Bhutan-Swiss archaeological excavation project 2008–2010 Drapham Dzong, Bhutan. Report 2009.

Werner Meyer

Introduction

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In collaboration with Nagtsho Dorji and Sonam Tashi

The Drapham Dzong is located in the Bumthang district in Central Bhutan on a mountain ledge in the Chamkhar Chhu valley (exact position: N 27° 39' 15.4", E 90° 45' 14.9", height: approx. 2,930 m.a.s.l.). The elongated mountain ledge is steep on all sides and in places, the rock forms the foundation of the wall. An ancient valley path leads across the col, east of the fortress hill.

The entire site is divided into two topographical parts – a mountain fortress and a projecting, fortified settlement in the south-east. The fortress consists of three layers: a main and an upper castle, a lower castle, and advanced outer baileys situated in the north and the south. Two staircases fortified by towers connect the southern outer bailey with the valley settlement. The mountain fortress is 200 m long, measured along the longitudinal axis which approximately lies in the north-south direction.

The archaeological excavation of Drapham Dzong is a major project, undertaken by the Ministry of Home and Culture Affairs of the Royal Government of Bhutan and Helvetas Bhutan, in collaboration with the SLSA. It successfully began its first excavation in autumn 2008 under the scientific direction of Prof. Dr. Werner Meyer from the University of Basel. The compensation of salaries for the Basle team during the excavation period in 2009 was taken over by the Basle foundation FAG (Freiwillige Akademische Gesellschaft).

For more project information and the case history of the excavation object, refer to the report about the excavation stage in 2008 in the SLSA Annual Report 2008, p. 25 ff.

Preparatory work in spring/summer 2009

Prior to the second excavation season in October and November 2009, extensive preparatory work was carried out on-site. Under the direction of, the Division for Conservation of Heritage Sites (DCHS) within the Department of Culture, which is responsible for the project management on behalf of the Government of Bhutan, the archaeological staff's camp was doubled in size, thus providing a more comfortable excavation base compared to the first year. The new premises not only offered more bedrooms, but also an office and a canteen. Due to the camp's improvements it was possible to

Fig. 1 Sector T (Utse) during the exposure. View towards the north. Photograph: W.M.

Fig. 2 View of the fortified valley settlement at the south-eastern foot of the castle hill. Photograph: W.M.

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Fig. 3 The excavation camp in 2009. Photograph: W.M.

Fig. 4 The excavation team. Photograph: Self-timer

continue with documentation work and finish paper work in the evening hours. Besides the construction work at the camp, wide-ranging forest clearance was also carried out on the fortress hill which meant that no further human resources were needed for this work during the excavation stage in autumn.

The working tools and other equipment were organized locally, provided that they were available in Bhutan. All remaining equipment – several special devices and the excavation camp's pharmacy – were flown in from Switzerland.

Excavation stage October/November 2009

After a welcome reception organized by Nagtsho Dorji, the offtg. Head and the field team from the DHCS and the Resident Coordinator of Helvetas Bhutan, Dr. Walter Roder and his colleagues in Thimphu, the excavation team traveled to Bumthang in Central Bhutan. There, they were extended a most warm welcome by the Maurer family of the Swiss Guesthouse who had been extraordinarily helpful to the project in 2008 when they provided the project's base. The following day, the District Governor received the team at a festivity in Jakar and expressed his appreciation and support to the planned work for the excavation season.

On October 7, the excavation in 2009 began with a festive and traditional ceremony on the Drapham Dzong hill; it was performed by monks in the presence of the local workers and the entire Bhutan-Swiss excavation team. Following the recommendation of a monasterial astrologer, the excavation started at exactly 1.30 pm at the signal of three pickaxe strokes.

The excavation team

The 2009 excavation team consisted of DHCS employees from the Department of Culture of the Royal Government of Bhutan, Kuenga Wangmo from the University of Cambridge, Helvetas Bhutan, local workers as well as the archaeological staff from Switzerland. Despite the fact that the DHCS had been immensely challenged due to damage surveys and initial supporting measures following a strong earthquake in the summer 2009 which caused severe damage to historic monuments in eastern Bhutan, the pre-excavation preparations on-site were well taken care of with the help of Namgyel Tshering of Helvetas Bhutan. The young engineer Sonam Tashi, who was recruited by the DHCS for this project, was utterly committed and highly interested in the excavation work, hence playing a substantial role in the project's success. Thanks to the pre-

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cise coordination of the workers by the engineer Nidup Gyeltshen from Bumthang as well as the efforts by the local foreman Ugyen – both of whom had already participated in the excavation in 2008 –, the work progressed very well and smoothly.

In 2009, the team was again accompanied by a medical doctor – Dr. med. Stefan Obrist from the University Hospital Zurich. Further, the excavation pharmacy was yet again generously supplied by the pharmacy of the University Hospital Zurich. Luckily, the excavation proceeded without any major medical emergency, allowing time for Dr. Obrist to treat patients from the entire valley every evening. Furthermore, he accompanied the employees of the nearby BHU on several of their visits to the surrounding villages.

We also managed to recruit the same reliable cook as in 2008.

Members of the Bhutan team:

— Nagtsho Dorji, Offtg. head of the DCHS, project coordinator
— Namgyel Tshering, Helvetas Bhutan, head of administration and logistic
— Kuenga Wangmo, University of Cambridge, research associate, documentation
— Sonam Tashi, DCHS Engineer, project management and excavation engineering
— Nidup Gyeltshen, engineer from Bhumtang Dzongkhag, excavation engineering and organisation
— Ugyen, Bhumtang, excavation engineering and organisation
— Approx. 50 to 60 local workers and two cooks

Members of the Swiss team:

— Prof. Dr. Werner Meyer, University of Basel, scientific director
— Silvia Scheuerer, University of Basel, research associate, project management, inventory of finds and documentation
— Jorge Osatinsky, University of Basel, research associate, excavation engineering and surveying

— Gaby Weber, University of Basel, research associate, excavation engineering and organisation
— Anita Springer, Department of Archaeology and Museum of the Canton of Basel-Land, research associate, training, documentation and responsible for samples
— Dr. med. Stefan Obrist, University Hospital Zurich, medical attendance
— Sebastian Obrist, video documentation

At the beginning of November, a team led by Prof. Dr. Armin Gruen of the ETH Zurich visited the excavation site and conducted a photogrammetric survey with drone flights over the fortress area for three days as an independent project. Their images will be used to construct a 3-D model of the fortified hill, which will also be made available to the archaeological team for evaluation purposes. Together with Prof. Dr. A. Gruen's team, Dr. Eberhard Fischer, Secretary General SLSA, visited the excavation site. Further, the District Governor and the Resident Coordinator of Helvetas Bhutan, Dr. Walter Roder, and his wife were able to get first-hand insights into the works on-site. The Maurer family also paid the camp a visit and brought fresh cheese and apple juice with them. Time and again, small groups of tourists passed by, including a tour group belonging to Helvetas; they were given an overview of the site and the ongoing works on small guided tours. In return, they were asked to sign the guest book.

Consulting and training

Besides the archaeological exploration of the fortress, the excavation on the Drapham Dzong also aims at supporting Bhutan on setting up its own archaeological department. For this purpose, Prof. Dr. Werner Meyer wrote a report for the Heads of the department about the significance of archaeology in Bhutan. Further, an additional archaeological site was inspected near Kenchosum/Jakar, which was discovered recently: a cist grave (era unknown), apparently part of a large burial site. The tomb was subsequently documented by the archaeologists, and its scientific exploration was considered urgent and of high significance. A more accurate exploration shall take place at the start of the next campaign in 2010 under the auspices of the DHCS together with technical support from the Swiss team, as long as the landowner has given his consent by then.

Provided that the daily excavation routine allowed for it, the three Bhutanese engineers were introduced to the ongoing specialized works during the entire excavation process. In addition to the «learning by doing» procedures in the daytime, the archaeologist Anita Springer held theory classes in the evening to cover topics on excavation engineering and the basics of archaeology. She had these teaching units and exam-

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Fig. 5 Transporting the debris at the southern bailey. Photograph: S.S.

Fig. 6 Security measures inside the Utse (area Ub). Photograph: W.M.

ples of the daily excavation routine compiled as a manual and handed it out along with the general script by Prof. Dr. Werner Meyer, at the end of the excavation stage.

After 45 days of work in seven weeks, the excavation stage 2009 was concluded on the 25. November 2009 featuring a celebration for the workers which was staged on the Drapham Dzong. Upon return to the capital city of Thimphu, the excavation team was invited by Helvetas Bhutan to present the course of the work as well as the initial findings and results of the campaign 2009 to a group of interested persons from the Department of Culture and Helvetas. The director of the Department of Culture kindly invited the team for dinner and continued discussion. Reluctant to leave but in pleasant anticipation of the next and final excavation stage in autumn 2010, the Swiss team finally headed back home.

Excavation results from stage 2 (autumn 2009)
Werner Meyer

1. Our goals

The second excavation stage comprised the following goals:

— Concentration of the excavation activities at the upper castle (as in 2008).
— Reduction of the large debris (determined in 2008) in the Utse region and at the west curtain wall.
— Exposure of the castle's southern periphery where the gateways are believed to exist.
— Inspection of the lower layers in the rooms which were discovered in 2008 and removed of secondary debris.
— Removal of debris in the south-west wing of the castle.
— Acquisition of samples for scientific laboratory tests.
— Development of a conservation concept for the exposed masonry, namely the Utse ruins.
— Archaeological/excavational training.

2. Procedure and course of excavation

The experiences and results of excavation stage 1 were decisive for the procedure in 2009. The organisation of the excavation site had to take into account the handling of the large masses of debris that were piled on nearly all the work spaces; they were to be disposed of in order that the further removal of the debris, the delicate archaeo-

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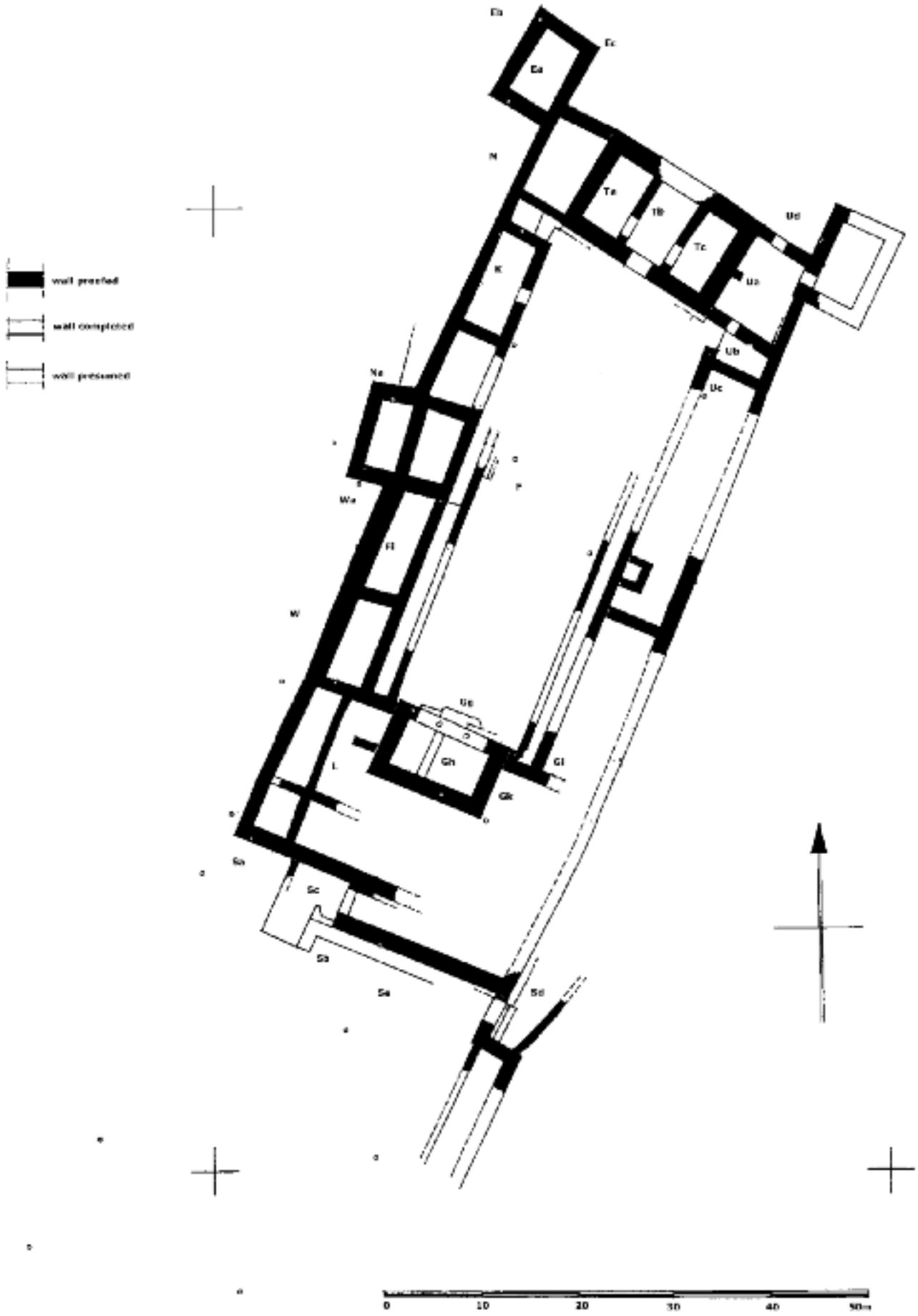
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Fig. 7

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Fig. 7 Drapham Dzong, main castle. Survey diagram. Recording: J.O.

