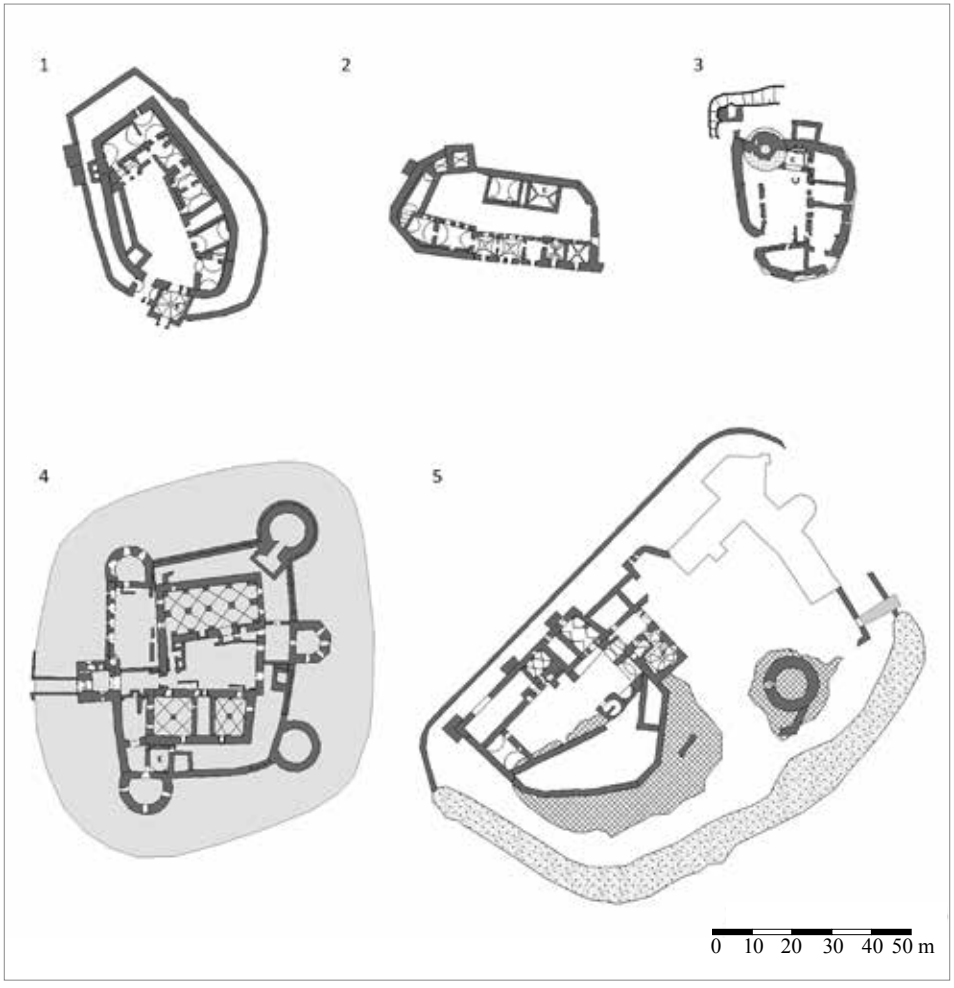

Fig. 2. Castle smoke kitchens (K) with octagonal flues. 1 – Helfštýn castle (after Lapáček et al. 2020, 99); 2 – Malenovice castle (after Janiš et al. 2018, Fig. 238); 3 – Vízmburk castle (after Razím 2012, Figs. 243–244); 4 – Švihov castle (after Menclová 1972a, Fig. 578); 5 – Roupov (after Durdík 1999, Fig. 1183).

Obr. 2. Černé kuchyně (označeno K) s oktogonálním dymníkem. 1 – Helfštýn (podle Lapáček et al. 2020, 99); 2 – Malenovice (podle Janiš et al. 2018, obr. 238); 3 – Vízmburk (podle Razím 2012, obr. 243–244); 4 – Švihov (podle Menclová 1972a, obr. 578); 5 – Roupov (podle Durdík 1999, obr. 1183).

2 Archaeological research into kitchens and waste management at medieval castles

Over the last forty years, quite a lot of research has been done into cataloguing castle kitchens, yet, as stated above, it has mostly focused on architectural aspects of kitchens, and no published research connects these sites with a complex analysis of usage and waste management (Belcredi 2010; Endlicherová–Belcredi 2006, 93–112; Nývltová Fišáková 2011, 47–57). Another necessity during cooking is water which is almost always not dealt with during castle kitchen research. When water availability and consumption is mentioned, it is only to the level of basic statement

that a cistern or a well was available, and no further research has been conducted[1] (Plaček 1984; Durdík 2009).

