Chubjakha Dzong Ruin, Paro Dzongkhag, Kingdom of Bhutan
The Investigations in 2013

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Chubjakha Dzong Ruin
Hungrel Gewog
Paro Dzongkhag

Map No. Bhutan 1: 50'000 No. 78E-7
Site Coordinates: E 194457.730/N 3034809.540 Drukref03
Altitude: 2878.00 m above sea level

Age determination: medieval period

Content

Fig. 1 Chubjakha Dzong, Paro Dzongkhag, Bhutan. View of the ruins from the east. The main tower is at the centre (Utse).

Fig. 2 Chubjakha Dzong, Paro Dzongkhag, Bhutan. The location of the Dzong ruin.

1. Initial situation

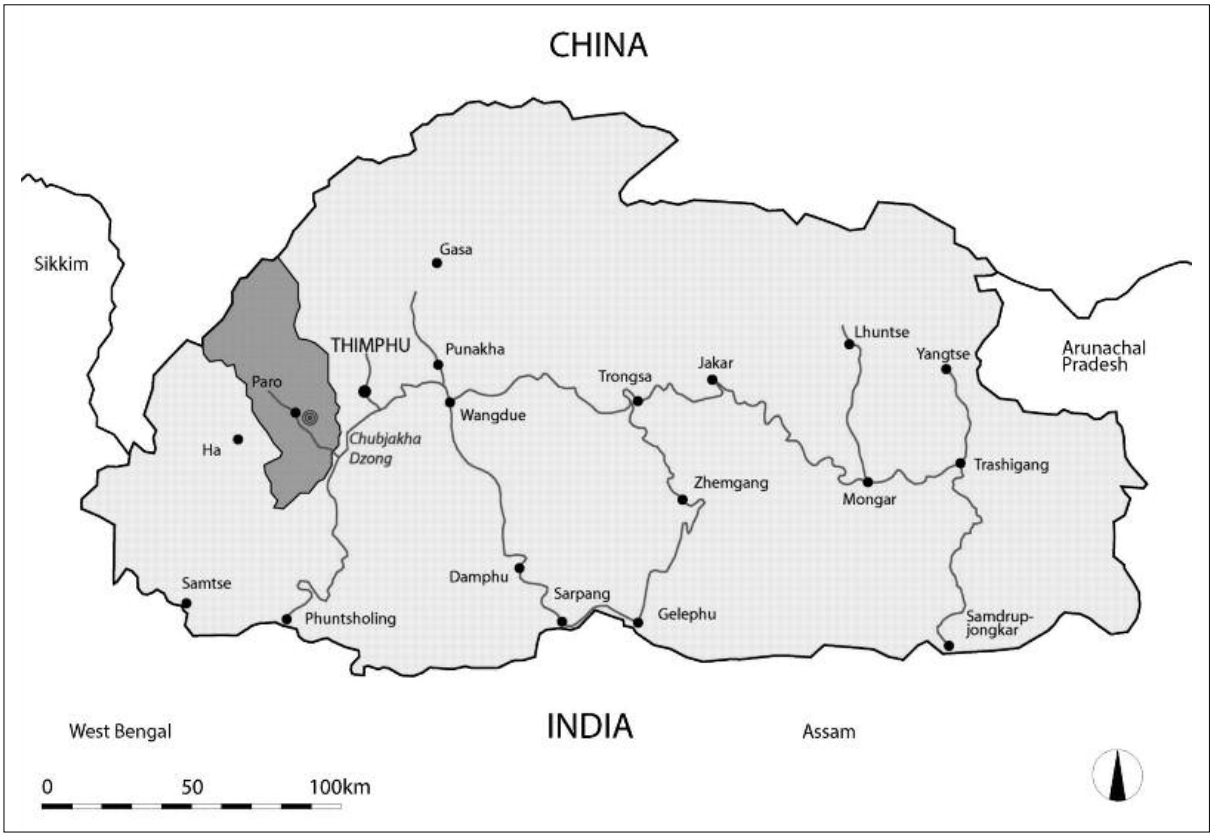
The Chubjakha Dzong is situated approx. two and a half kilometres (linear distance) eastward above the town of Paro and is one of the most impressive Dzong ruins in Bhutan. The Chubjakha Dzong has an extraordinary stance nationwide – not only because of its size and good condition, but also due to its historic meaning[1]. After an assessment made by Prof Dr Ph. Della Casa (University of Zurich), Mr Namgyel Tshering (Helvetas Bhutan) and Mr Karma Tenzin (DCHS, DoC, MoHCA) in April 2012, the site was identified as an appropriate object of the investigation as part of the Bhutan-Swiss Archaeology Project[2]. Without setting a binding timeline, it was decided to keep a close eye on the site and strive towards organising a research resp. documentation and inventory project at the earliest opportunity which indeed arose one year later.

The acquisition of a Leica Total Station TS06 in April 2013 for the Division for Conservation of Heritage Sites under the Department of Culture led to the need to provide the employees with a training course on how to use the device. The Chubjakha Dzong ruin was selected as the training object. The survey work took place in July 2013. During the course of this work we were able to find out more about the ruin and understand its building structures. When measuring the ground plan, one central question remained: namely as to where the main entrance to the Dzong was situated. Two possible positions for a gate were taken into consideration. A reliable answer to its exact position was only possible after the selective excavation had been carried out.