Fig. 8 Removal of the secondary debris in area Ua. In the background: south-eastern wall of the Utse. Photograph: W.M.

Fig. 9 View from the turreted tower E towards the north and the counter slope with traces of iron mining. Photograph: S.S.

logical surveys or the documentation work were not obstructed in any way at all. The bad state of the walls, especially in the Utse area, proved to be a dangerous obstacle during the removal of the debris; safety precautions became necessary which then led to delays of the work processes, but which were indispensable in order to prevent accidents. As in 2008, the well-preserved stones were sorted out from the wall debris and temporarily stored in suitable places to be used later during the preservation works.

The successfully applied system in 2008 – i.e. dividing the excavation area into sectors and labelling them with capital letters, was also used in 2009. The separate sectors were then divided into areas, and labelled with small letters; wherever possible, the walls and rooms which emerged, were taken into consideration. Due to topographical reasons, an abstract area division of the excavation area was not possible. Within the individual areas, the distinguishable layers were numbered with Arabic numerals from top to bottom. Likewise, the walls were also labelled with the code letter W (wall). The walls were labelled according to the order of exposure.

The traverse constructed in 2008 was again used for survey measurements. Because of the expansion of the excavation, we had to add a whole new series of points. The detail views of the stones were, according to the requirements, recorded on a scale of 1:10, 1:20 or 1:50.

The small finds were collected according to areas and layers; a photo inventory was compiled. Layers containing a large amount of finds were sieved and cleansed if necessary.

Thanks to the predominantly dry and warm weather in October (in the daytime), the work progressed very smoothly. Due to other work commitments, we were not able to start the excavation with the entire workforce. Hence, only about 25 people were able to help at the beginning. As of the third week, 45 to 50 people were on-site. The local engineers were a great help during the excavation of the rugged and fine material; they also took part in the documentation work concerning the excavation process.

It was highly admirable how the women and men, only equipped with simple gear, coped with the heavy excavation work (particularly regarding the rugged material) which we relied upon. Unfortunately, the devices we purchased in Bhutan (made in China) were of extremely bad quality and, even though treated carefully, had to be replaced again and again.

During the seven working weeks in October and November 2009, the workers excavated for seven days a week at their own request. Two festivities helped to loosen the strenuous work rhythm. On both days, the staff amused themselves with their relatives and friends by playing darts, dancing, singing, eating and drinking.

The archaeological surveys on the Drapham Dzong were accompanied by investigations in the immediate vicinity. Particularly noteworthy is the inspection of the

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Fig. 10 Transporting stones to the stone deposits. Photograph: S.S.

Fig. 11 Drapham Dzong, layer profile NW–SE in the Na area:
1 Forest humus.
2 Secondary debris; clay, stones.
3 Primary debris; clay, a few stones.
4 Settlement sediment; solid, humus. Ceramics, animal bones.
5 Collapsed walls; stones, clay.
6 Natural clay.
Recording: Kuenga Wangmo

hard-to-reach former mining site near Nag Lhakhghang which was suggested to us by Kuenga Wangmo and successfully led by the research assistant Sangay.

As in 2008, a very affectionate rapport was established between the Swiss team and the local employees. And because everyone was highly fascinated by the exciting research work, it was not at all easy for us to say farewell to Drapham Dzong and Bhutan – despite the tough living conditions.

3. Excavation finds

3.1. Stratigraphy

In 2009, we assessed that large amounts of debris exist on the area of the upper castle, and that beneath these masses only very thin and weak occupation layers tend to stretch out. Accordingly, the small finds are concentrated on a burnt layer in the south tower (sector G); they derive from a collapsed hearth and still exist on an area measuring a few square metres.

In 2009, it became apparent that the layers were structured in a more significantly complicated manner than assumed at the beginning. The more than 6 m massive layers of debris lying under the humus forest soil must be evaluated in a differentiated manner. The secondary debris that derived from the building and comprised bricks and clay, serving as a bonding agent, was permeated with humus lentils in places, which further concluded in a spasmodic collapse of the brickwork. The transition to primary debris was fluent. Charred architectural elements varying in size became visible in all layers of the debris – particularly frequent within the primary debris where the bricks became scarcer because they were predominantly composed of clay which originated from the wall plaster and the intermediate floors of the upper storeys, as the numerous pebbles (diameter: 2–4 cm) showed which were mixed with mud.

Near the strongly decayed quoins, the block-shaped cornerstones were missing in the debris – an indication that they were removed from the fortress to be re-used.

Inside the Utse (sector T), the debris masses appeared in a particular consistency. They contained a very high proportion of charcoal; furthermore, the bricks and the clay material were red which leads to conclusive evidence of a violent fire within the building.

In 2009, the bottom horizon of the debris layers was still not able to be reached on the majority of the excavation areas, including the interior of the Utse. Yet, where the former walking level of the castle area was exposed, the same image was revealed as in 2008, because only very thin occupation layers were visible between the floors

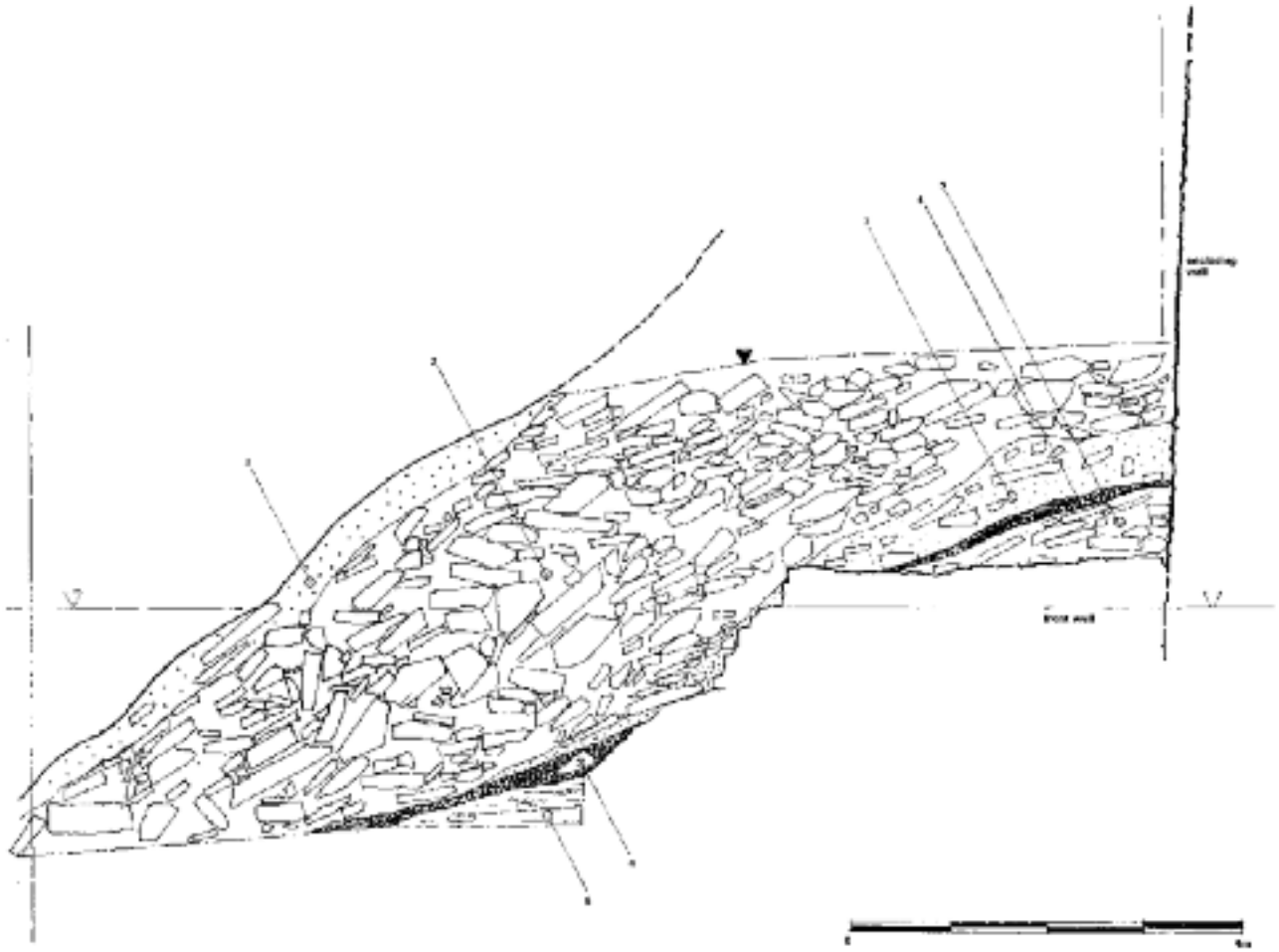

Fig. 11

made of tiles, respectively clay which was spread all over. In various places, the occupation layers did not even cover the area, but were instead visible in flat dents. We got the impression that the interiors and courtyard areas of the upper castle were cleaned regularly so that no occupation layer containing finds was able to develop. The same image could be observed on the staircase steps and podiums of both castle gates at the south periphery of the upper castle (sector S).

The situation differed on the outer foot base of the western and southern curtain wall. Beneath the wall debris, directly above the natural rock and clay subsurface, an occupation layer containing finds (5 to 20 cm thick) was spread out. Its exact extension is still to be determined. It is not separated by an intercalated fine-grained horizon, therefore its sedimentation probably steadily took place during the settlement era.

In different places, the natural subsurface – partly rocky, partly argilliferous – has become visible. The individual items are not yet sufficient to reconstruct the ancient topography of the castle terrain. However, it starts to show that the original ridge consisted of a narrow crest running from north to south, and whose flanks were raised, respectively levelled off in a step-like manner by depositing earth during the construction of the fortress within the enclosure walls. The replenishment layers at the west and east periphery as well as inside the south tower (sector G) were already observed in 2008.

3.2. Brickwork

The studies carried out on the castle in 2008 were basically confirmed during the second campaign in 2009. Certain assumptions and assessments were however deepened and amended.

It must be assumed that, due to the stratigraphy (as already explained), only one settlement era took place on the Drapham Dzong. The observations made on the brick-

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work did, however, lead to a definition of this stratigraphic discovery, namely that the analysis of the masonry seams and the ground work structures reveal that several building phases and stages must be distinguished during the single settlement era.

As explained below, the development of the upper castle's ground plan can be reliably reconstructed in broad outline (see 5.1.). For the record, butt joints do not necessarily mark temporally separated building phases. In some places it was evident that openings had been left when certain walls were erected; these openings obviously helped to ease the transportation of building material. Such a work procedure was presumably carried out by a stationary or moving gang of workers which was only possible and efficient as long as the ground-level passages were left open.