First mentions of kitchens at castles come from D. Menclová (1972; 1972a) and basic (but not in the least trivial) overviews on castle kitchens has continuously been provided by M. Cejpová (e.g., Cejpová 1987; 2003; Kolář et al. 2018; Cejpová et al. 2020, 518–533). The first separate kitchen in the Czech Lands can be found at Týřov Castle, and as these types of kitchens are quite space demanding, they can be fitted in a myriad of places around the castle (e.g., the zwinger or outer bailey, or the castle ditch; Durdík–Bolina 2001, 65). Other examples of castle kitchens are represented at the castles Helfštýn (Fig. 2:1), Kurovice (Fig 1:5), Malenovice (Figs. 1:4; 2:2), Roupov (Figs. 1:3, 6; 2:5), Švihov (Fig. 2:4), Vízmburk (Fig. 2:3). Smoke kitchens with pyramidal flues have been reconstructed at the Opava Castle, with the kitchen protruding into the Outer Bailey. The operation and waste management of the kitchen is connected to the proximity with the zwinger (Zezula 2018, 191, 203–205; Kolář et al. 2021, 37–84). A similar situation can be found at Estergom Castle in Hungary. Serving hatches or windows (Figs. 1:4–6) from the 15th and 16th centuries illustrate access restrictions to the kitchens themselves, as a way of controlling and evidencing food stocks, examples of which can be attested by written sources during the Late Middle Ages and mainly the Early Modern Period (Hrdlička 2000; Kozák 2014). Such a feature shows an internal kitchen operation within the castles (mainly prohibiting the garrison of the castle from the kitchens, as the manorial family followed different rules, concerning food accessibility).

Kitchens form mainly two architectural types, stand-alone and incorporated kitchens, with further distinction being the baking area, as it can be separate from the kitchen area. Kitchens can simply be characterised as places of food preparation with the possibility of using a heat source. Based on meal type, either a baking oven or an open flame hearth is needed which determines the form of the cooking space. This furthers the types of kitchens which can then be represented by a room with an open hearth and/or a baking oven with the whole room under a flue (or a kitchen hood), creating a smoke kitchen, where the fumes dissipate through the flue and the roof of the building, or through a smoke opening/window in the walls (cf. Štajnochr 2017, 9–16; Anderle 2008; Škabrada 2003). Smoke kitchens can be further split into groups, depending on the shape of the flue, with the basic type being the pyramidal shape, like those found at Viszegrád castle in Hungary, Lipa castle in Poland (Fig. 1:1), or at Austrian castles Gutenstein or Strahemberg (Feld–Orosz 2007, 66–67; Kolář et al. 2018, 147, 151; Kolář et al. 2018a, 165; Piper 2007, 477–478). For example, another Austrian castle, Aggstein, has pentagonal flue which is given by the architectural scheme of the kitchen (Fig. 1:2). The kitchen itself is also quite far from the castle's palace (Piper 2007, 477–478). The other setup being a room with the flue constructed especially above the open fire hearth, which can then continue to the chimney-like structure above the roof or can be dragging the fumes out of the kitchen to the space under the roofing, and from there the fumes dissipate, again, through the roof itself (a semi smoke kitchen; cf. Štajnochr 2017, 17–34). A possible type of open-fire kitchens is then represented by fireplace kitchens with direct smoke outlet in the form of a chimney. This creates the possibility of cooking in individual fireplaces in different rooms around the castle (Fig. 3; Štajnochr 2017, 35–39).

The hearth itself could also take many shapes. From being situated right at the floor level, with only some demarcation in the form of stones or bricks, to being elevated above the floor, forming a pedestal made from clay, stone, brick, or a combination of those (cf. Schenk 2020). The average size of these hearths is around 1.9 × 1.6 m, with the maximum size reaching 2.5 × 2.0 m at the Bradlo castle (Hejna 1974, 373). As for the baking ovens, these can, as said before, be a completely stand-alone feature of the castle, not being attached to the kitchen itself (this can possibly be due to their not so frequent usage during meal preparation), or they can be

1 E.g., if said cisterns could hold enough water for cooking, livestock husbandry, or cleaning and bathing, or where could be another source of water, as water is an essential everyday commodity. Only few sites can shed some light into the water management on castles, with examples of lead pipes from the Château-Thierry (Aisne; Blary 2006), ceramic pipes and cistern with pulley system from the Pustý Hrad castle (Beljak Pažinová–Beljak 2020, 947–948), or from the Czech Lands the castles Nové Hrady and Křivoklát (Durdík 2009).

Fig. 3. Cooking in a fireplace. Decameron 1430–1455 (after BnF. Bibliothèque de l'Arsenal. Ms-5070 réserve 226v).

Obr. 3. Vaření v krbu. Decameron 1430–1455 (podle BnF. Bibliothèque de l'Arsenal. Ms-5070 réserve 226v).

an integral part of the kitchen. Smaller ovens reach dimensions of around 2.0 × 2.0 m (e.g., Rokštejn castle), and in case of the larger ones around 5 × 2.0 m (Strakonice castle; Valkony 2008, 307).

