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THE TERRACE - THE PROTOTYPE OF THE BATTERY

In 14th century Poland the principal element which became the source of the development of further forms and defensive systems was the flanking tower. It was seemingly a tower. But it had discarded its former passive form, clearly visible in the even walls without any openings. On the contrary, in the 14th century it was equipped with a great number of loopholes opening directly to the foreground in all directions. Thus it took on a definitely active attitude. This general principle, however, was accompanied by numerous variations and forms, particularly the forms of an oriel, that is, a flanking tower opened at the back to form a bend in the wall, and a „full” flanking tower, seemingly the shape of a normal tower. Similarly, their multifarious adaptations developed into simply amazing forms. There appeared both long, oriel-like, antegate necks, and low, broad ramparts with walls, wood or fascines inside, terraces. Besides, there existed also the traditional, well-known elements such as walls, whose sections were now transformed into curtain walls, which connected neighbouring towers to form bays, and towers, which had remained the traditional defences of the most vulnerable sections of the walls, including the gates. Therefore both the constructions had also been improved.

Thus, the above-mentioned bay or curtain wall, which could be defended both frontally and by means of two flanking towers, became the foundation of the flanking tower system. A bay as a whole could open crossfire on the foreground from three different places. Moreover, it made the defence of one flanking tower by another possible, which was a novelty. It became a breakthrough as a realized idea of a three-element set creating a flanking, three-sided and triple defence of the foreground and remained the crowning achievement of the art of defence until the 19th century. The bay, however, required that all three wholes were combined to form an integrated full defensive circuit. Consequently, numerous series of arrangements and their variants developed on the basis of different kinds of outlines such as the irregular outline at Kalisz (14th century), the oval outline at Pырzyce (14th century) and the quadrangular outline at Nidzica (14th century) and different forms of flanking towers (they could be square and circular in shape, multilateral, high

and low, small and big). This is the way the main „arrangements” of the system, namely the oriel-like arrangement, the tower – flanking tower arrangement, the terrace arrangement and finally the miniaturized small flanking towers arrangement, employed in the city walls of Banie (15th century), appeared. Within the framework of those systems there developed a number of variations, not to mention some individual „mutants” such as the unusual „octagon” at Frombork.

The following question can be asked here. Why were there so many variations if the flanking tower defence principle was so perfect?

The answer appears glaringly obvious. The variations developed as a result of new and new practical improvements. Consequently, the ability to overcome successive difficulties in order to achieve perfection was given the name of the art of defence and the resultant edifice of defence was referred to as the work of the art of defence.

Besides, in the case of the flanking tower system there appeared two basic obstacles: the material and economic obstacle and the technical obstacle.

The first obstacle resulted from the cost of building the defences, equipping them with weapons and finally maintaining the crew. This is why a tendency to construct defensive churches died a natural death unless it was connected with some fundamental needs of the local community, that is, the parish (for instance, defence against the Tartars or Turks in the Eastern border country). Castles had retained their importance, especially when they were a manifestation of the needs of the State organization (for example, Teutonic castles and Polish castles in the border country). Under the circumstances, however, the defensive possibilities of cities were very much in the foreground. Cities were powerful economically, had at their disposal military crafts and could provide a great number of their own or mercenary defenders.

The second, technical, obstacle lied in the inability of the contemporaries to solve a contradiction. On the one hand the effective defence of a place required thick city walls resistant to gunfire, but on the other hand it also required numerous and

comfortable, that is, large gunloops. As a result of this, numerous dead fields appeared (the thicker the wall, the more numerous the fields). They were visible in the vertical (from above) and, above all, the horizontal defence of the foreground. Hence square flanking towers were the first to be discarded (at their corners there appeared the largest dead fields). They were replaced with semicircular and multilateral constructions. Spurs filling in those fields were also used (e. g. the castle at Pniów). This was a major step forward in the development of the only universal solution, namely the pentagonal turret, which, however, belongs to the next bastion period of the art of defence.