The corner bracings of the circular walls and the buildings feature different levels of quality. It may be assumed that walls adjoining high-quality squared corner bracings were erected after a certain lapse of time that was necessary to plan the annex building, whereas only a short break was presumably needed between the two construction stages for the butt joints (layered on both sides with quarry stones).

The second campaign in 2009 provided new insights into the «skin» of the wall. On both the inner and outer skins of various buildings, more or less coherent remains of a 2 to 4 cm thick layer of smooth plaster consisting of clay were visible. The finds from 2008 comprise fist-sized pebble stones with unilateral polishing traces; the stones were most certainly used to smooth the plaster. In places, the layer of plaster was coloured red over a wide area. The consistency of this thin layer of paint is still being analysed.

The outer skin of the western and southern curtain wall as well as the parapets was not plastered with clay but rather whitewashed directly onto the wall bricks – the minor remainders of the whitewash can only be seen up close. The amount of these remains is however large enough to be used for consistency analysis.

In 2009, we were able to record and document the wooden elements (embedded in the brickwork) in a more distinct and precise manner, particularly in the area of the Utse (sector T). The wooden parts – the lintel beams above the doors and windows – proved to be structural weaknesses because all of these beams were either burned or decayed which is why the brickwork above – without a safety arch – had no means of support. The disastrous condition of the Utse and other buildings can be explained by the collapse of the sections of the wall where the wooden supports were removed.

The intermediate floors of the multilevel buildings were placed upon wooden beams that were embedded in the walls at both ends. Apart from a few charred wood remains, only the omitted holes in the brickwork are proof of the support beams.

Fig. 12 Area Gi, perpend joints. View towards the south-west. Photograph: W.M.

Fig. 13 Area Tc, arrow slit in the north-eastern wall of the Utse. Photograph: W.M.

Fig. 14 Area Tc, remainders of the summer beam in the embrasure of the arrow slits. Photograph: W.M.

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Another reason for the decay of the Drapham Dzong is the specific removal of the corner bracings from the buildings and the enclosure walls. This spoliation is possibly due to the search for good square stone blocks by the surrounding populace.

Wherever the interior of a building was devastated by a fire, e.g. the Utse, the brickwork was damaged to such an extent that any kind of preservation may well encounter difficulties.

3.3. Doors and windows

As previously mentioned the doors and windows – and their wooden head flashings which are prone to fire and decomposition – are a major, cause for the rapid decay of the brickwork after the Drapham Dzong was abandoned. The wider a hole the larger the collapse capacity. Therefore, some arrow slits appear to be intact from the outside due to their narrow opening, whereas on the inside and above the approx. 1 m wide loophole alcove, the brickwork has collapsed in a threatening manner.

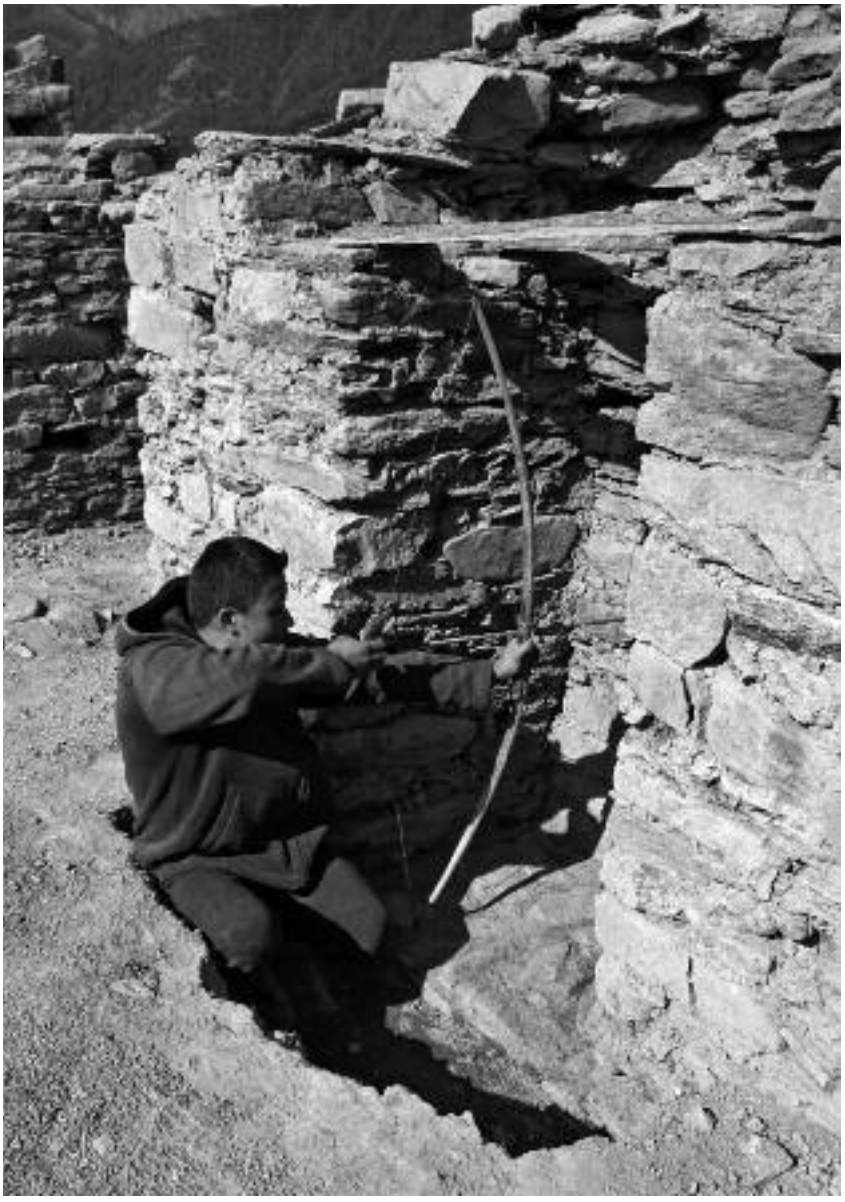
The embrasures of the large gates display the omitted channels for the blocking beams. The window and door openings feature hardly any latches, hinges or other indications of closability, respectively fastenings for wings of doors and windows. Remains of wood charcoal do however prove that all the wall openings were coated with wood, except for the sideward loopholes and the floor. Solid wooden sleepers were laid upon the floors where the doors are located.

Quite a number of windows and doors reveal that the embrasures were not built vertically, but rather slant slightly inwards in order that the respective opening obtains a trapeze-shaped cross-section. The reason of this constructional directive is subject to speculation. In any case, the phenomenon cannot be interpreted as a structural measure, for instance to increase the static stability.

In the clearance, the doors and windows show different sizes, from which however the wooden fittings must be subtracted. Representative entrances which presumedly existed for both castle gates on the south front and the gate of the Utse, were probably furnished with carved and painted wooden decors which do not exist anymore.

As expected, the arrow slits were discovered at the periphery of the upper castle, in the curtain walls and on the towers. Both the Utse and the south tower featured arrow slits on the ground floor – they were probably designed for ventilation and lighting rather than for defence purposes.

The interior arrow slits were all built according to the same pattern: rectangular chambers, as tall as a man, with enough space for an observer or a shooter. The arrow



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loop was shaped conically and usually tapered off to a narrow, approx. 10 cm wide and 50 cm high slit that broadened out at the bottom. These slits were built for archers to shoot arrows. Tests using a recent, traditional bamboo bow showed that per slit, a lateral shooting angle of 40° and a vertical, downward angle of 35° were possible. At the north-western corner tower E there are also horizontal, rectangular slits which, analogous to occidental forms of such slits, lead us to classifying them as light-calibre firearms.

The different-sized vertical, rectangular windows were mainly faced towards the inner courtyard and were hardly designed for defence purposes.

3.4. Floors and stairs

The two categories of artificial floors, already observed in 2008, were also detected in 2009 on various excavation areas. Clay floors interspersed with gravel which became visible particularly on the inside of the buildings and in the inner courtyard, belong to the first category, whereas the second one comprises irregular, close-knit stone slabs. On open spaces, e.g. many parts of the inner courtyard, the builders had obviously been content with a horizontal, flat natural floor consisting of clay. Odd stone slabs make it easier to walk across this third floor category during the wet season. Where the rock

Fig. 15 Testing a traditional bamboo bow at an arrow slit in area Ua. Photograph: W.M.

Fig. 16 Area Ua, arrow slit from the inside. Photograph: W.M.

(in many places equal to the foundation) emerged, it had been chipped away to the height of the walking level.

Despite the artificial earth deposits and levelling within the upper castle area, level differences of 20 cm to 70 cm still remained. These were bridged with stairs made of stone slabs. The same kind of stairs was also used on the staircases of the gateways at the south periphery (sector S).

For the time being, it remains unclear how the individual floors of the multi-storey buildings were connected to each other. Bases of stone staircases have not yet been detected. There were most probably wooden stairs that can be found in preserved Dzong and other old buildings.

3.5. Finds in the individual sectors and excavation areas

3.5.1. Sector F

In the western part of sector F, the upper layers of debris were removed from the area Fd (which was cut in 2008) towards the south in 2009 *(area Fk).* Hence, a room featuring a horizontal, rectangular layout and belonging to the middle section of the west wing became visible. A row of beam holes in the east wall facing the courtyard revealed that a whole storey must still be stuck in the ground. For the time being, we decided against removing the masses of debris that fill up this storey.

3.5.2. Sector G

In 2008, the exposure works in sector G led to the evidence of the rectangular south tower and the adjacent walls in the west which marked the south end of the long west wing. The areas that were opened in the east and west in 2008 were extended in 2009. The hearth that was cut in 2008 inside the south tower was thoroughly exposed and documented.

On the western slope, next to the walls of the west wing which were uncovered in 2008, the southernmost room *(area Fl)* was documented in 2009. It comprised a longitudinal, rectangular ground plan, fronted by the protruding arcade facing the courtyard, i.e. on the eastern façade; the arcade ended in the north-west corner of the south tower. The western longitudinal front was formed by the curtain wall; at the northern narrow side, the room Gl adjoined the room Fk; the south closure was formed by the wall (without a door opening) in the trajectory between the west curtain wall and the north-west corner of the south tower, thus separating the west wing from the buildings in sector L.

Room Gl was filled with debris up to the level of the wall copings. Removing the debris allowed for a continuous row of beam holes to become visible within the east wall facing the courtyard – as in room Fk. These holes signified a storey lower down within the slope. In the southern part of the area Gl, an exploration tunnel was expedited along the entire width of the room and up to 3 m below the level of the beam holes; yet no walking level was revealed. These works must be continued in 2010.

Inside the south tower and on its forecourt to the north (which belonged to the courtyard), the excavation zones were extended in 2008 in order to thoroughly expose the finds. In area Gh, the precipitated, central hearth was investigated; in its burnt layer, fragments of ceramics were allocated to the same type A which had already defined the consistency of the ceramic material in 2008.

Next to or beneath the debris from the blaze – which spreads across an area of approx. 5 square metres – a very weak occupation layer containing humus (practically without any finds) emerged inside the south tower upon an artificial floor of limestone and clay.

The course of the northern front of the south tower was further ensued in *area Gg.* A complete exposure had to remain undone because we had consideration for a magnificent tree above the north-east corner of the building. A second, round stone

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Fig. 17 Area Gh, layer profile with collapsed hearth. Photograph: W.M.

Fig. 18 Removal of the wall debris in sector L. Photograph: W.M.

slab emerged on the ground-level wall coping which allowed us to reconstruct the layout of the northern front on the side facing the courtyard. A mighty door opening in the middle section of the façade must have existed, and which was encased by sturdy wooden pillars. Their supports – the two round stone slabs at a distance of 3.3 m – are preserved in situ.

The probe areas Gi and Gk in front of the north-east corner of the south tower provided important information. The southern front of the east wing evidently adjoined these areas, approximately in a symmetrical order to the west wing. We were able to verify the walls of the protruding arcade, the longitudinal wall facing the courtyard and the south lateral wall which formed the closure of the west wing. The latter was adjacent to a butt joint at the corner of the south tower – therefore, it must have been built afterwards.