An important aspect of kitchen management is the distance from the kitchen to the table, where the finished food was served. Although, an accurate modelling of pathways would require a further work, mainly using 3D modelling, which can be shown at the Rokštejn castle in the future, as it is one of the planned outcomes of the GAČR project on castle kitchens,[2] a 2D plan can paint a much clearer understanding of this aspect of dinning culture during the Middle Ages. Kitchens situated within the castle palaces have an obvious distance advantage, as these represent the shortest way of serving the meals from the kitchens to the lord's table. But even external kitchens can still be situated within a short distance of the main palace, but here the weather and temperature can become a factor. Examples of short distances can be seen at the Týřov castle (40 m from the kitchen; Fig. 4:1), Vízmburk and Malenovice castle (both approx. 20 m; Fig. 2:2 and Fig. 2:3), Roupov castle (40 m; Fig. 2:5), or the Švihov castle (50 m; Fig. 2:4). On the other hand, sometimes the kitchen can be quite far from the dinning hall. The Rokštejn castle represents castles with their kitchens being outside, or not directly within the palatial building, and quite further from the dining halls, as the Upper Palace Great Hall was situated on the third floor, and the distance from the kitchen to the hall measured approximately 95 m (Fig. 5). This is closely related to waste management, in order to ensue free passage from the kitchens to the tables. The study of waste management is a continuous problem of any given society, and as the waste materials change, and become less and less biodegradable, waste products and their management pose a problem not only for the society that produced them, but also for the future generations. The problem with kitchen waste in general is that it is not often a studied area of archaeological evidence, even though it is one of the most prolific and ever-present type of finds, as archaeology primarily studies mainly waste of past populations (cf. Neustupný 2007), waste management should thus be scrutinized, as well, not the waste itself. The study of waste management can help us in understanding the topic of castle kitchen management, and in deciphering the positions of kitchens/cooking spaces that are not clearly defined (for example, by specially constructed stone/brick kitchen buildings, or by specially allotted places within another stone/brick structure; as is the case of many castles; cf. Cejpová 1987; 2003; Durdík–Bolina 2001, 65–66; Plaček 2001, 63). The problem of how to detect them on such castles has not been successfully analysed. This determination can be based on osteological and pottery evidence, accompanied by micromorphology and other available methods, so that these areas can be then identified on other castles, where other clear evidence for such edifices or areas is lacking.

2 It is an ongoing project Reconstruction of Medieval Castle Kitchen Operation in Relation to Waste Management on Rokštejn Castle Example (registration number GA22-02149S).

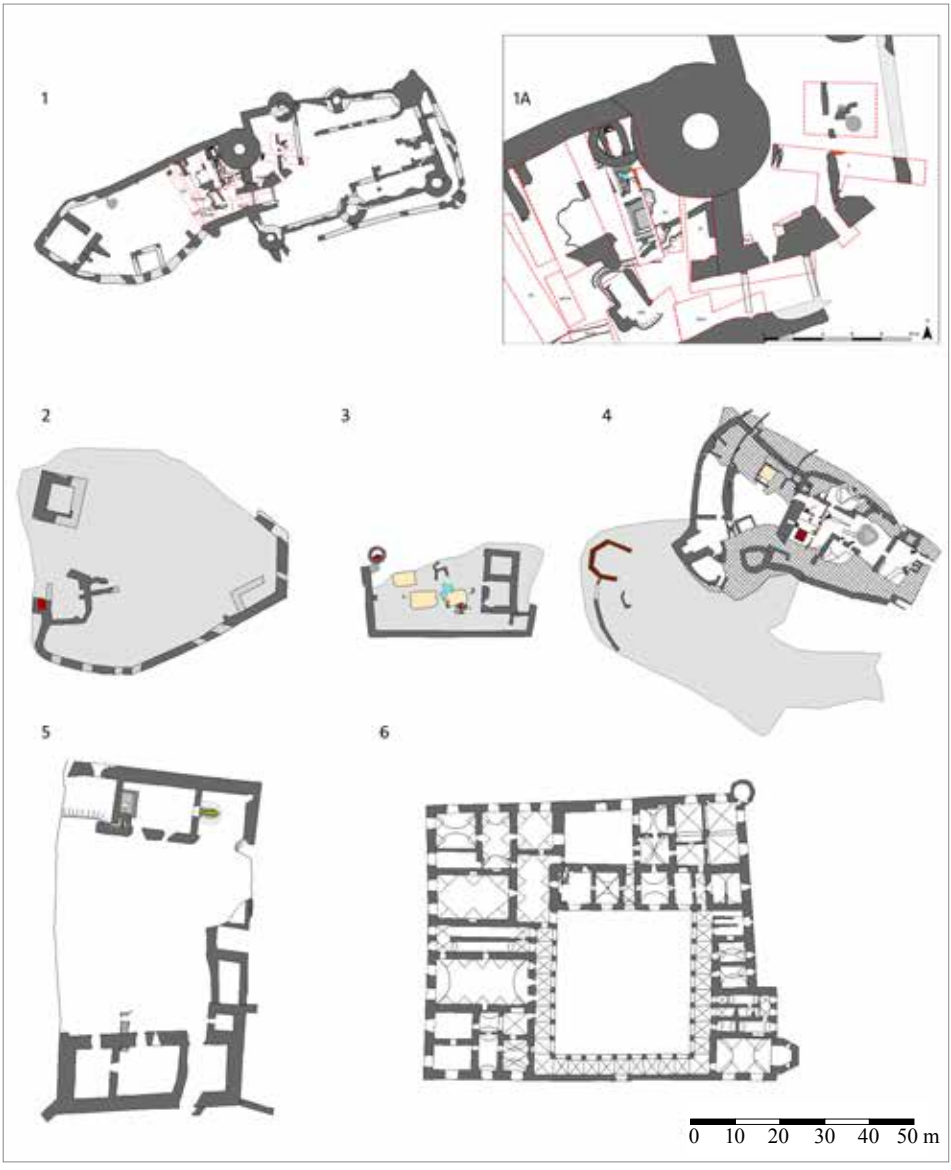

Fig. 4. Archaeologically researched kitchens. 1 – Týřov castle (after Durdík 2001, 14); 2 – Bradlo by Hostinné castle (after Hejna 1974, Fig. 2); 3 – Újezd u Tišnova castle (after Poláček 1990, Fig. 1); 4 – Skály u Jimramova castle (Belcredi 2011, Fig. 2); 5 – Litice castle (after Cejpová 1998, Figs. 1, 2); 6 – Litomyšl castle (after Cejpová 1993, Figs. 1–3).