The archaeological investigation in the south-west area outside the enclosing wall took place in October and November 2013. Besides the excavation, which actually led to the evidence of the main entrance, we also started with the inventory resp. the documentation of the building structures in the autumn of 2013. This work should be finished by the end of 2014. With the subsequent publication of a monograph on previous exporations, the first phase of research of the former Chubjakha Dzong shall then be completed.

1 Della Casa et al. 2013, p. 156.

2 Della Casa et al. 2013. p. 155f. In general about the Bhutan-Swiss Archaeology Project, cf. Della Casa et al. 2011. p. 173ff.



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2. The geographical and topographical situation of the Chubjakha Dzong site

The Chubjakha Dzong ruin is situated on a sloped terrace high above the confluence of the Deo chhu and the Pa chhu, a good 600 metres to the east and above the Paro Rinpung Dzong, and it can be reached from the valley in approx. half an hour by car on a dirt farm road (Fig. 4). The entire Dzong area including baileys in the east, south and west comprises a total area of about 1.5 ha and spreads across a plateau which originates from the gentle hillside in the east before sloping steeply down into the Paro valley in the west.

Next to the Dzong facility, two natural trenches which were originally aquiferous – and today dry – were used as two consecutive barriers converted into defence ditches that were concentrically situated around the area. (Fig. 3).

Fig. 4 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Topographical situation of the ruin to the east and above Paro Town/Babteng.

Fig. 5 Chibjakha Dzong, Paro Dzongkhag, Bhutan. View from the south.