Thus, the theory of the art of defence of those unusual, low or long ramparts or demi-bulwarks built into the existing line of, e. g., city walls remains a challenge. The source material is scarce. The purpose of building those fortifications seems obvious. They are part of modernization of the existing defences (e. g. in Gdańsk and Cracow).

Against the background of the flanking tower system the terrace arrangement is clearly visible. It still remains one of the unsolved puzzles of the Middle Ages, though one of the forms, namely the rampart, was used as early as in the stronghold period. The terrace probably developed from simple ramparts, rectangular in shape, which served as gun or bombard positions. They were protected by their own forebreastworks (foreparapets) in the form of palisades, fences, timber or fascine ramparts. Therefore the terrace was somehow the prototype of the fortified battery and was initially employed during sieges. Consequently, the defenders had to invent some effective defences. It was also a kind of terrace, usually built before the gate or improvised in the form of a superrampart next to the curtain wall (hence the so-called *cat* or *cavalier*) or on the broad terrace of some existing or specially erected flanking tower (cf. Frombork, Octagon). All those forms, however, are somehow primitive in their kind. The real terrace was a long earth bank, especially along the curtain walls, in the form which did not differ from the form of the rampart (cf. e. g. Malbork in the 15th century). Besides the above commonest form the terrace could also be erected before the moat as a forerampart equipped with its own moat. The reason was usually the lack of space (cf. Cracow in the 15 and the 14th centuries). Exceptionally, it could also be built outside the walls in order to widen them and make it possible for the defenders to place guns there. In addition, this multiform kind of fortification resulted in a new form, namely the terrace gun.

Besides, the invention of the terrace, especially the rampart variations, opened up a number of interesting, though complicated, possibilities. The defence of a place could be based on a new conception of connecting the wall system with the flanking tower system. The two systems were connected vertically and at the same time in two lines deepening the defence.

In front of the existing line of flanking towers there was a terrace – rampart or a terrace – forerampart, i. e. a terrace surrounded by its own moat, employed in accordance with the wall system principle (the choice depended on the terrain). This profile allowed the defenders to use the already existing e. g. oriels. They could be modernized and added to in order to transform them into, for example, high flanking towers. On the other hand, it made it possible for them to employ artillery (though only for frontal defence). It could be freely and easily introduced on relatively comfortable earthen terraces. To sum up: the terrace in this form became a remarkable achievement on the road to the perfection of the art of defence. It produced many variants. Four main variations can be singled out.