Obr. 4. Archeologicky odkryté kuchyňské provozy. 1 – Týřov (Durdík 2001, 14); 2 – Bradlo u Hostinného (podle Hejna 1974, obr. 2); 3 – Újezd u Tišnova (podle Poláček 1990, obr. 1); 4 – Skály u Jimramova (Belcredi 2011, obr. 2); 5 – Litice (podle Cejpová 1998, obr. 1, 2); 6 – Litomyšl (podle Cejpová 1993, obr. 1–3).

3 Rokštejn Castle – heritage research in view of new possibilities

Rokštejn Castle, the Vysočina Region, is situated in south-western part of the Bohemian-Moravian Highlands on the Moravian side of the land border between two historical lands: the Kingdom of Bohemia and the Margraviate of Moravia (Fig. 6). The castle origins relate to the final phase of

colonization of the area during the late 13th century where the Střížovic family had established its fiefdom, and soon after, they called themselves "de Ruthenstein" (Mazáčková 2012; 2017). The Castle Rokštejn stands almost alone in the region, even though the closest castle is in the town of Brtnice (4 km), it is younger in its origins, and later replaced Rokštejn as the seat of power, as a result of almost 300 years of power struggle in an important border region, family feuds, and most notoriously, because of debts (cf. Mazáčková 2012, 159–189). Yet, farther castles are beyond 20 km radius, which only accentuates the status of the Brtnice and Rokštejn castles in the central Highlands. Rokštejn Castle has been archaeologically studied since 1981 and can be used as evidence of fast, distinctive construction changes inside the castle allotment, by using different building structures and efficient use of limited space given by the bedrock. The existence of the castle dates from the 1270s to the 1467, when it was destroyed in a military action, and the political centre moved to the Brtnice castle, as mentioned before (Měřínský–Plaček 1989; Měřínský 2007; Mazáčková 2017).

The castle itself was most probably named after its founder, Hrut or Rutho, as the oldest mention (from 1289) of the castle comes from nobiliary particle of Bernhardo de Ruthesteine, denoting the Castle Rokštejn, as the seat of residence of the Ruthensteiner Family (CDM VII, 776–777), until 1359, when the castle became Margravial property. The castle itself went through many architectural changes, as it became a representative seat of the Margrave on the historical Moravian – Bohemian border. The Upper and Lower Palaces were built, and the outer walls had also some rebuilding done, as did part of the outer wall (Měřínský 2007, 65–75). After the death

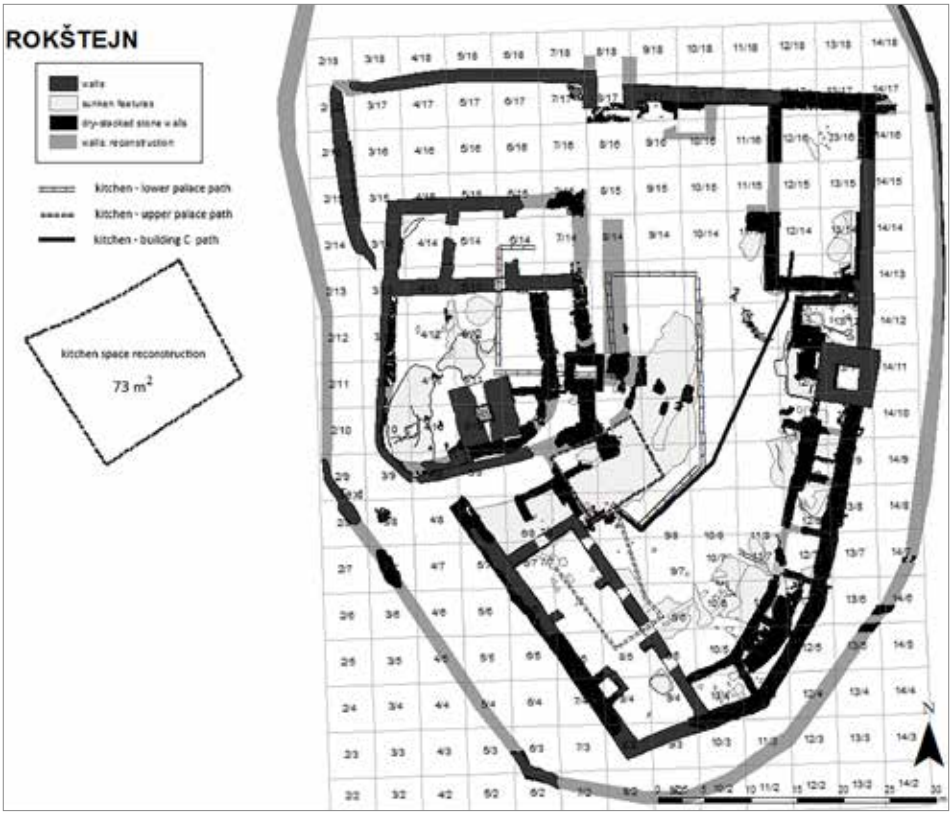

Fig. 5. Reconstruction of distances from the Rokštejn castle kitchen to possible dining areas of the castle.