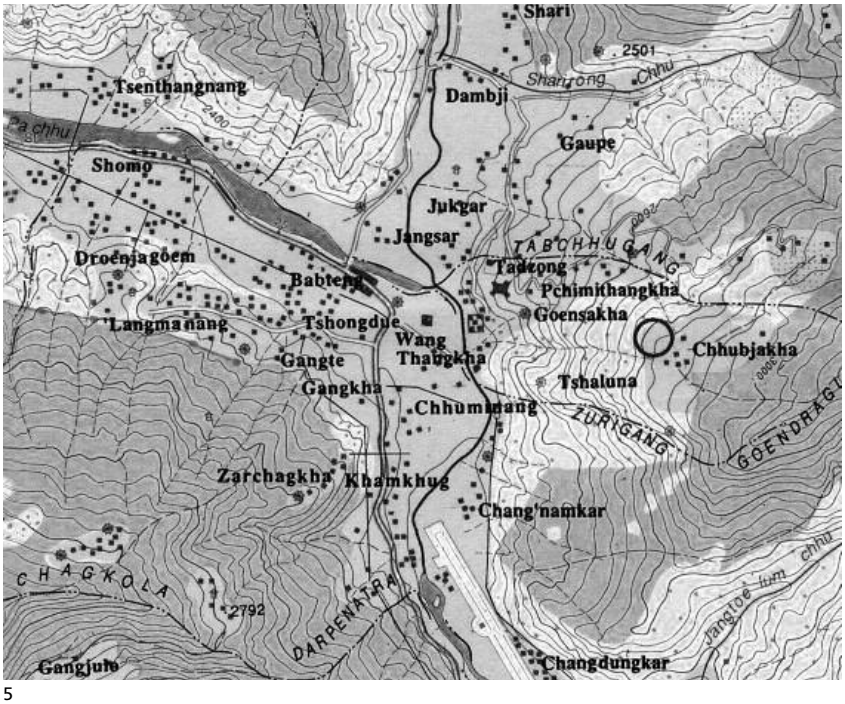

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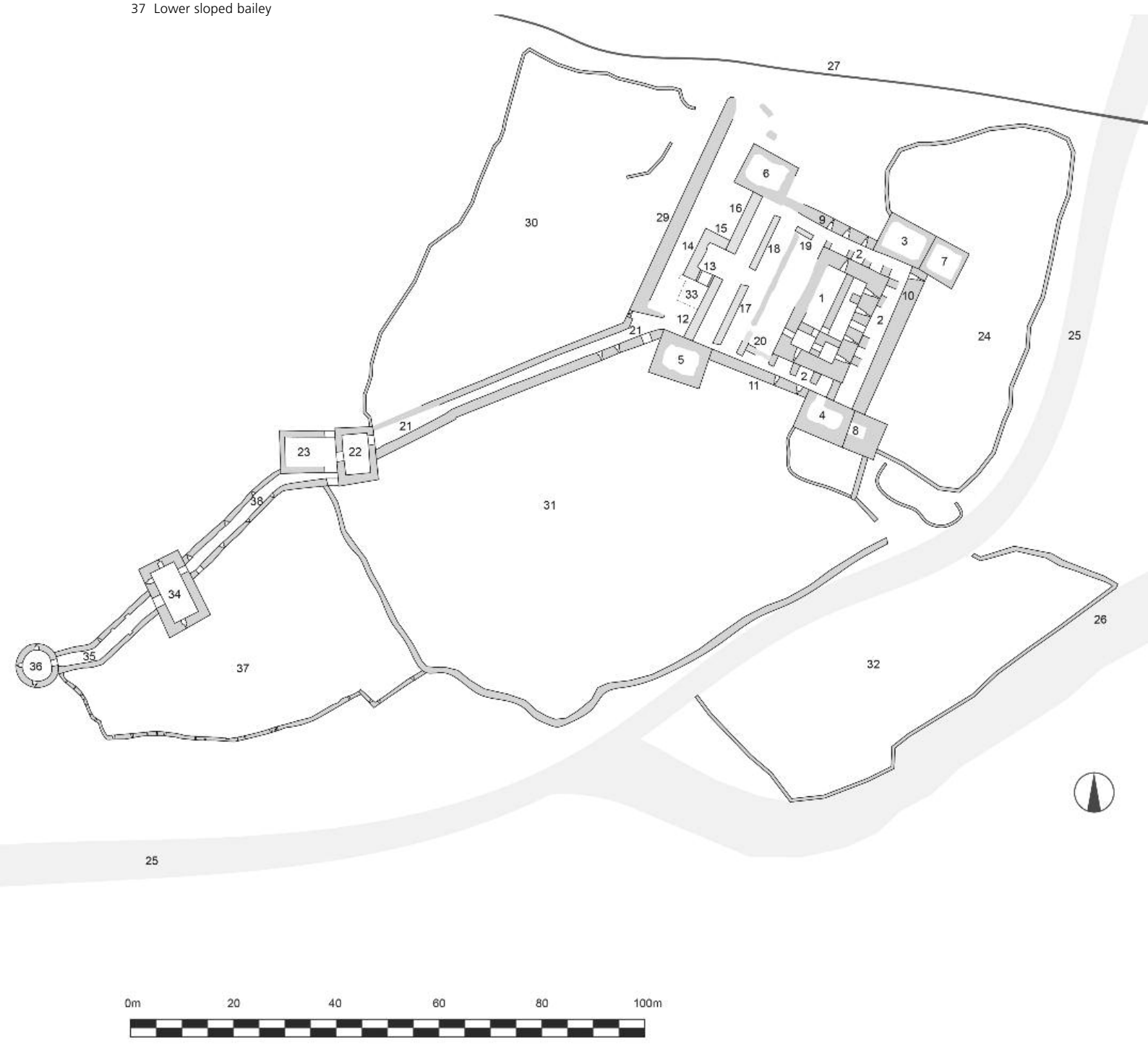
Fig. 3 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Ground plan of the Dzong ruin.

1 Utse
2 Rooms in the Utse
3–8 Corner towers
9–11 Defense masonry walls
12–20 Rammed earth walls
13 Wall at the main entrance
21 Fortified path
22 Tower
23 Bulding
24 Eastern bailey
25–26 Inner and outer ditch
27 Footpath
29 Sustaining wall of the entrance terrace
30–32 Bailies
34 Building
35–38 Fortified path
36 Round tower
37 Lower sloped bailey



3. The building structures of the Dzong

3.1 The enclosing wall

The central facility of the Dzong is a rectangular fortress with a side length of approx. 40 m. It encompasses rectangular fortified towers at each corner (Fig. 3). The enclosing walls to the north, east and south are all built from the local plate-like split rocks (Fig. 6; 7; 11). The up to 3 m thick wall is an exceptional piece of high-quality work. The rather flat stones were alternately laid as stretchers and binders, and the wall is solidly built from the inner to the outer wall casing. Mortar was used as a binding agent. The enclosing walls are largely preserved up to the cornice (which used to be red) of the so-called *Kemar* at an approximate height of 6 m.

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A deviating construction method displays the section of the enclosure that points toward the slope in the west between the corner towers 5 and 6. These are walls 12, 13, 14, 15 and 16 (Fig. 8; 9). They have a 2 m high foundation made of stone and, above, rammed earth walls which are at least 2 m thick. The rammed earth walls are 1.5 m thick and were built in a modular manner. The finding clearly shows a box height of 75 cm per work step. Both the foundation as well as the mud walls are very well preserved. Respectively, along the base of the wall there is little debris. One exception however is wall 13 resp. the corner of walls 12 and 13. Here lies a huge scree. Due to

Fig. 6 Chubjakha Dzong, Paro Dzongkhag, Bhutan. View of the enclosing wall and tower 4 from the southwest.

Fig. 7 Chubjakha Dzong, Paro Dzongkhag, Bhutan. View of towers 3 and 7 from the north.

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Fig. 8 Chubjakha Dzong, Paro Dzongkhag, Bhutan. The evaluation area in the corner of walls 12 and 13 featuring the excavated main entrance. View from the southwest.

Fig. 9 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Tower 6 and the western sections 14 and 16 of the enclosing wall made of rammed earth. View from the west.

the fact that no other gate construction is visible in any other area of the enclosing wall, the entrance could only be postulated here. A stone battlement 13.3 is considered a positive indication – its interpretation was verified as a western gate frame during the excavation (cf. 4.2 The archaeological evaluation of the entrance area).