In the south closure wall of the west wing, a subsequently closed construction opening was distinguishable owing to butt joints. This opening was used to transport building material to the level of the natural subsurface. In order to keep this passage clear, the base wall of the arcade was completed when the works were almost finished and the walking level reached the height of the courtyard level by means of earth deposit. The rather complicated and carefully documented find prompts questions, particularly in view of the further course of the south closure wall and how it adjoined the east curtain wall. Somewhere within this region which has not yet been archaeologically investigated, the innermost gateway must exist where it was possible to get to the inner courtyard from the second gate (area Sc).

3.5.3. Sector K

To the south-west of the Utse (sector T), a multiple wall complex was already cut out in sector K in 2008. Apparently, a rectangular room emerged in area Ka which was identified as the north section of the sustained west wing. However, it was only partially exposed. In 2009, we aimed at defining its entire extension. The layer proportions which were studied and documented in 2008 were confirmed in 2009 across the entire remaining area Kd of the room: a weak occupation layer featuring only a few finds (animal bones and ceramics) lay below the debris. It was discovered upon the clay floor interspersed with gravel (discovered in 2008) which covered the entire interior. Two stone slabs were embedded at ground-level upon its longitudinal axis; the slabs presumably served as supports for the wooden supporting pillars.

Three openings were revealed at the building's east front facing the courtyard – the entrance door at the centre as well as a rectangular window to its left and right. The threshold was carefully made of stone slabs. The verified protruding arcade (facing the courtyard) in the middle and south section of the west wing was not present in front of the entrance door to the room Kd.

The partition wall did not feature a door opening on the southern narrow side where the next, non-exposed room of the west wing was adjoined.

3.5.4. Sector L

The excavation sector L browses the south-western flank of the upper castle. Before the excavation began, the terrain sloped steeply to the west and formed an obscure screen that didn't reveal any building remains whatsoever except for slight traces of the west enclosure wall.

The exposure works involved a gradual removal of the upper, loose layers due to the large and unstable masses of debris. It quickly became clear that various walls were embedded in sector L that pointed to a dense construction across the entire area. The individual walls were integrated at right angles in the steep slope between the south and west curtain wall as well as the south tower. The north boundary was formed by the cut out wall (2008) which connected the north-west corner of the south tower with the west curtain wall, concluding the west wing towards the south. This wall featured a subsequently closed building opening (visible by two butt joints), but no gateway, which means that the staircase from the second gate (compare with Sa,b,c) leading to the inner courtyard of the upper castle must still be discovered in the south-east flank of the hill which has not yet been archaeologically investigated.

The walls that emerged in sector L have not yet provided a clear picture of the architectural correlations. The construction appears to continue towards the south-east – something that will be clarified in 2010. The wall adjoining the north-western narrow side of the south tower is possibly a supporting pillar, although a gap (10 cm wide) was detected in the butt joint.

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Fig. 19 The south-western section of the upper castle with a view of the curtain wall, on the excavation sector L and the flight of stairs belonging to the second gateway. Photograph: W.M.

In 2009, only the secondary debris (several metres thick) was removed from the entire excavation area of sector L. The removal of the primary debris and the occupation layers expected below is planned for 2010. The functional interpretation of the walls and rooms may then be easier to explain. It is now safe to say that according to the butt joints, the entire building complex L, including the surrounding south and west curtain walls, was attached to the south tower and the west wing F/G during a later extension phase.

3.5.5. Sectors N and W, areas Eb and Ec

The sectors W and N as well as the areas Eb and Ec ensue the western and northern enclosure walls (curtain walls) on their outer sides including the protruding flanking towers Fc and Ea. Before the excavation began, these walls slightly protruded from the debris, but seemed to stick several metres in the ground. Because the steep terrain (towards the west) rose from south to north, the removal of the wall debris was carried out in increments of 4 to 5 m beneath the visible wall copings.

The painstaking and time-consuming removal of the wall debris proved to be successful, as the entire western front of the upper castle with walls as high as 5 m was exposed. The level of excavation remained mainly in the area of the wall debris; the bottom edge of the curtain wall base was however reached in two places (Wa and Na) which provided valuable insights into the lower layers.

Between the natural subsurface of stone and clay and the wall debris, a 10 to 20 cm thick occupation layer (with humus) featuring numerous animal bones and fragments of ceramics emerged. This was evidently a waste disposal site that was formed outside the Dzong when it was occupied. In the slice Na, located in the north angle between the flanking tower and the curtain wall, this occupation layer Na.3 browsed a 1 m high wall base which fronted the curtain wall. Its extension and meaning still remain unclear.

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Fig. 20 The western curtain wall with the turreted tower E, and the Utse in the background. Photograph: W.M.

Fig. 21 Sector N, removal of the wall debris in front of the west curtain wall, view towards the south-east. Photograph: W.M.

Where the bottom edge of the base was exposed, it became apparent that the natural, slanting subsurface of clay or stone had been removed in increments of 10 to 20 cm in order to horizontally shift the foundations.

In the northern section – in the areas Eb and Ec – the layers still remain obscure. On the other hand, it was determined that a slit, and not a door, was embedded in the wall that connected the north-west corner tower Ea with the north corner of the Utse. Thus, the opening in the wall between the areas Ua and Ud east of the Utse is the only link between the upper castle and the bailey.

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3.5.6. Sector S

At the beginning of the excavation, sparse wall remains, which appeared to derive from a connecting wall, were visible within the transition zone between the plateau of the south bailey and the steep, debris-covered slope to the upper castle. The excavations in 2009 provided a more differentiated find that clarified the ground plan relationships at the south periphery of the upper castle to a large extent.

A gateway, built during at least two stages, emerged in the *areas Sa, Sb and Sc.* It comprised a base for an outside staircase (4 m wide) which ascended at a right angle to the rear western section of the curtain wall. The staircase did not feature the structure of the steps, but at the top, where the base adjoined the curtain wall, there was a platform paving. A small fragment of the wall revealed that the outside staircase ran sidewards along a narrow parapet wall. The entrance branched off at a right angle from the platform to the right, i.e. towards south-east, and traversed a gateway (2.6 m wide) above three well-preserved stone steps. The further course of the ascent to the upper castle was not able to be pursued in 2009.

The preserved remains give the impression of a representative and also defensive gateway. A butt joint in the middle section of the circular wall (area Sb) and the partially closed beam holes (by the staircase platform) in the western section of the curtain wall indicate that the gateway was built during a renovation phase. It remains speculative how the original, presumably simpler entrance might have looked.

In the angle between the west curtain wall section and the staircase base *(area Sa),* a 10 to 20 cm thick occupation layer comprising humus *(Sa.3)* emerged from beneath the wall debris, directly above the adjoining, natural clay; this layer revealed many finds, particularly ceramics and animal bones. It was evidently a waste disposal site whose location right next to the representative outside staircase remains somewhat surprising.

The gateway in the areas Sb and Sc connected the south lower castle with the upper castle; it therefore must have been an inner, second gate. The first exterior gate

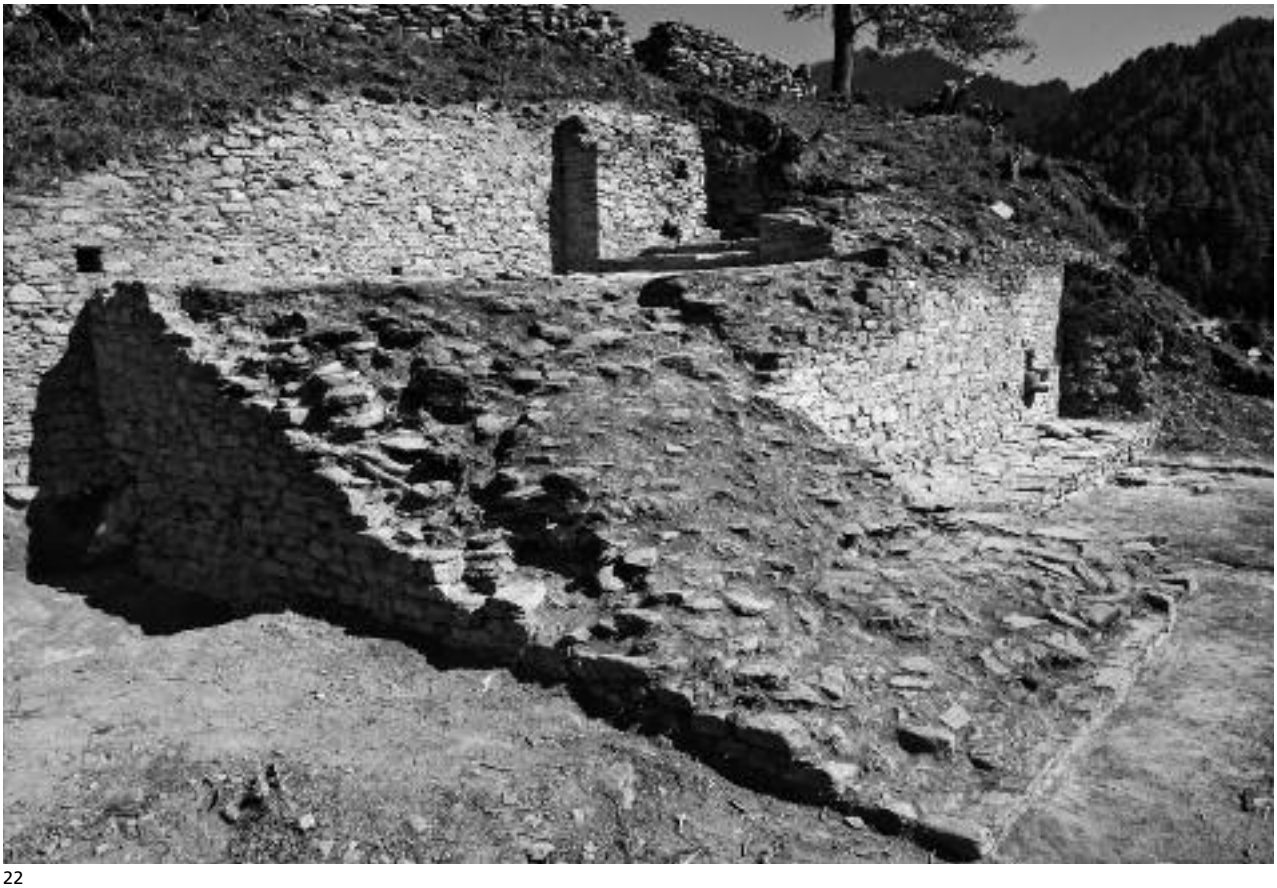

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Fig. 22 Sector S, southern curtain wall with the second gateway. Photograph: W.M.

Fig. 23 Area Sc, second gateway of the southern curtain wall. Photograph: W.M.

was verified in *area Sd* at the south-east corner of the upper castle. Already at the beginning of the excavation, weak traces of the wall pointed to the possibility of a gate construction at this place. The exposure works however did reveal a find which, due to its details, was not necessarily expected.

The gateway evidently led across the eastern flank of the mountain hill, over a path of slabs, accompanied by a support or parapet wall (slope-side), to a platform directly in front of the gateway's opening. Two arrow slits were built on this platform, embedded in the short section of the wall which connected the north corner of the bailey's curtain wall, double-angled with the gateway. The interior of the bailey was reached by walking across three steps made of slabs, branching off from the gateway at a right angle, through the entrance opening (2.5 m wide).

We have not yet managed to acquire accurate information on the connection between the outer gate in area Sd and the inner gate in Sb and Sc, due to the fact that the south curtain wall and its surrounding were not yet exposed due to organisational reasons. Its middle section, the *area Se* attached to Sb in the east, did surprisingly provide a magnificent find – the sewage pipe extension, which was discovered inside the south tower in 2008. The canal protruded from the curtain wall as a spout and led the water into a collecting tank which was embedded into the coping of one of the curtain wall's protruding wall bases. The sewage was then directed from the tank into a lower, covered canal fitted with stone slabs towards the south-west via the bailey area. A second gutter heading towards the south-east was visible due to its humus backfilling.