Obr. 5. Rekonstrukce vzdáleností z rokštejnské kuchyně k možným místům jídelen.

of the Moravian Margave, John Henry (1375), and Holy Roman Emperor and Bohemian king, Charles IV (1378), the political stability of the historical Czech Lands, and partially in the Holy Roman Empire as well, began to crumble. This situation culminated in the so-called Moravian Margravial Wars, at the end of the 14th and the beginning of the 15th century and continued during the Hussite Wars and Bohemian-Hungarian War of the 15th century. During this period, in 1398, Henry of Wallenstein gained Rokštejn Castle and started to rebuild it, again (Mazáčková 2012, 159; Měřínský 2007, 26). In 1467, the castle was besieged and destroyed by the royal town of Jihlava, and thus the main habitable history of the castle ends. It was used even after its downfall, but that is not within the scope of this article.

The first phase, the Ruthensteiner phase (Fig. 7), sees the castle in its beginnings, and we do not have any indications on where a castle kitchen was situated. During the Margravial and Wallenstein phases, new kitchen areas appear with two bread ovens (Figs. 8, 9). The bread oven next to the gatehouse was unearthed in 2017 and it was discovered it was operational until the violent end of the castle in 1467, as it was cleaned and ready for next batch of bread, when the surrounding walls crumbled on it, during the siege. The gate and the Mantelmauer of the Lower Castle Bailey created a chimney for the oven, creating an updraught, so that the smoke would not bother the cooks. The oven was made from stones mixed with bricks, with the oven floor constructed out of bricks. On the other side of the gatehouse, another oven-like structure has been discovered in 2014, yet it is smaller and more gracile, and made completely out of stones. The bread oven is 60 m away from the main kitchen, which is situated between the Lower Castle Palace and the Mantelmauer of the Upper Castle (Fig. 9). This kitchen is also the place where the other bread oven (from the margravial phase) was excavated during the 1987 season. This oven is similar in size to the one by the gatehouse, but the floor of the oven was made only from clay, with the chimney possibly using the wall of the Lower Palace for creating an updraught. This oven was then destroyed during the Wallenstein phase, when a new kitchen was built, but without an oven. During this phase, the oven was situated at the gate, as mentioned above, and was not part of the kitchen itself. The kitchen was probably a log building, measuring 6 × 6.5 m with an entrance from south, based on previous evaluation by Z. Měřínský, who wrongly put it into the Margravial phase, based on the baking oven which precedes the kitchen (Měřínský 2007, 73, 76). The Upper Palace of the Rokštejn castle must have had a kitchen as well, with the other kitchen using the same chimney, as the one by the Lower Palace, but the destruction of the castle has strongly eroded the archaeological situation there.

The smoke production within the enclosed courtyard of the castle is still an open topic, as it is quite important for the inhabitant's health, and is not often being considered. When discussing cooking, we must also consider that food could be prepared inside the palaces in the fireplaces, so the division of cooking in the kitchen and cooking inside the palatial rooms was possible. Cooking, or finishing the dish inside the palace fireplaces has many advantages, as the food is served hot, which is especially important during winter months.

As for the archaeological evidence of cooking vessels and cooked foods, animal bones can be statistically evaluated, so that animal species, age, sex, and butchering marks can be catalogued and further analysed. This will then enable closer evaluation of the main practices in meat preparation (i.e., dependence on either beef or pork, or other types of meat), but also culinary practices (e.g., which parts of given animal were used in cooking, if boiling or roasting was used during preparation). Previously analysed bone fragments from the Upper Palace and the outbuildings of the Lower Palace do not represent usable analyses for a detailed picture on meat consumption throughout the castle's existence. Even though more than 6,000 bone fragments have been analysed, the results have unfortunately been disconnected from their original contexts they were excavated in, which only brings general statements on different animals being eaten. One major result from these analyses is that the majority of meats eaten were beef and pork (Sacherová 2004; Vršek 2004, 97–104). Cut marks on bones can then tell the probable size of the knife, or in case of hacking, if a cleaver was used instead. Historical sources on cooking