3.2 The Utse

The interior of the Dzong is dominated by the mighty Utse (1), the rectangular main tower featuring 15 × 20 m long sides and approx. 3 m thick walls (Fig. 10). The walls in the north, east and south are five stories high, preserved up to a height of approx. 12 m, and, as common with Bhutanese stone buildings, the walls clearly lean inwards. The west wall facing the valley has collapsed – the entire wall segment had tumbled over as an intact stone bonding. Here, it appears that the damage was caused by the

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Fig. 10 Chubjakha Dzong, Paro Dzongkhag, Bhutan. View of the Utse from the north.

earthquake in September 2011[3]. The thickness of this west wall is only 2 m, and here is where the entrance to the Utse was located, as well as a *Rabsey,* a balcony that extends over several stories. Today, it is possible to climb over the wall segment that tipped over and enter the interior of the Utse, hence reaching the second floor. A complex internal division comprising several rooms is visible here.

3.3 Reinforcement of the fortress towards the east

There was originally no defensive wall in the east. Here, the east wall of the Utse formed the enclosure of the fortress. The gaps between the Utse and the two corner towers 3 & 4 were filled with walls jammed inbetween. Due to reinforcement reasons, the Dzong was fortified towards the east at an unknown date. The two corner towers 3 & 4 were both fitted out with the tower extensions 7 & 8. A defensive wall 10 with a thickness of 3 m was constructed exactly upon the axis of the joints between the existing corner towers and the new building extensions. Arrow slits on the ground floor and first floor enabled the wall to be defended. In this context, the Utse's arrow slits on the second floor. which had become useless. were then walled up on the outside. From then on, they merely served as alcoves.

3.4 Tower 22 and building 23

An approximately 70 m long path 21 continues in a southwesterly direction down the slope from the southwest corner tower 5 of the Dzong. The path is about 2 m wide, and it is secured on both sides with man-sized defensive walls. While the southern section of the wall is about 1.5 m thick, the one in the north is only just slightly more than 1 m thick. In its lower part where it is connected to tower 22, the wall has collapsed and is now perceived as a mere terrain deformation. It does however appear that the two defensive walls belonging to connection path 21 were originally attached to tower 22, and that no door was situated here. On the other hand, in the upper part where the south wall is connected to corner tower 5, there is a doorway leading to the south-

3 Personal communication, Mr. Namgyel Tshering, Helvetas Bhutan.

Fig. 11 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Buildings from a recent period. The latest tower 8 and defensive wall 10 attached to the older tower 4. View from the east.

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ern outer bailey 31. The tower is called the *watch tower.* The view from here and also from the two adjacent towers 34 and 36 further down the slope to the Pa Chhu valley was undoubtedly slightly better than from the Dzong. Especially horsemen heading up the valley in a northern direction could probably have been spotted a bit earlier from here. However, this can hardly have been the only reason for constructing such impressive buildings. Tower 22 covers an area of 8.5 × 10.5 m, and its side walls are aligned to the north. The approx. 2 m thick walls are five stories high on all four sides. The only thing missing is the woodwork, namely the roof, the floors, and in parts, the lintels and frames of doors and windows. The enormous area of the tower and a large amount of window openings with a great variety of shapes on every floor are indicative of multiple room divisions. As a result, we should assume that they were purely wooden interior walls or framework constructions with infill panels made of mud and wattle. Interior walls made of stone or rammed earth were not observed. Due to its size, we can safely assume that tower 22 was used for residential purposes. Tower 22 is situated on the front ledge of the terrain gently sloping away to the west. From here, the slope becomes very steep. Building 23 – which measures about 7 × 10 m and is aligned to the east – was built in this embankment beneath and adjacent to the tower. The walls are 1.4 m thick. The west wall is two stories high and completely filled with debris on the inside. As a result, the remains of building 23 form a kind of terrace at the foot of tower 22. For the time being, the function of this building is still unknown and would only be clarified after archaeological excavations.

3.5 The outer bailey areas

The entire Dzong terrain covers an area of 1.5 ha. The actual Dzong itself only covers the smallest part. On three sides however, the fortress is surrounded by extensive outer bailey areas which take up the essential proportion of the area.

Eastern outer bailey 24

The outer bailey sector 24 with the smallest area of 17a is situated to the east of the fortress. This terrace, which originally may have exhibited fields or vegetable gardens, is enclosed by a lower, approx. 70 cm wide bounding wall. It starts at the corner tower 8, continues to the east before branching off towards the north. At a distance of about 24 m it runs parallel to the eastern defensive wall 10 from the recent period of the Dzong. Here, the wall – for an approximate length of 80 m – is also accompanied by the inner moat 25 which is situated directly in front of it. In the area of today's access path 27 to the ruin, the wall finally branches off to the west and then takes a large bend to the northwestern corner of tower 3.

Southern outer bailey 31

At almost 48a, the southern outer bailey is the largest of the three outer bailey areas. In the north, it connects to the outer bailey 24 and runs parallel from here to the inner moat 25 in a southwesterly direction. After about 90 m, the wall branches off to the northeast and connects to tower 22 after approx. 60 m. An entrance to tunnel 38 is situated here. In the north, the southern outer bailey 31 is bounded by the wall belonging to connection path 21. The wall also has a doorway in the area of corner tower 5.