The wall base that protruded from the southern curtain wall was able to be pursued along the entire length of the middle section. It branched off at a right angle in front of the staircase platform and ended flush with its bottom edge. Nothing definitive can be said about the function of this base which protrudes approx. 0.5 m above the clay level of the bailey area. An arcade alongside the curtain wall, linking the outer and the inner gateway, is not to be ruled out (at a width of 1.5 m).

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Fig. 24 Area Sa. Settlement sediment Sa3 on the formation level. Photograph: W.M.

Fig. 25 Drapham Dzong, excavation area Sd (first gateway). Stone-by-stone view. Recording: J.O. and W.M.

Fig. 26 Area Sd, overview of the first gateway, view towards the north. Photograph: W.M.

Fig. 27 Area Se featuring the outlet of the drain in the southern curtain wall. Photograph: W.M.

The base was possibly built during a secondary renovation phase, maybe even together with the outside staircase belonging to the inner gateway. In any case, the bottom edge of its base does not rest upon the clay, respectively stone (as the curtain wall does), but rather upon a 10 cm thick occupation layer containing humus. The dating is yet to result from the radiocarbon samples.

After the complete exposure of the wall remains at the south periphery of the upper castle, we plan to re-open the entrance through the whole ensemble of the outer and inner gateway.

Fig. 25

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3.5.7. Sector T

The interior of the *Utse,* the main tower, forms the excavation sector T which is divided into the three areas Ta, Tb and Tc – they correspond with the three internal spaces which are separated by walls on the inside. In 2008, the wall debris in the north-west *area Ta* was removed down to the level of the floor marked by the beam holes between the ground floor and the first storey. In 2009, the main exposure work was carried out in the middle section *Tb* and the south-east *room Tc* which was filled with debris up to the wall coping. In order to remove the debris, an efficient work place organisation was necessary; due to the bad state of the damaged wall (because of fire), it soon became clear that we had to pay attention to it. The piles of debris were dumped on two sides; on one hand at the south façade where an entrance gate emerged at its centre. We were able to get inside room Tb, on top of a working level of approx. 1 m above the presumable height of the threshold. On the other hand, it was possible – from area Ud via the low coping of the north-eastern wall of the Utse – to proceed with the masses of debris on area Tc. Because the opening of a collapsed door was soon revealed within the partition wall between the rooms Tb and Tc, both removal areas were able to be connected via this opening at a depth of 3 m beneath the surface of the debris. The goal set for 2009, i.e. to expose the former walking level on area Tc and on parts of area Tb, was unfortunately not achieved. The afore-mentioned bad state of the wall required wooden stays to be fitted, which would have prevented any form of collapse; in the southern part of area Tc, the damage caused by collapsed bay windows gave such a threatening impression that the protective debris filling should not even be touched.

Despite these technical obstacles (regarding the excavation), a temporary find was able to be made which provided important evidence of the Utse and its interior. Until now however, nothing relevant has emerged from a stratigraphic point of view. Both rooms Tb and Tc were filled with wall debris that was coloured red due to the heat of a huge fire. Between the calcined stones and chunks of clay, large and small remains of charcoal had been interspersed; their position did not however lead to any constructive coherence. As previously mentioned the bottom horizon of the layer of debris has not yet been reached. In 2010 – within the technical possibilities of excavating – an area as large as possible and as low as the natural foundations reach, will be exposed on the inside of the Utse; this may give more insight into the stratigraphy of the occupation layers.

The enormous masses of debris which are piled inside and around the Utse help to estimate that the building once towered above the current wall coping (which now reaches up to the first floor) by at least 1 or 2 storeys.

Fig. 28 Exposure of the Utse, view towards the north. Photograph: W.M.

Fig. 29 Sector T (Utse), view from the south-west. Photograph: W.M.

Fig. 30 Drapham Dzong, excavation sectors T (Utse) and U. Stone-by-stone view. Recording: J.O. and W.M.

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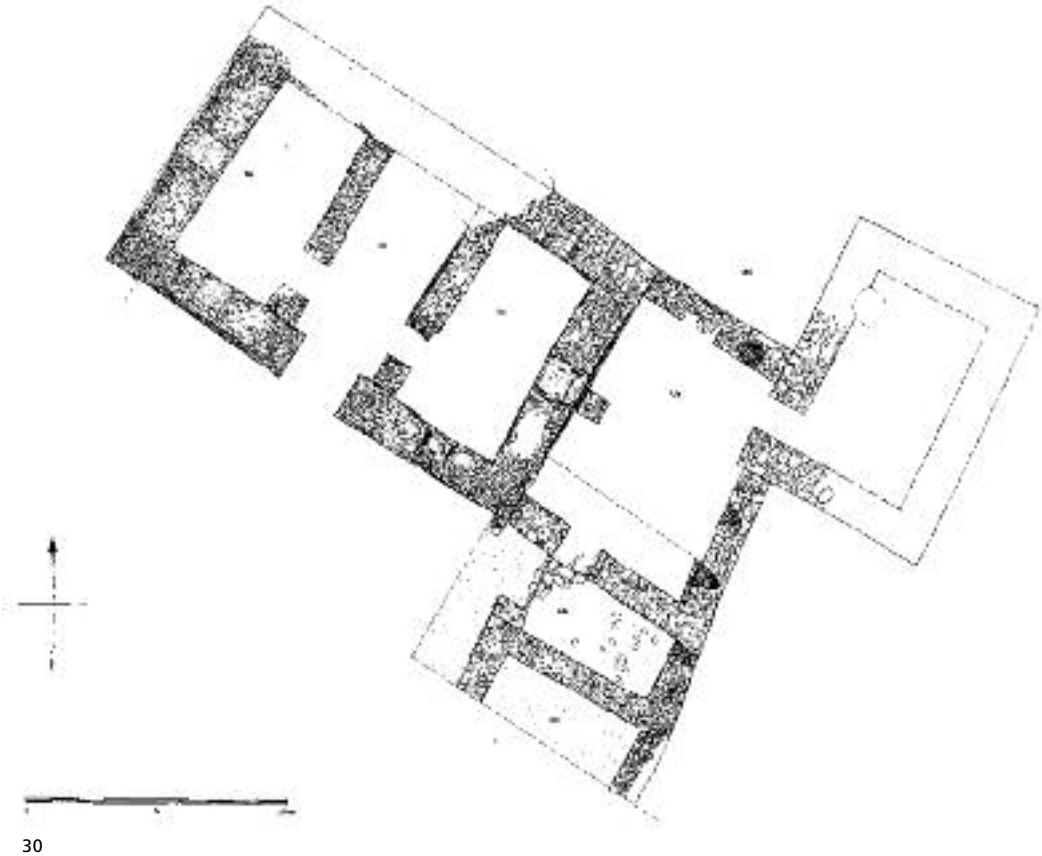

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Fig. 31 Area Tc. Mural crown of the Utse during the exposure. Photograph: W.M.

Fig. 32 Drapham Dzong, areas Tb and Tc. Reconstructed layout of the ceiling beams on the 1st storey. Composition: W.M.

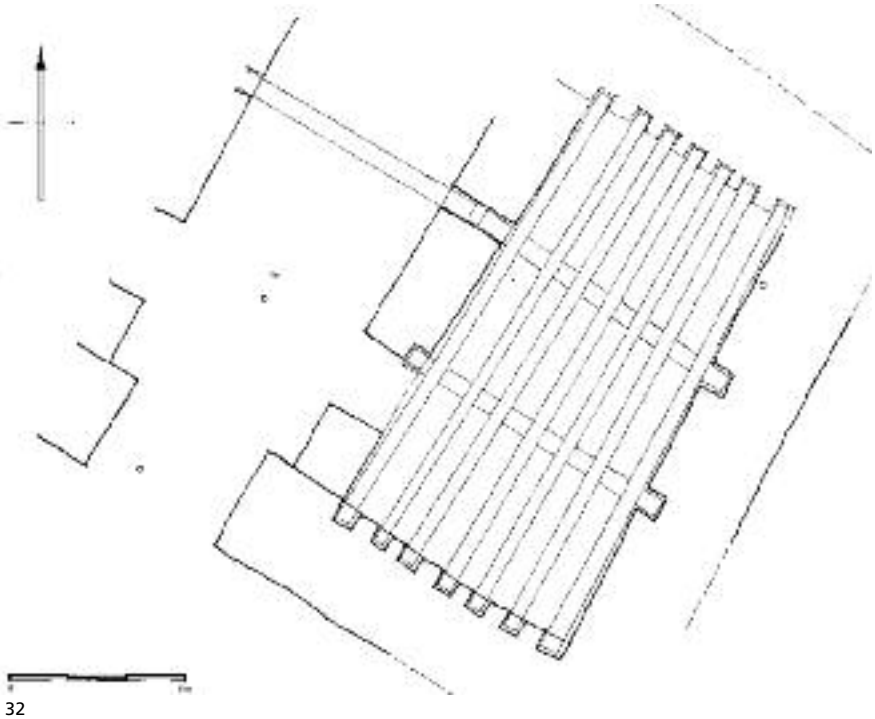
Fig. 33 Sectors U und T, overview featuring the western curtain wall in the foreground and the Utse in the background. View towards the north. Photograph: W.M.

Various walls touch the Utse by means of butt joints on the outside. Hence, it was probably built during the first building phase. The butt joints on the outer walls indicate that also both lateral walls on the inside between the rooms Ta, Tb and Tc were built during a later building phase – even though they were interlocked in the region of the foundation.

The lower region of the three doors – the centrally positioned entrance door and both ground-level doors which lead sideways into the rooms Ta and Tc from the middle section Tb – was not entirely excavated in 2009. Therefore, they will be revealed in a more precise manner after the definite exposure planned in 2010.

The south-west outer wall of the middle section Tb had collapsed right down to the height of where the entrance door had given way – possibly because a large part of the middle section of the Utse's façade was made of wood and therefore was prone to destruction.

In the room Tc, the beam holes that had been heavily burnt, helped to determine the order of the ceiling beams between the ground level and the first floor. According to this, the floor of the first storey was supported by seven parallel beams that were embedded in the narrow sides of the room and supported by two transverse beams underneath. Analogous constructions are assumed for the rooms Ta and Tb.



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Altogether five windows in a more or less ruinous state are preserved in the outer walls of room Tc. Arrow slits in both the north-east and south-east walls are on ground level. The alcove of the north-east slit is open at the top; remains of wooden lintel beams were found above the embrasures. What distinguishes this slit is the completely intact coating of the floor and both embrasures featuring a 3 to 4 cm thick layer of plaster made of smooth clay. The exposure highlighted the fact that the outer part with the narrow orifice of the slit was in a very bad state.

The orifice of the slit in the south-east wall is undamaged on the outer wall. On the inside however, the slit's alcove is completely broken-in and was not able to be exposed because of safety reasons. The same applies to the rectangular window in the south-west wall of room Tc. Its opening is 60 cm wide and 75 cm high. The notch of the missing wooden lintel is still visible. A rectangular window bearing the same measurements was embedded in the south-west wall of room Ta.

In the south-east and south-west wall of room Tc, rectangular windows with a continuous width of 1.3, respectively 1.6 m were found on the first floor. The height of the windows was not determinable. Remains of charcoal indicate that the embrasures and the benches of the windows were covered with wood above a 3 to 4 cm thick layer of clay.

Judging by their construction, the rectangular windows were hardly used for fortification purposes. The arrow slit on the ground level of the north-east wall was faced towards the northern bailey and therefore had a specific meaning of defence, whereas the slit in the south-west wall faced towards the internal room Ua – presumedly an outer ward – may have been used to fight off intruding enemies. It was however most probably used as a lighting and ventilation opening.

For the time being, we are not able to say which functions the Utse and its three internal rooms Ta to Tc fulfilled on an overall basis. The building finds indicate towards representation and defence tasks. More precise statements will be feasible if large parts of the walking level and its occupation and burnt layers can be exposed in 2010.