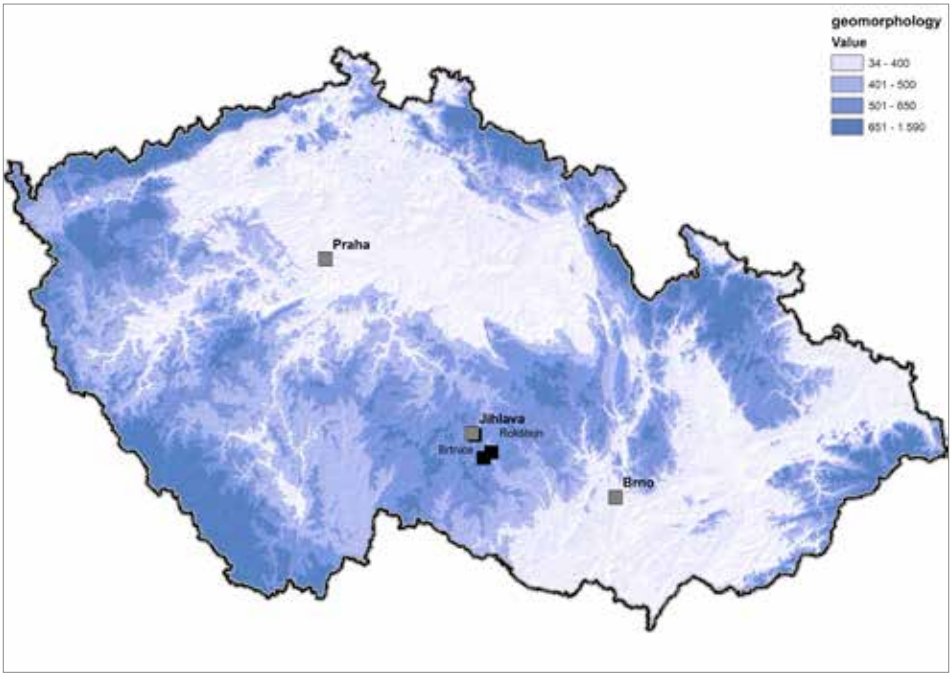

Fig. 6. Map of the Czech Republic with the location of Rokštejn Castle and Brtnice as a centre of the historical Brtnice estate.
Obr. 6. Mapa České republiky s lokalizací Rokštejna a Brtnice jako centra historického panství Brtnice.

Horizons	Major activity	Approximate dating range
Horizon I	Ruthensteiner phase	1250–1350
Horizon II	Margravial phase	1350–1399
Horizon IIIa1–3	Wallenstein phase	1399–1467
Horizon IIIb	Destruction horizon	late summer/autumn 1467
Horizon IV	Deterioration phase	1467–1728
Horizon V	Subrecent – tourism phase, 1st amateur excavation of Eleonara Collalto	1728–1950
Horizon VI	Amateur excavation of B. Coufal	1950–1965
Horizon VII	Modern excavation	1981 – present

Fig. 7. Archaeological horizons of the castle's existence with approximate dating range (these are still not final dates, as the excavation is still ongoing, and new pieces of evidence can alter the absolute dating).

Obr. 7. Archeologické horizonty existence hradu s předpokládanými daty (tato data nejsou finální vzhledem k tomu, že výzkum stále probíhá).

and kitchens – interdisciplinarity, especially in cases where the kitchen areas are not clearly distinguishable, is the only way of studying kitchen operation and waste management. Invaluable source of information are also medieval and renaissance cookbooks, illuminations of kitchens or cooking, and overall historical mentions of either food eaten, or ledgers of royal or wealthy families on how much of what is needed for running a medieval or renaissance household (e.g., Dembińska 1999; Unger 2007).

A comparison can be drawn between archaeologically excavated and analysed medieval castle (Rokštejn) and historically studied early modern château (Brtnice). An earlier study of

Fig. 8. Rokštejn Castle, reconstructed size of the castle kitchen from the Wallenstein phase. In the south-western corner of the kitchen is the older substruction of the bread oven. 1 – within the hearth pedestal, a milling stone was used as building material; 2 – photographic documentation of the situation.

Obr. 8. Hrad Rokštejn, zrekonstruovaný rozsah hradní kuchyně z valdštejnské faze. V jihozápadním rohu starší substrukce chlebové pece. 1 – do soklu topeniště byl zazděn mlecí kámen; 2 – fotodokumentace reliktu chlebové pece.

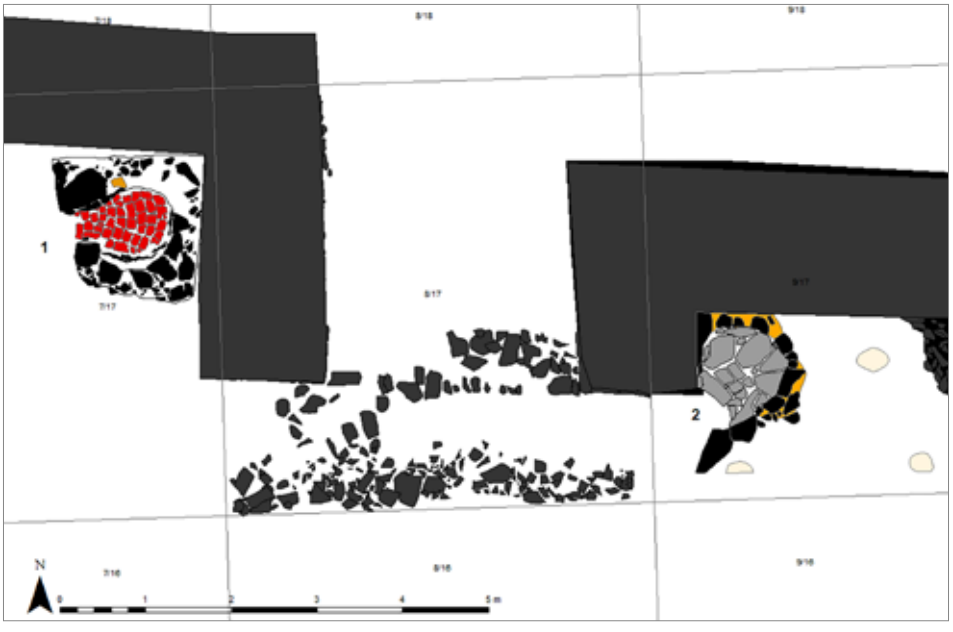

Fig. 9. Rokštejn Castle. 1 – bread oven; 2 – pyro-technological feature with cobbled fireplace.