The entire area of the southern outer bailey 31 slopes gently towards the southwest. It cannot be ruled out that also fields originally existed here, but it is indeed more conceivable that pastures, orchards and especially settlement structures, e.g. farmers' and craftsmen's dwellings, were situated here. It can be assumed that a Dzong the size of Chubjakha did need a significant number of service providers who lived and worked in the surrounding area in order to maintain it. There may also have been a community of monks outside the Dzong's walls, and it is feasible that at least a proportion of the garrison – who were needed to defend the facility – including their families did indeed live outside the fortress.

Western outer bailey 30

The outer bailey terrace 30 which joins the connection path 21 in the north may also have had a similar function. Its area covers almost 25a and is enclosed by a double-shell wall. It is attached to the northeastern corner of tower 22 and runs approximately northward until it branches off towards the east after almost 90 m, and then follows footpath 27. Here, its trace disappears about 5 m in front of wall 29 – the retaining wall that levels off the path to the entrance of the Dzong. It remains unclear whether a passage ever existed in this area. It is however certain that a door did exist at the southern end of retaining wall 29. This door led directly to the main entrance 33 of the Dzong and was walled up later on and equipped with an arrow slit.

3.6 The inner and outer moats

The Chubjakha Dzong was built on a terrace between two natural trenches that were originally aquiferous. According to the topographic map of Bhutan (scale: 1:50'000), a stream arises south of the Dzong, runs off to the west and joins Pa Chhu beneath the Paro Rinpung Dzong near the Nemeyzampa (bridge). A further stream originates northeasterly of the Chubjakha Dzong, at first flowing in a northwesterly direction, and finally turning towards the west and joining the Deo Chhu. Both trenches were used for reinforcement purposes and then developed into two semicircular moats – one behind the other – which led around the Dzong area.

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Fig. 12 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Trench 25 in the area of a terrace to the north and beneath the Dzong ruin. View from the west.

Figs. 13, 14 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Training on two Total Stations Leica TS06.

The inner moat starts in the southern course of the stream, approximately at the height of the lowest tower, round tower 36. Here, the external trench wall was reinforced with an impressive revetment. The trench now runs in a northeasterly direction along the course of the stream to the area of the original spring where the inner moat joins the outer moat 26. From this point onwards, both moats were completely artificially constructed. The inner moat 25 follows the eastern outer bailey 24 and then runs down the slope towards the north. Today, it displays a beautiful division of the terrain in the tree nursery towards the north beneath Chubjakha (Fig. 12). Not until approx. 100 m further down, the inner moat joins the natural stream bed in the northeast. This bed forms the origin of the outer moat. The trench is of natural origin right up to the terrain edge of the Chubjakha terrace. From there on, an artificial moat 26 runs around the area in a large arc up to the aforementioned connection to the inner moat. At its widest point, the distance between the inner and outer moats is about 50 m.

3.7 Additional buildings and structures

The inventory and documentation of the building structures of the Chubjakha Dzong ruin are merely a humble beginning. The work shall be continued and finished in the autumn of 2014.

4. The investigation work in 2013

4.1 Training on the Total Station Leica TS06

Date of survey and mapping: July 15 to 29, 2013

Mapping is one of the most important documentation methods in archaeology and monument conservation. For this reason, a Leica Total Station TS06 was purchased in April 2013 for the Division for Conservation of Heritage Sites, financed by funds from the Share Foundation[4]. In order to become acquainted with the instrument and to prac-

[4] Elena Probst, president of the foundation board.