3.5.8. Sector U

In sector U, the north-east corner of the castle area, huge piles of debris towered up before the excavation began; the debris reached the wall coping of the Utse, and only left weak outlines on the edge of the castle plateau of the north-east corner tower and the curtain wall. Inner walls were not visible anymore. At first, the enormous wall debris had to be extensively removed, and after other walls had gradually emerged, sector U was able to be divided into the separate areas Ua to Ud.

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Area Ua forms a recatangle that adjoins the south-eastern narrow side of the Utse by means of butt joints. It is bound to the castle plateau by the east curtain wall and the south corner of the north-east corner tower. The rectangular area was covered with a large amount of debris that was removed to approx. 1 m above the former walking level in 2009. The level was verified at the southern edge of the area by means of an approx. 2 m wide section. It consisted of treaded clay and horizontally processed rock. A thin occupation layer (only 2 to 4 cm thick) revealed individual bone and ceramic fragments. A grey layer of ash was detected above that marked the bottom horizon of the primary debris.

The walls on the north-eastern and south-western narrow sides each featured a door opening. The opening in the north-east wall was secondary and it was blocked with a dry stone wall without any binding agent. Another door was discovered at the

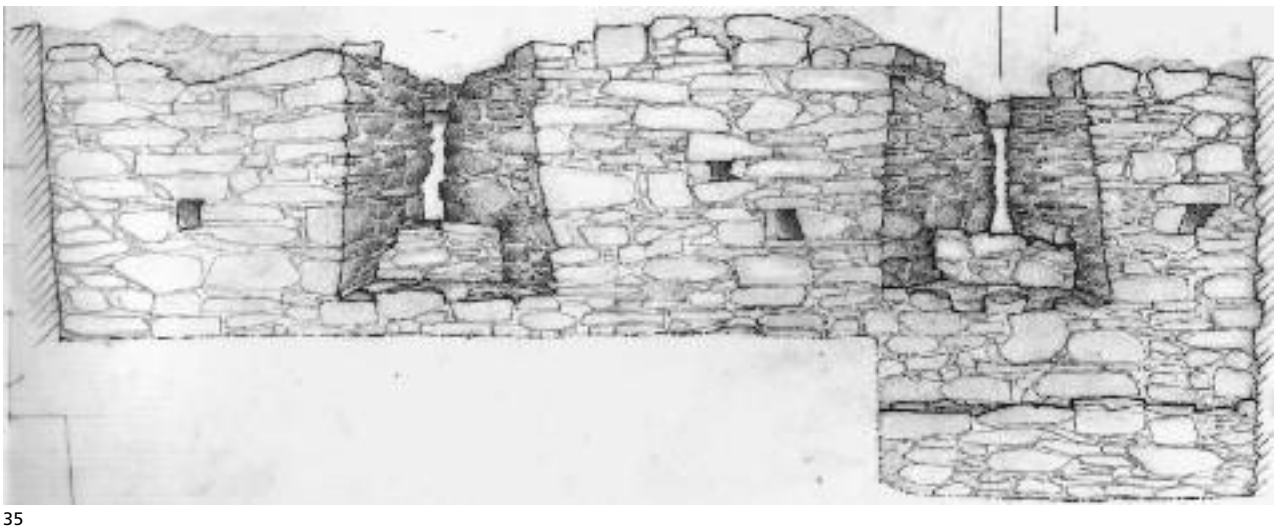

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Fig. 34 Exposure work in the areas Ub and Uc, view towards the south-east. Photograph: W.M.

Fig. 35 Drapham Dzong, area Ua. Interior view of the eastern curtain wall. Draft: A.S.

Fig. 36 Area Ua, gravel deposit at the foot of the Utse. Photograph: W.M.

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north-east corner of the room facing the interior of the corner tower. To the east, next to the door in the north-east wall, an arrow slit of the usual type was revealed. Two other slits (the same construction) were discovered in the curtain wall.

A peculiar find emerged at the foot of the Utse. A square wall block (each side: 1 m) was found leaning against the outer front, below a narrow slit. A depot containing several hundred pebbles was discovered on both sides of the block. The pebbles were specially picked and were round-shaped with a diameter of approx. 10 cm. Except for several samples retrieved for material analysis, the depot remained untouched for the time being. The function of the pebbles, some of which were painted red, remains unclear at the moment.

Area Ub adjoins Ua in the south-west. It is a narrow rectangle between the walls of the rooms Ua and Uc as well as the curtain wall. Westwards, the area opens up towards the inner courtyard of the upper castle. The walking level is structured by steps. The western section where a clay floor, interspersed with small pebbles, stretches, ends with a stone staircase which lies flush against the door to room Ua. On the eastern, lower section of the area Ub, the walking level consists of treaded clay encompassing individual stone slabs.

A strongly decayed arrow slit is visible in the curtain wall that concludes the room Fb towards the east.

A protruding wall base was observed at the south-east corner of the Utse – it presumably corresponds with an analogue find that emerged in 2008 at the west corner of the Utse. This narrow wall base may well act as a support for prayer mills.

Area Uc was easily identifiable as the north end of the sustained east wing. The interior, which was exposed across the entire width, featured a clay floor interspersed with small pebbles. A weakly developed occupation layer (without finds) lies above it.

The curtain wall which formed the east border of the area Uc was partially degraded beneath the walking level of the interior. An alcove, approx. 2 m long and 0.5 m deep (height unknown) was embedded in the north-east wall.

A pillar with a butt joint was attached to the north corner of the building; it is presumably associated with a door that divided the area Ub here.

The longitudinal wall of the east wing (facing the courtyard) featured a smooth plaster layer on the outer wall that was coloured red. As in the opposite sector K, the areas Ub and Uc did not show any indications of the arcade that was verified further south.

Area Ud spreads out across the scree that steeply declines from the areas Ua and Tc of the upper castle down to the plateau of the north bailey. The slope is covered by

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Fig. 37 Areas Ua and Ub, view towards the north. Photograph: W.M.

huge masses of debris which mainly derive from the Utse and which entirely blur the original topography.

The removal of the debris in the upper parts of the slope was necessary in order to remove the excavated material from the areas Ua and Tc as efficiently as possible. A new question arose after the discovery of the door in the north-east wall of room Ua – access to the northern bailey must have led through this door. A more precise clarification is planned for 2010.

The building sequence in sector U: the following building sequence of the walls and buildings in sector U can be reconstructed based on the butt joints: the Utse was built during the first phase. Shortly afterwards, in stage one of the second phase, the north-east corner tower was constructed. The curtain walls, the east wing and the walls adjoining the Utse were then built during the second stage of phase two. Finally, during the a final extension phase, the wall bases were added at the foot of the Utse as well as the pillars at the north corner of the east wing. This building sequence probably only took a few years to complete.

The Utse, the north-east corner tower and the east wing were presumably roofed over, respectively equipped with upper floors. The area Ub formed a part of the inner courtyard and was exposed, whereas the origin of area Ua appears to be uncertain. At the present status of the excavation, the rectangular room – accessible via two doors, connected with the corner tower by an opening and featuring three fortified slits – gives the most likely impression of a courtyard similar to an outer ward.

4. Small finds and samples

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Fig. 38 Small finds, fragmented bangle made of non-ferrous metal. Photograph: S.S.

4.1. Metal objects

In 2008, small metal finds were discovered. Only a few individual samples of iron and non-ferrous metal were revealed during the second campaign; they do indeed provide very important information. Two *arrowheads* emerged in the layers of refuse Sa.3 and Na.3 – unfortunately heavily rusty and in a fragmented state. Both samples feature blades with a long and narrow shape as well as a rhombic cross-section. The nozzle that held the wooden shaft is either completely rusty or broken, but still visible at the neck. Strikingly, the shape of both arrowheads corresponds with a type that is characteristic of the 12th and 13th centuries in the occident.

The showpiece of the small finds from the excavation in 2009 is a *bangle* made of non-ferrous metal. Although deformed, it is still entirely preserved. Its alloy must still be analysed. The bangle is composed of two intertwined, braided round rods which are joined together as a flat knob. A symmetrical ornament is engraved – its style and meaning are yet to be defined.

It is also striking that until now, no iron nails have been found on the Drapham Dzong which can be expected in view of the numerous wooden constructions.

4.2. Ceramics

As in 2008, the second campaign also yielded considerable amounts of ceramic fragments – not only around the collapsed hearth in the south tower, but instead in small amounts on all the excavation sectors as long as they were dug down to the former walking levels, respectively occupation layers. Larger quantities were found in the layers of refuse Sa.3, Wa.3 and Na.3 outside the south and west curtain walls.

In 2008, only one type of pot was verified: a bulbous cooking pot with a round, sagging bottom, a short neck and a protruding, rounded, edged, distinctive and funnel-shaped rim. We call this shape *Type A,* and it is featured abundantly in the corpus of finds from 2009. Further, even more types of pots were discovered which – regarding the ceramic material of the Drapham Dzong – point to a larger diversity than assumed until now.

Type B: pots with a tall, cylindrical neck and a thick, round rim. The fragments of *strap handles* featuring a vertical-groove decor also presumably belong to this group.

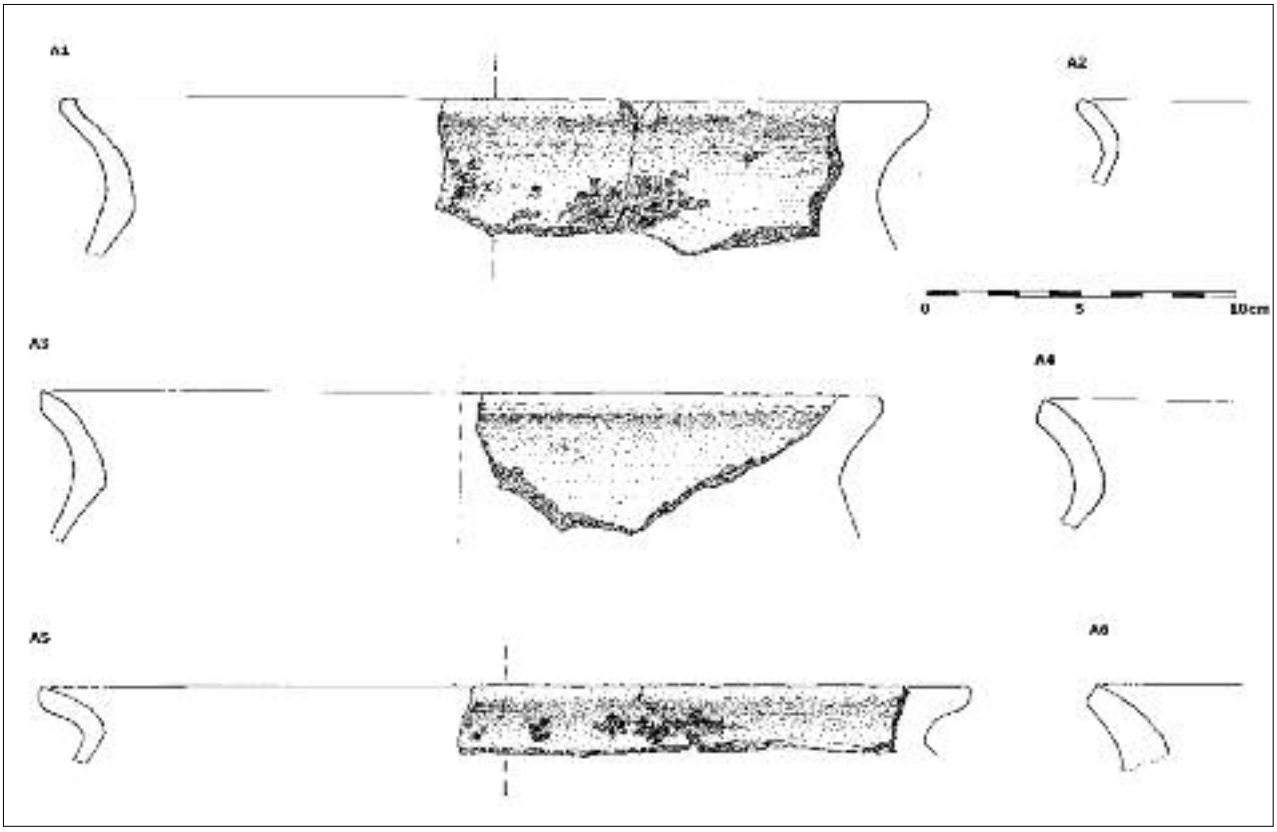
Type C: bulbous pots, drawn-in at the top, and without a distinctive rim. Due to their shape, they may also be descibed as bowls.