Obr. 9. Hrad Rokštejn. 1 – chlebová pec; 2 – pyrotechnologické zařízení s dlážděným topeništěm.

animal bones from the Upper Castle (Sacherová 2003–2004) shows three main types of meat, beef, pork, and mutton, based on the weight of meet associated with bones found in the Upper Castle courtyard. Whereas kitchen accounts of the Collalto family, some 300 years later, show mainly beef and mutton, followed by poultry (Janáček 2019, 26). Further study is needed, as these data need to be refined and supplemented. For example, as it is the only osteological analysis, with no correlation with archaeological layers, a more holistic analysis needs to be undertaken, in order to fit the preliminary results into the timeframe of the existence of the castle. And on the other hand, the historical analysis of written records for the geographically close-by Brtnice Château has been done as a bachelor thesis, and only works with one year – 1725. As there are more kitchen accounts, spanning the years from 1671 to 1777, which are stored at the Moravian Land Archive,[3] a more detailed picture can be drawn. The château was staffed by around 25 people, added the comital family, the number of people being fed by the comital kitchen during 1691 gets to almost 45 people. During a feast, the number of people attending could have been as much as a hundred (around ten larger or smaller feasts were thrown during 1691; Chocholáč 1994, 50). The difference between a normal kitchen production when the Count and his family were at the château, as opposed to when they are at one of their other houses and palaces, is mainly in what is being cooked, rather than how much of the food is produced (Chocholáč 1994, 49). The majority of meats eaten is represented by beef (mainly veal) and fish, and less by mutton and pork, game constituted only a small portion of meals served to the Count (Chocholáč 1994, 51–52). This information can be used in future research, in order to recreate the kitchen management, by combining all the available data from the written records with the kitchen itself (Fig. 10). Historically close are, for example, written sources on the court of Sigismund I the Old or Vladislaus II of Hungary (Kozák 2014; 2019; SOkA Kutná Hora), or younger Renaissance sources for the aristocratic courts (Hrdlička 2000a).

4 Discussion and preliminary conclusions

The over 40-year-long excavations of the castle have produced quantitatively and qualitatively a plethora of archaeological data, and as the castle has been excavated almost in its entirety, and the only part of the castle unavailable for archaeological survey is the Outer Bailey, we are left with two spaces within the Inner Bailey, that have been positively identified as kitchens/cooking/baking spaces. This amount of data also brings along the burden of the inability to analyse everything at once, and compare newly obtained data with the older ones, as the research started off in the 1980s as a rescue excavation, due to the methodology of sampling, we simply do not have all the evidence which is considered a staple in archaeology today (mainly environmental proxy data[4]).

Many previously excavated areas of the castle were poorly documented (by modern standards), scanning available photos from the 80s and 90s and uploading them into the Agisoft Metashape software for 3D modelling, could create a 3D model of given situation, and complementing available data. This method has one main obstacle, that is, the software needs more photos from different angles of the same location. Previous tests of this method with selected photos of the lower tower procured usable results. The issue we are facing with the inheritance is that the photos are not usually inscribed, or marked, and the photographed situation has to be interpolated given the year it might have been taken, the overall situation on the photo, and other factors. With the help of students, we can at least find those pictures that represent the same place or object, and then try and pinpoint it with our model of the castle, virtually blending old photos with new, thanks to the Agisoft software. 3D modelling is also helpful in creating pathways inside the castle walls, as the models can be inserted into real-world, eliminating situations where

3 Collection F 19 – Central Administration of the Collalto Family, Brtnice.

4 It was not until 2004, when regular samples of each archaeological layer started to be taken for future analyses.

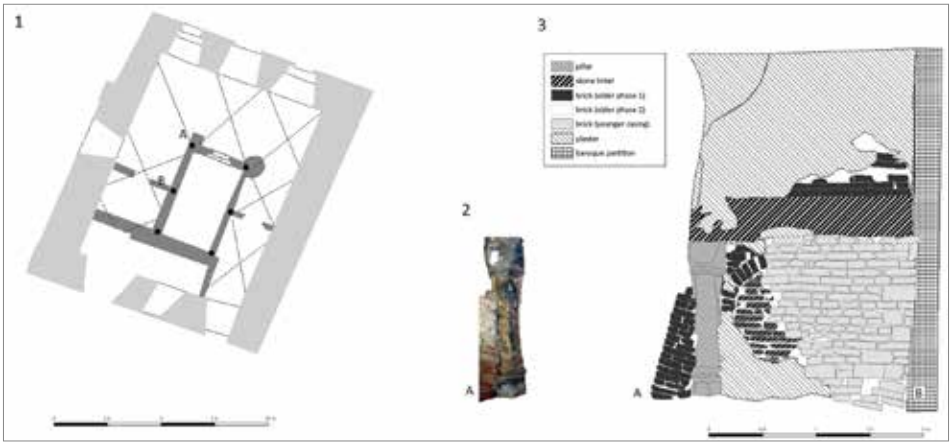

Fig. 10. Brtnice Château – the kitchen. 1 – detail of the kitchen schema with a central flue over six pillars; 2 – stone pillar (position A); 3 – south-western view of the walled-in flue.