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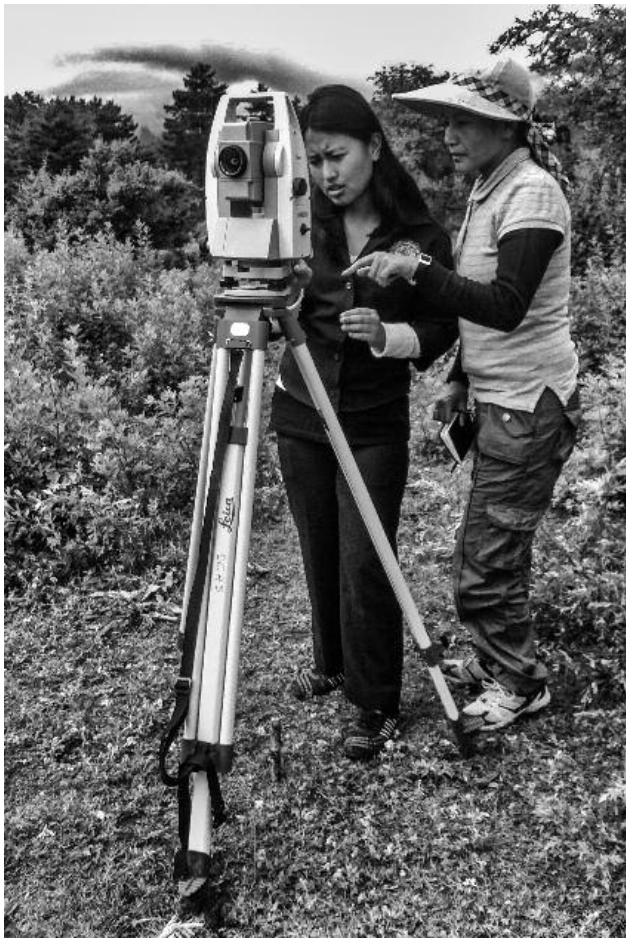
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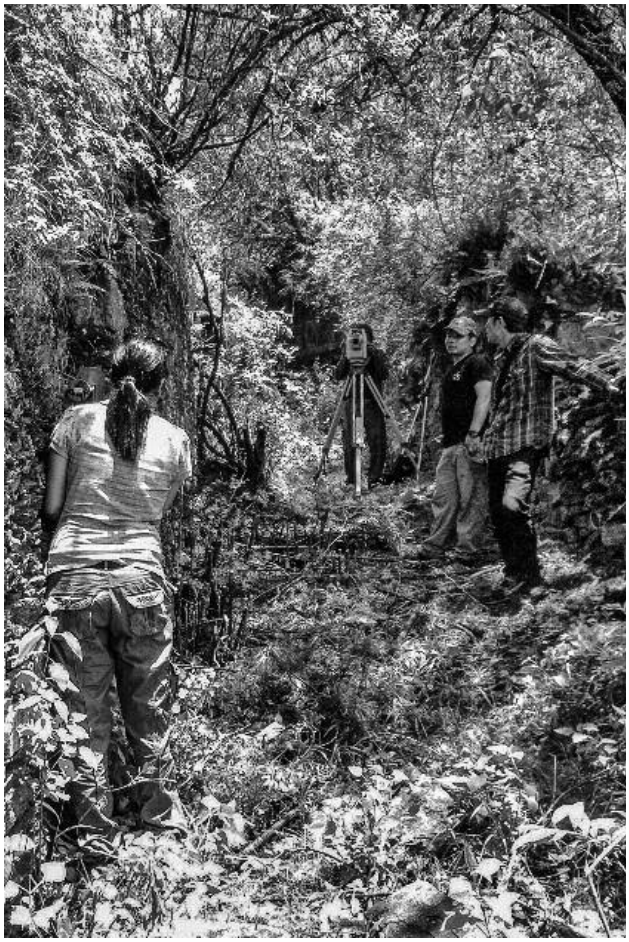
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tice using it, the steering committee of the Bhutan-Swiss Archaeology Projects decided to conduct a two-week practical survey training course for the employees of the DCHS (Fig. 13; 14). The Chubjakha Dzong ruin was selected as the training object. The aim was to survey the ruin and draw a ground plan in order to become better acquainted with the site and its structures, and also to obtain the basics in order to plan more work (Fig. 3; 15; 16).

The following teaching objectives where targeted:

- Practice installing the instrument
- Setting up a new station by using reference points determined by using GPS (orientation with coordinates; resection; orientation with angles)
- Finding a point with the help of the Total Station (stakeout)
- Point measurement; survey of the Dzong ruin
- Importing data to autoCAD 2007 resp. 2009 and drawing the ground plan
- Importing data as a DXF file to ArcGIS 9.3 and drawing the ground plan
- Exporting data and maps as a KML file from ArcGIS 9.3 to Google Earth
- Working with the Bhutanese national coordinate system drukref03 (250'000 false easting, 0 false northing, 0 latitude, 90 longitude, scale factor 1)
- Using the Total Station's possibility of 3D measurements to obtain elevations and sections
- Layout and drawing of elevations and sections

The objective was to ensure that the DCHS' future survey work should always be compatible with the data from the official national survey. The working method and data collection should be adapted to those of the National Land Commission NLC. In practical terms, this means using the drukref03 as a projected coordinate system. Data man-

Figs. 15, 16 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Impressions of the survey work at the Dzong ruin.

agement resp. saving of data as shape files in ArcGIS 9.3. In order to guarantee compliance with these guidelines, we asked the survey engineer Mr Sonam Tobgay, surveyer for the NLC, for his advice and assistance. The NLC even provided a further Total Station Leica TS06, thus enabling two groups of 3 or 4 people to be able to work with one instrument each.

The following members of the DCHS participated in the training course (in alphabetic order):

- Choening Dorji, senior architect
- Karma Tenzin, architect
- Nidup Tshering, electrical engineer
- Pema, architect (until 24.7.13)
- Phuntso Wangmo, civil engineer
- Sangay Kinga, senior draftsperson
- Yeshi Samdrup, engineer

All participants managed to fully achieve the learning targets, and they are now able to carry out independent surveys using the DCHS' instrument at any time as well as process the data.

In addition to the training course, the creation of a ground plan was one of the two main goals of the 15-day fieldwork during which the entire Dzong area was surveyed. The survey also included both moats around the Dzong, the northern, southern and eastern outer baileys situated between the moats and the main structures as well as the connection paths – protected by walls – which run towards the west down the slope. The survey also includes three successive towers, whereby both of the lower towers were only captured with the GPS. They shall be surveyed using the Total Station within the scope of the autumn project.

The ground plan of the Dzong was recorded and illustrated including all interior walls. Owing to lack of time, we limited ourselves to recording the building structures during the mapping procedure and hence abandoned a topographical representation. Surveying a DTM (digital terrestrial model) with contour lines would have required a multiple quantity of measuring points and was not possible within the working time available.

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Fig. 17 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Investigation site 33 before commencing work.