The three groups A to C all feature the same material quality, defined by thick-layered, black-grey, and very lean clay. Turned on a hand disc and burnt in a reduced manner, these pots were designed to be used over an open fire – as indicated by the soot crust (in places up to 2 mm thick) on the exterior.

Type D is clearly different from the other groups in view of shape and clay quality. They are thin-layered, made of very lean clay, brown-grey, and their fragments point to small bowls or dishes featuring a slightly bulbous shell and a short, protruding rim.

One single piece is a hand-shaped little *saucer* made of black-grey clay, corresponding with the ones from groups A to C. Further, another isolated single find is a small *porcelain fragment*. It depicts a blue painting on a white background, and may be considered a Chinese import. More and larger fragments (which we hope to discover in 2010) would be necessary for a more precise classification and dating.

Finally, we would like to mention a small ceramic fragment that is cylindrically-grinded and has a diameter of approx. 7 cm – it may well be a game token from a non-identified board game.



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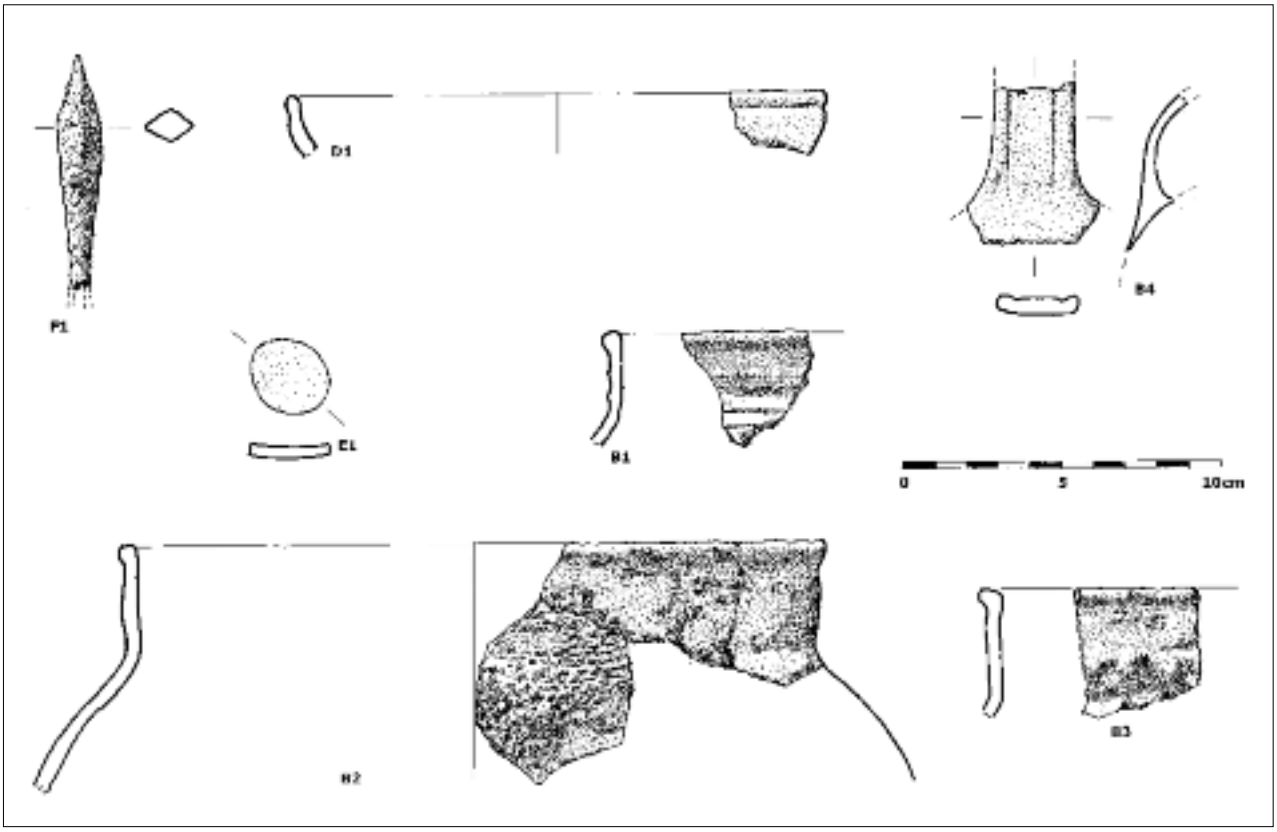

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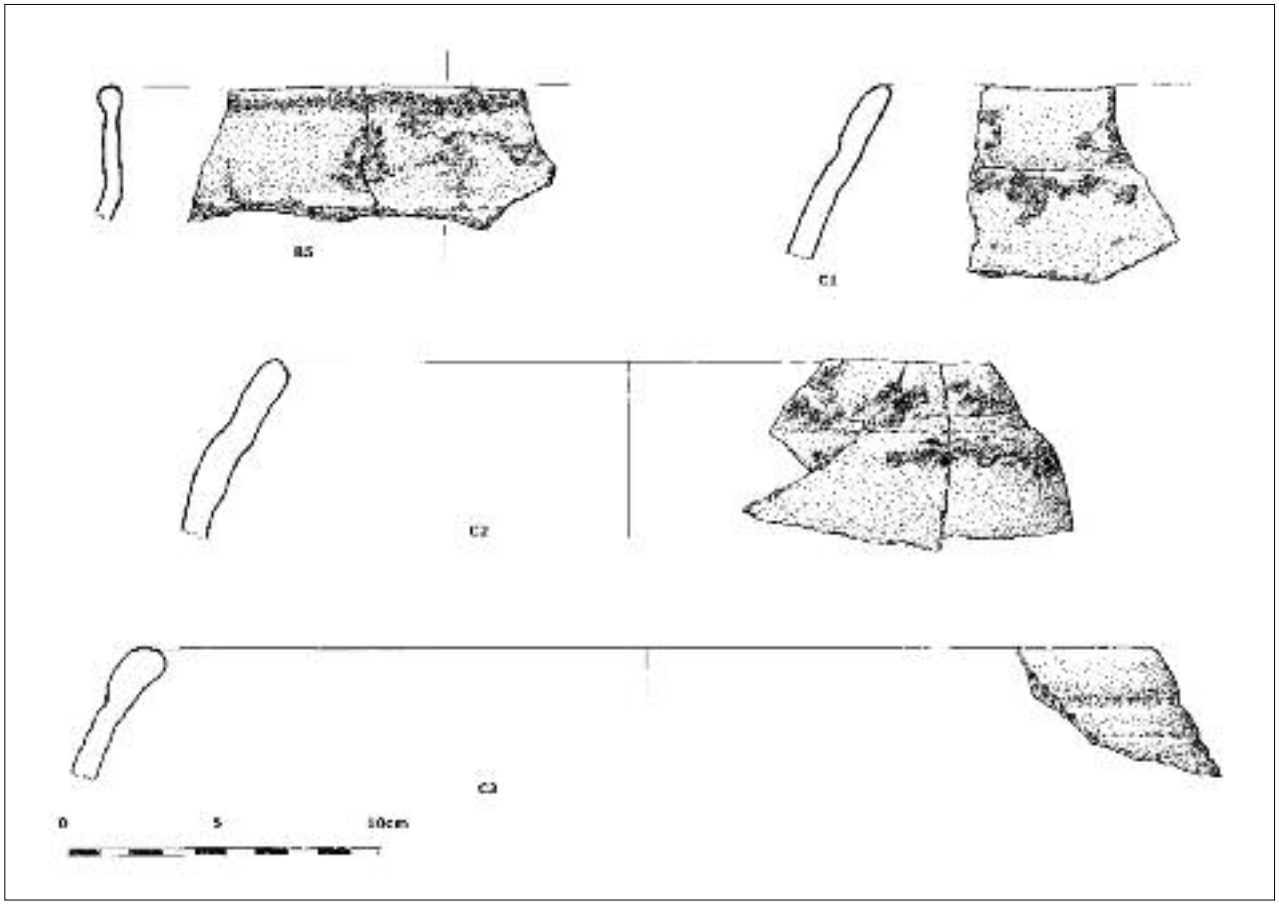

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Fig. 39 Small finds, ceramic fragments A 1 to A 6, type A (2008). Composition: W.M.

Fig. 40 Small finds, ceramic fragments B 1 to B 3, type B; D1, type D; E 1, game token; F1, fragmented iron arrow. Composition: W.M.

Fig. 41 Small finds, ceramic fragments B 5, type B; C 1 to C 3, type C. Composition: W.M.

4.3. Animal bones

As opposed to the first excavation campaign in 2008, which yielded strongly shredded bone fragments that were defined as kitchen or food waste, the campaign in 2009 was successful because it yielded larger, and, to some extent, intact animal bones. They mainly originate from the occupation layers (including humus) Sb 3, Wa 3 and Na 3 – the layers outside the west and south circular walls which were formed by waste disposal and other refuse. These bones evidently derive from slaughterhouse waste. The precise archaeozoological analysis is yet to be carried out; this analysis will be performed at the Institute for Prehistoric and Scientific Archaeology at the University of Basel. A first inspection revealed that the skeleton parts, also encompassing the skull and jaw fragments, derive from, e.g. sheep, pigs and cattle; yak bones may also be part of the collection.

The conclusion that wild animals did not play an important role for the food supply of the castle's inhabitants (the material discovered in 2008 led to this conlusion), is also confirmed by the finds from 2009. The thorough laboratory analysis will reveal more precise and differentiated results.

4.4. Samples

Unlike the excavation campaign in 2008 which provided the *radiocarbon samples* in the form of charcoal particles from debris and occupation layers, the samples from the campaign in 2009 delivered wood remains that were discovered *in situ,* embedded in the wall. Their analysis at the Centrum voor Isotpen Onderzoek at the University of Groningen NL is still in progress. It is worth mentioning that the datings of the samples from 2008 (which, in the meantime, have arrived) have revealed figures from the period between 1550 and 1650.