Obr. 10. Zámek Brtnice – kuchyně. 1 – detail dispozice kuchyně s centrálním dýmníkem nad šesti pilíři; 2 – kamenný pilíř (poloha A); 3 – jihozápadní pohled na zazděný dýmník.

a model was physically impossible (i.e., too steep gate bridge, or too narrow courtyards), or can reveal other technical problems (for example smoke updraught from individual kitchen areas, so that the smoke does not fill the castle, and so on).

As the castle changed owners, the architectural dispositions changed as well, within the limits of the outer walls of the castle. With it the so-called empty spaces which could indicate waste piles or other waste related management. So far, the archaeological evidence is pointing to a waste management system of moving trash around the castle, and its secondary use as infill layers when levelling the terrain. The working theory is that, if not all, the majority of the accumulated waste during the whole existence of the castle can still be found within the castle walls, and that we can thus piece together either whole animal or pottery individuals, enabling the research on how the waste management changed over time. The formation processes of layers can shed new light into their origin, usage, and/or structural changes (Mazáčková–Lisá 2016; Peña-Monné et al. 2014; Schillito et al. 2014). Microscopic changes, which cannot be otherwise observed, point at different usage of different castle areas, and what post-deposition processes were in play (Banerjea et al. 2019; Kittel et al. 2018; Giaime et al. 2018). These analyses should be able to bring new data on how waste layers are formed within the presumed area of cooking, and in the place of food consumption, as the excavation of the newly discovered palace has revealed a substantial amount of bone fragments so far.

Defining what waste comes from before cooking/roasting and after will help in better understanding of waste management of kitchens in general (does different waste end up in different places, is it then collected some other place, how is it changing over the period of the castle's existence). From historical mentions on the studied region, we have evidence for butcher's privileges for the Jihlava Town (Ebelová 2009; Hoffmann 2004; 2009). And other sources for southern Bohemia let us in on the complicated world of the court of Petr of Rosenberg, where for example, the head cook was also responsible for slaughter and butchering of the animals (Hrdlička 2000a). This shows the varied possibilities of procuring meat, that are contained in different historical sources, only adding to the interdisciplinarity even within Humanities.

Analysing pottery shards, usually associated with kitchen waste, is common practice in archaeology (i.e., basic shape, diameters, rim shapes). Yet, further research into, for example, the volumes of cooking and storing vessels needs to be done, in order to determine what food

was cooked in different types of pottery, and to compare the sizes with bone fragments that were cooked or boiled (experimental evaluation of different techniques see Chantran–Cagnato 2021). With this comparison, of pottery and bone size, next step of analysis will be comparison with historical cookbooks. For further research, it is necessary to define what exactly kitchen waste is, and how to identify it in archaeological contexts, as waste is usually studied for its individual components, and not as a whole (Reno 2017, 17). An important part of waste management is to find out how kitchen waste is spatially related to castle kitchens themselves within the architectural structure of castles. Another important aspect of castle kitchens is how these buildings/areas worked and how they operated (i.e., the construction itself, smoke outlets, wood storage and consumption, cooking options as to the aspect of meal preparation, pottery and cooking vessels storage and consumption rate), and how the consequential waste was dealt with and moved around the castle. Rokštejn Castle can be used as an example as it has a unique opportunity to be used for new methods of interdisciplinary research, as the excavation is still going on, and thus allowing for modern archaeological approach, however, it can also use the already obtained material and re-examine previously excavated areas with new, modern methods and techniques.

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Shrnutí

Co víme o hradních kuchyních a jejich provozu? Čtyřicet let archeologického výzkumu hradu Rokštejn

Hradní kuchyně jsou mnohdy studovány jen ze stavebního hlediska. Tento shrnující článek se zaměřuje na současné poznání provozu hradních kuchyní. Ty nabývají dvou základních forem, černé kuchyně a polodýmné kuchyně, které se mění s dobou a kuchařským uměním. Podle druhů jídla se dále vyčleňují kuchyně s pecemi, ohništěm, nebo jen prosté využívání palácových krbů. Provoz kuchyní může být studován také na základě jejich vzdálenosti od míst, kde jsou hotová jídla pojídána. Tato vzdálenost bývá v rozmezí od 20 do 100 metrů. Se zvětšující se vzdáleností se naskýtá otázka udržení pokrmů teplých, především v zimních měsících. Se zkoumáním provozu kuchyní na hradech také vyvstává otázka zacházení s odpadem, která bývá častěji řešena pro města než pro hradní prostředí. Důležitou součástí výzkumu zacházení s odpadem na hradech je také srovnání středověkého provozu kuchyní s raně novověkým, které přináší nová zajímavá zjištění k vývoji naší společnosti.

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