Fig. 18 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Investigation site 33 after grubbing up the vegetation.

4.2 The archaeological evaluation of the entrance area

Date of the excavation: October 22 to November 8, 2013

During the survey work and while drawing the ground plan on the occasion of the campaign in July 2013, we were easily able to record the Dzong ruin's basic structures. It was not yet possible to clarify the question concerning the entrance situation. The main entrance in wall pos. 13 in the southwest of the fortress was established as the working hypothesis. This hypothesis should be clarified by means of a selective excavation during the autumn campaign.

In the first instance, the entire corner area of walls 12 and 13 were freed of vegetation (Fig. 17; 18). Afterwards, strings were attached along the alignment of wall 13 and 1 m parallel to the alignment of wall 12 in order to mark the profile axes. After that, we started to remove the earth along the marking strings (Fig. 19). This material (33.7) consisted of the debris from a rammed earth wall. During the removal, a profile of the scree was created parallel to wall 12. At the same time, larger parts of the foundation 13.2 became visible. The battlement 13.3, which had become visible at the top before the start of the excavation, emerged as the remains of the western gate frame (Fig.

Fig. 19 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Investigation in area 33. Work impressions.

Fig. 20 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Investigation in area 33. Documentation work.

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25). At the height of the gate threshold, we stopped removing the earth, and instead documented the profile which ran parallel to wall 12. We then removed the earth down to the same level. This is where the eastern gate frame 13.4 then emerged. During the further removal of the debris 33.7, remains of a staircase 33.5 leading to the gate as well as a stone slab floor 33.4 were exposed (Fig. 21). The stone slabs were apparently only laid within the area of the access paths. Next to it, the paved surface area was made of a fill resp. an encasement consisting of small stones 33.3 (Fig. 21). The aforementioned paving rests on a unit of hard and compacted clay 33.2. This layer was evaluated in one single position measuring 50 × 50 cm. It was traced down to a depth of 30 cm, but its bottom edge could not be reached. For this reason, the thickness of this layer package is still unknown. This was obviously material which was used to level off the terrain between the defence wall 29 and the western Dzong enclosure (12–16) and then deposited here. The material with a loamy matrix was strongly mixed with charcoal.

This small evaluation in area 33 shows that selective archaeological clarifications can actually contribute to unveiling further secrets about the Chubjakha Dzong ruin.

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Fig. 21 Chubjakha Dzong, Paro Dzongkhag, Bhutan. The evaluation area 33 with paving 33.4 and staircase 33.5 to the entrance of the Dzong.