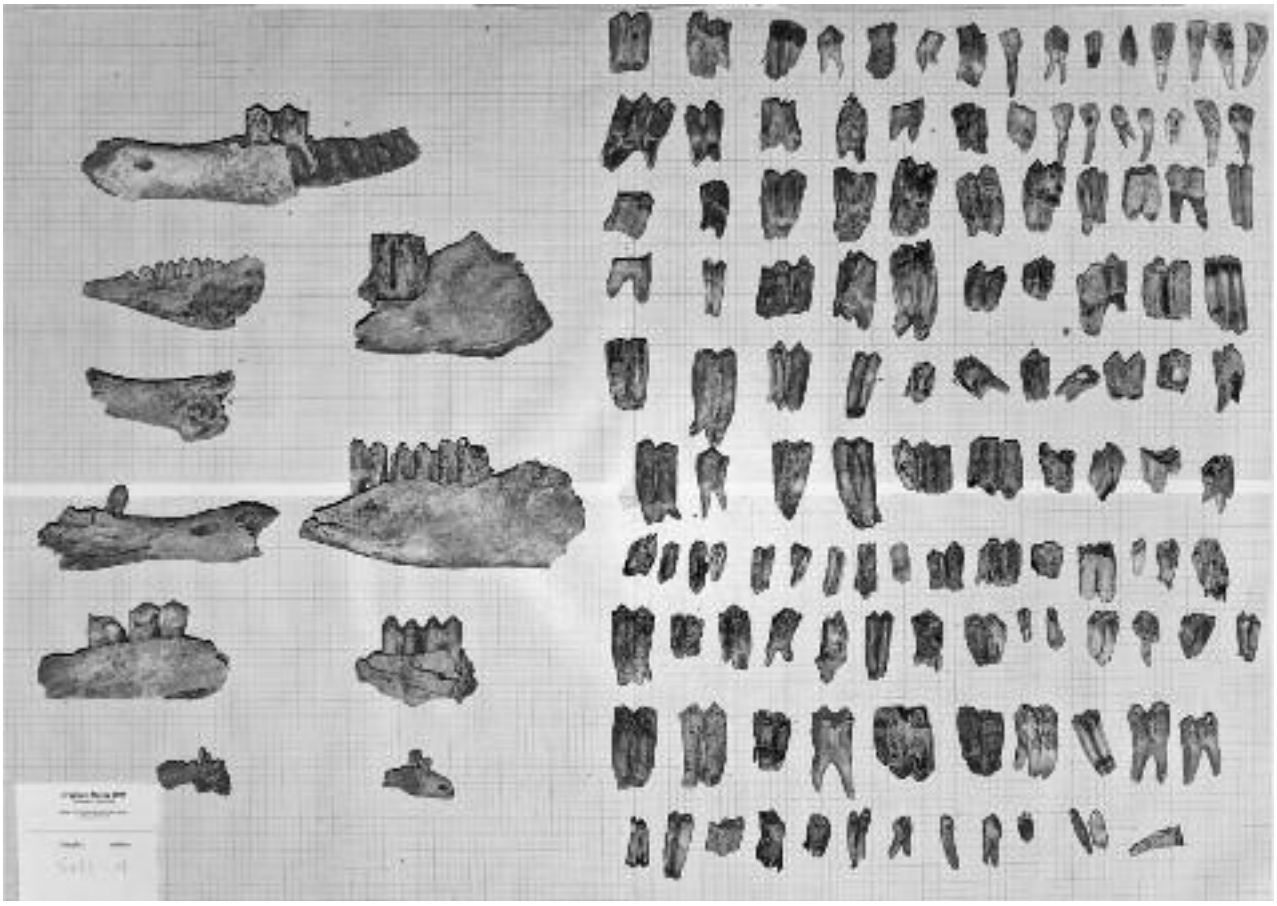

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Fig. 42 Small finds, various tooth and jaw fragments. Photograph: S.S.

To some extent, the *wood remains* discovered in the walls were very large and well-preserved; thus, they appear to be suitable for an *archaeobotanical analysis* as well as a *dendrochronological determination*. The respective analysis will be carried out at the Institute for Prehistoric and Scientific Archaeology at the University of Basel. The first results are expected by the summer of 2010.

The same applies to the samples of *wet-sieve analyses* which were performed in different occupation and burnt layers. Recent plant components were collected from all over the hill of the Drapham Dzong for botanical comparison purposes.

Further, *rock and sediment samples* were collected in 2009. First and foremost, they are necessary for the geological determination of the clay and stone layers which the castle hill is made of; they are also needed to identify the heterogeneous stone material that was used to build the walls of the fortress. These examinations – performed at the Institute of Mineralogy at the University of Basel (by Prof. Dr. S. Graeser) – have not yet been concluded, although the first results have already arrived. For example, an «Almandin» garnet was identified. The mineralogical tests are based on *ceramic tempering* which is defined by a high amount of mica and consists of stone grain that was apparently not taken from a river or creek bed, but instead formed by crushing rocks.

Further material analysis also encompassed samples of *clay plaster* which was preserved *in situ* on various walls, partially coloured red.

We eagerly await the results of all above-mentioned laboratory tests. They will most likely be available by late summer; thus, the possibility remains to probe into the third campaign in autumn 2010, and to amend the sample collection as required.

4.5. Iron slag

The *iron slag* finds belong to the most important objects that were discovered in 2009. They partly derive from the layer Na 3 – from the waste disposal outside the west cur-

tain wall –, but mainly from the excavation site near Nag Lhakhghang, approx. 400 m north-east of the Drapham Dzong where clear traces of former iron mining are preserved in the bamboo jungle (compare above: 2.). The slags still have to be analysed, a process that will be performed by the Institute for Non-destructive Analytics and Archaeometry in Basel, together with examination of the metal artefacts.

The iron slag finds, partly on the fortress, partly nearby at a former pit, all help to clarify the economic environment of the Drapham Dzong which, until now, was subject to vague speculation. The slags prove that the Drapham Dzong was the organisational and stately centre of a mining establishment that presumedly (presumably?) provided the economic foundation for the fortress activity in the barren high mountain valley.

For the time being, there is no information available on the location of smelting institutions. In former times, wall remains were apparently visible near the slag tip. The furnaces may have been operated in both bailey areas or in the fortified valley settlement. The crushing mill (used for crushing the ore) and a hammer mill where the raw iron was used to forge ingots, are most likely to be found near the course of a stream.

5. Results

5.1. Ground plan

The upper castle of the Drapham Dzong – the only one to be mentioned in view of the state of research – was verifiably not built in one phase. Although not all coherences and building sequences are yet transparent, it can be assumed that the upper castle was approximately built between 1550 and 1700 according to the present radiocarbon data. The various phases and stages however are not equally spread out during this time period of one and a half centuries, but are instead focused on the first ten or maximum twenty years of the settlement era.

The ground plan of the upper castle does not give the impression of random growth characterised by changes to the concept. If the distinct masonry seams had not existed, the ground plan could well be seen as a result of one single building phase. The Utse seems to be strikingly different; its orientation appears to be angled at 10° as opposed to the main axes. This deviation can possibly be explained by the fact that the Utse, which in any case belongs to the first building phase, was at first a detached building, and the square of enclosure walls, which was constructed afterwards, could not be rectified precisely on the ground plan of the Utse due to topographical reasons. Otherwise, the south-east corner of the circular wall would have been built much too far into the slope.

Apart from the Utse, the south tower also seems to belong to the first buildings of the upper castle that were constructed. Its lateral axis which is extended to the middle of the entrance to the Utse, formed the longitudinal axis of the rectangular wall square belonging to the upper castle. This was presumably planned from the beginning, but erected during an extension phase immediately after the Utse and the south tower were built. During this phase, the north-east corner tower, followed by the east and west curtain walls (the latter including the two flanking towers) were constructed. It remains inexplicable why the east curtain wall did not receive a flanking tower in the middle section.

Further, the sustained west and east wings, leaning on the curtain wall from the inside, were also a product of the first extension phase. The non-symmetrically structured interior construction including transverse walls as well as the two arcades facing the courtyard both belong to a later building phase. This also applies to the extension of the south-west flank and the two gateways at the south periphery of the upper castle.

The two walls which are built in alignment with the north-east façade of the Utse and the two corner towers, thus forming a closed line of defence, were also built sub-

sequently, but hardly with a long interval in between. The builders may even have waited to erect these two important walls due to the fact that the openings were kept open for as long as possible to transport material.

For the time being, the building sequence within the south-east flank (which has not yet been archaeologically defined) of the area where the entrance ascending from the south curtain wall to the inner courtyard still has to be found, remains obscure.

The overall architectural concept of the upper castle consists of the following elements:

A rectangular wall square encloses the entire site. Along the approximate longitudinal axis from south to north, the Utse rise in the north, and at the other end, the smaller south tower is located. The enclosure wall is fortified by two protruding square towers on the west side and one on the east side. On the west and east side walls of the wall square which was built for defence purposes, long wings divided by lateral walls were built with protruding arcades facing the courtyard. Both wings are attached to annexes on the northern narrow side which run along the Utse on its west and east sides. The southern section of the site, where two tiered gateways mark the entrance, was at least partially overbuilt. However, the walls that have been exposed until now do not indicate any architectural coherence. Further, the structural connections to both bailey sites also remain unclear.

It can be said that the upper castle was built during several phases and stages according to a clear initial ground plan.

Fig. 43 Upper castle at the end of the excavation in 2009, view from the southern bailey towards the southern front. Photograph: W.M.

5.2. Dating

For the time being, only the analyses of the radiocarbon samples from 2008 provide binding data regarding the age of the Drapham Dzong. A total amount of seven samples indicate the building period during the time between 1555 and 1700, whereas five samples belong to the first half of the 17th century. Based on the arithmetic averages, the plus/minus deviations lie between 15 and 35 years.

It remains unclear as to what extent the verified figures allow a conclusive dating of the Drapham Dzong. As previously mentioned, the samples of charcoal particles are derived from the wall debris and burnt layers, and do not necessarily belong to the time as when the fortress was built.

It is therefore presumable that the site was built during the second half of the 16th century, and abandoned around 1700. However, it is still too early to try and reconstruct a historical context, respectively to link the chronologically non-verified foundation to historical events.

More reliable dating can be expected from the samples taken in 2009 which originate from wood that was embedded in situ in the walls.

5.3. Evaluation

The general status of the archaeological research in Bhutan makes it practically impossible to gather conclusive comparative examples of the finds on the Drapham Dzong, even if single structural elements can be found which correspond to those of the preserved Dzong. This applies, e.g. to slit windows, wall techniques or the floor design. The ground plan as a whole, including the means of defence of both baileys and the fortified valley settlement, are, for the time being, unique in Bhutan.

Owing to the excavation finds, the defence function is particularly comprehensible; this is indicated by the use of bows and arrows, and possibly even light-calibre powder firearms. Due to the means of defence of the two baileys and the fortified valley settlement, the Drapham Dzong was a vast and impressive fortress that needed a garrison of 2,000 men in order to have a tactical effect in case of a war.

The Drapham Dzong was not just a military fortress though, but also a residence of stately representation, as small finds and structural details prove – e.g. in the area

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of the gateways or the Utse and the south tower. In view of the animal bones discovered in 2009, the conclusions pertaining to the meat supply for the inhabitants have become even clearer than in 2008. It is certain that domestic animals were slaughtered within the fortress. Even though agricultural equipment, which might prove the production of crop products, is missing in the corpus of finds, it still does not question the meaning of rice or buckwheat as basic foodstuffs.

Economic foundations of the habitation and fortress operations (not defined in 2008) became clearly visible in 2009 owing to the evidence of a connection between the Dzong and iron mining. This knowledge must be deepened in 2010. The importance of the Chinese porcelain fragment find – trade relationships? – remains unclear.

Whether or not the Drapham Dzong also accommodated a monastery-like settlement of monks can not be assessed during the present excavation status. Low wall bases at the foot of the Utse may have served as supports for prayer drums. For the time being, no indications whatsoever exist for cult chambers.

According to the excavation finds, it is absolutely clear that the Utse was destroyed by a fire. The fire did indeed seem to have only damaged the Utse. Therefore, the question pertaining to the destruction procedure, respectively the reasons of abandonment must remain open. For the time being, no archaeological indications are given as to whether a war was to blame for the downfall of the Drapham Dzong. Nevertheless a war destruction, for what historical reasons ever, must not be completely disregarded.

According to the radiocarbon data we have so far, the settlement era of the site took place during the one and a half centuries between (around) 1550 and 1700 which, in accord with the occidental periodisation, corresponds with early modern times. Such terms of era, developed by the Europeans, are of no help whatsoever to cultures in other parts of the world. Until now, the finds, the architecture of the Dzong and its means of defence have helped the excavation to reveal relationships which, from a European point of view, would refer the site to the Middle Ages.

6. Further procedures

The Bhutan-Swiss archaeological project Drapham Dzong has a span of three years, from 2008 to 2010, which means that the final excavation stage will take place in 2010.

The following measures are to be considered top priority:

— Further investigation of the Utse with the goal to reach the walking level, at least in parts of the site.
— Exposure of the south section of the inner courtyard adjoining the Utse.
— Exposure of the south-east flank of the upper castle.
— Investigation of the bottom layers in the sectors L, N and U.
— Amendment of the ground plan of the upper castle by means of superficial prospecting.
— Selective probes in both baileys and in the fortified valley settlement.
— Development of documentation for the preservation of the exposed walls, namely the highly endangered ruin of the Utse.

These final field work stages – planned for autumn 2010 – will be followed up by the scientific evaluation of the excavation which will be comprehensively published. These works that also include the results of the various laboratory tests shall be planned and financed in the form of a follow-up project. Before this research report is published, no other excavations should be planned for the Drapham Dzong.

Photographs:
(W.M. = Werner Meyer, J.O. = Jorge Osatnisky, A.S. = Anita Springer, S.S. = Silvia Scheuerer)

Fig. 44 Distant view of the Drapham Dzong from the south-west. Photograph: W.M.

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