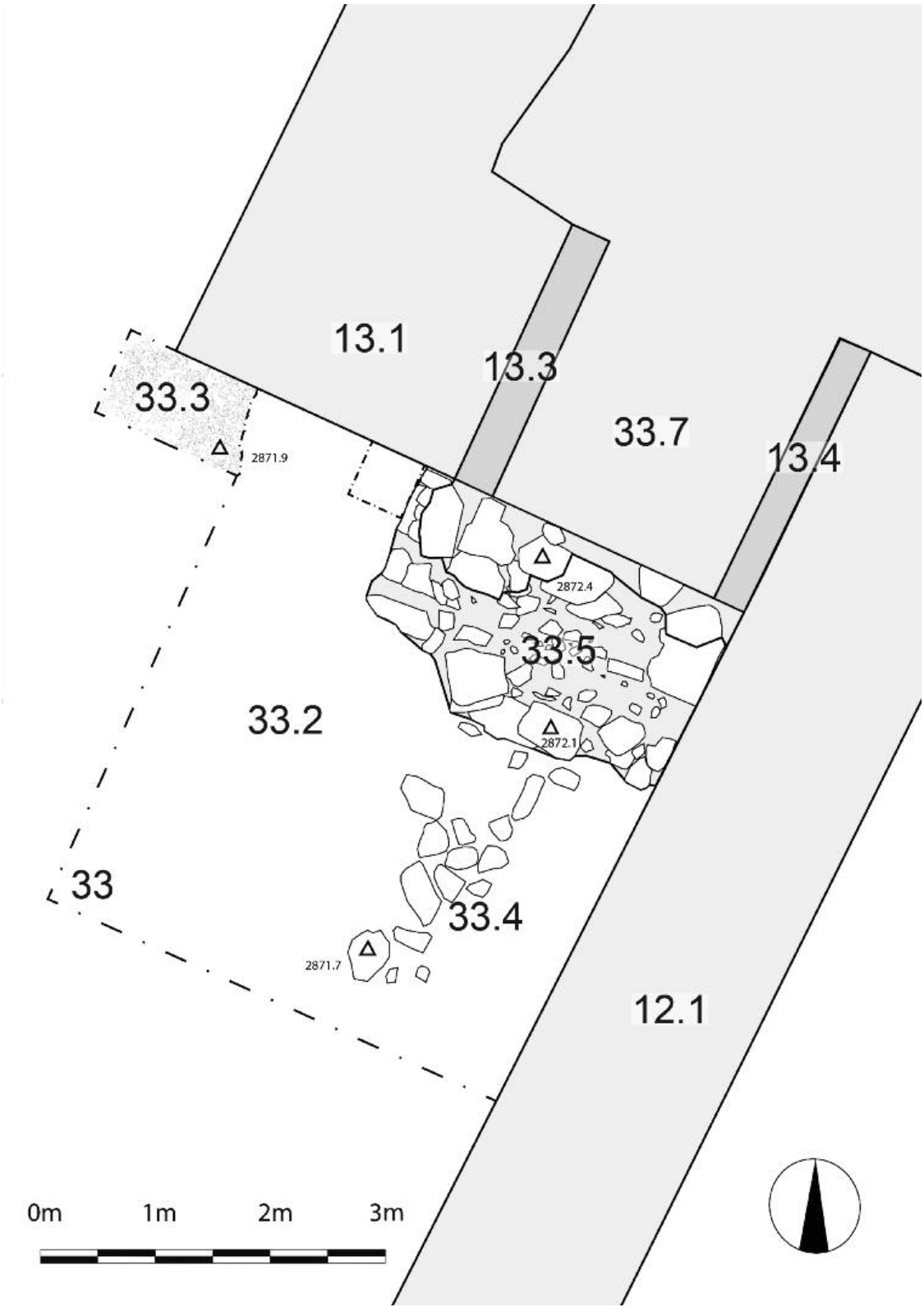

Fig. 22 Chubjakha Dzong, Paro Dzongkhag, Bhutan. The exposed main entrance to the Dzong in wall 13. In the foreground: remains of the staircase 33.5 leading to the entrance. View from the southwest.

Fig. 23 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Exposed section of wall 12. View from the northwest.

Fig. 24 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Area 33. Top view of the staircase leading to the main entrance in wall 13.

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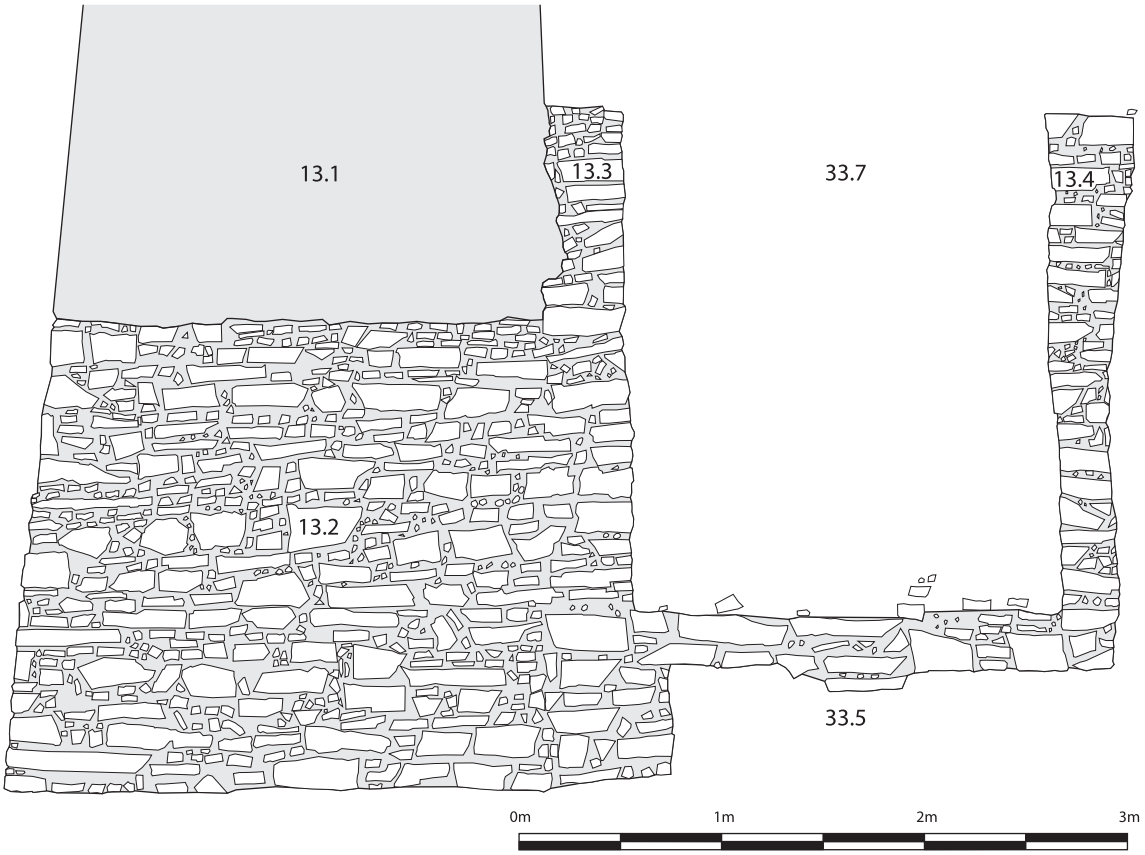
Fig. 25 Chubjakha Dzong, Paro Dzongkhag, Bhutan. Stone-by-stone view of the exposed main entrance. 13.1 Rammed earth wall; 13.2 Stone foundation; 13.3 western gate frame; 13.4 eastern gate frame; 33.5 Staircase to the main entrance; 33.7 Door opening filled with mud debris. Illustration: Sumjay Tshering.



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