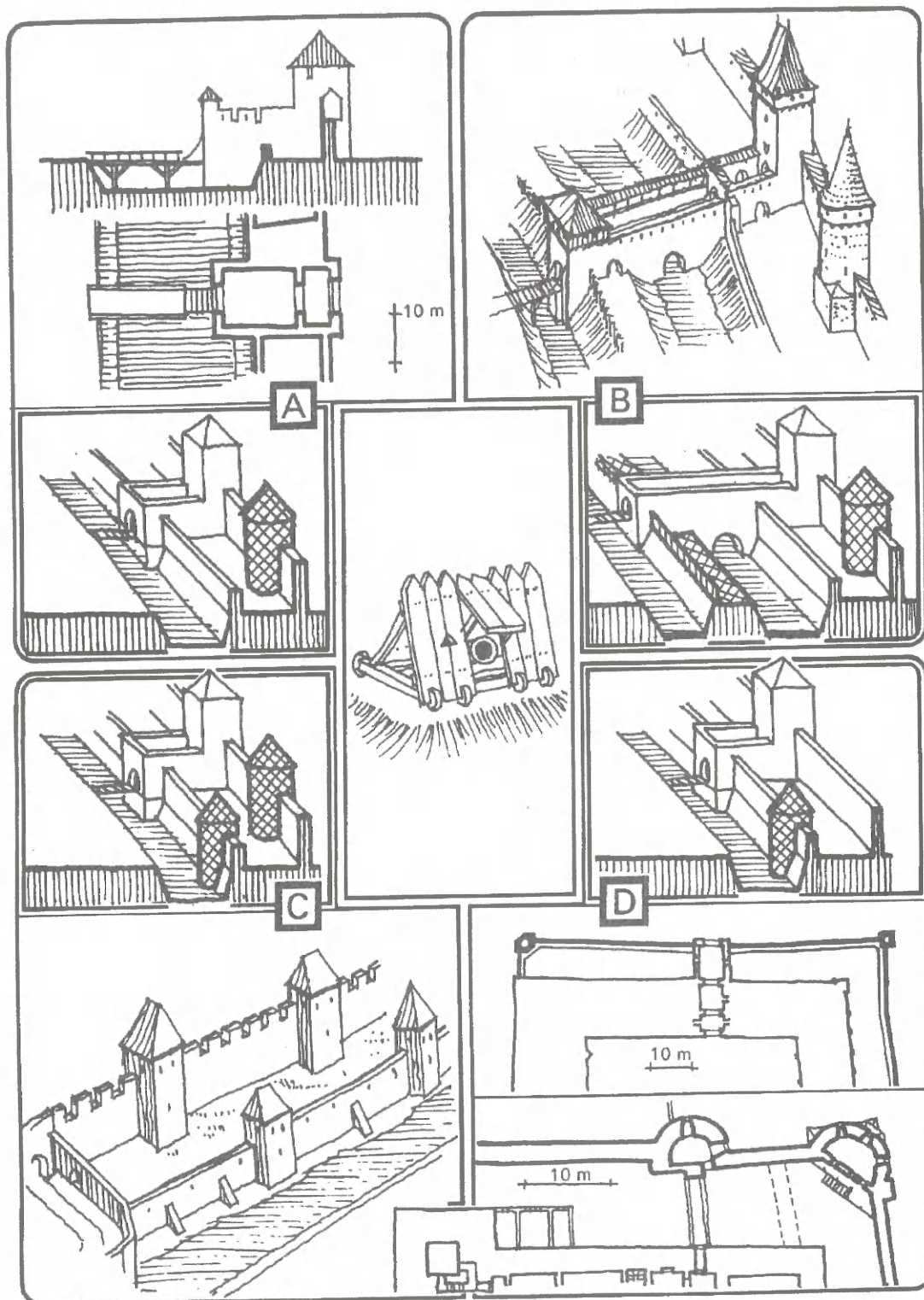
– Variation I, which can be referred to as the rampart variation, was a terrace protected by the so-called *annexe-wall*. In the 15th century, such a perfect *annexe-wall* was introduced first in Cracow (1401 - 1429) and then in Toruń. It was also employed in a number of smaller towns such as Wschowa and Kalisz.

– Variation II, i. e. the forerampart variation, was based on the idea of introducing an additional earth bank in front of the moat. The slopes were reinforced with a timber, stone or brick wall and the rampart itself was surrounded by a moat. The variant can be found in many cities, particularly the ones situated on plains. Thus that was the case in Stargard, Pyrzyce, Mieszkowice (16th century), but also in Cracow (15th-16th centuries).

– Variation III, the terrace – flanking tower variation, was undoubtedly the most perfect typologically. The terrace was equipped with a new line of low oriels. Such terraces were erected in Malbork, Poznań, Warsaw, Wrocław (the first half of the 15th century) and Lvov (the second half of the 15th century?).

– Finally, Variation IV was also connected with modernization. This was the modernization of castles, during which the ramparts were equipped with low flanking towers. The castle in Barciany, which was one of the first castles to be armed with gunloops, and the castle in Golub (1422) can serve as examples of such structures.

When discussing the terrace, one should draw the reader's attention to the role of the neck. It was originally a kind of oriel protecting the gate (e. g. Szydłów in the 14th century), but was subsequently transformed into a longer structure, the shape of a caponier ending with a tower (e. g. Cracow), a single flanking tower, and then two or three flanking towers (e. g. Chojna). The task of this structure was to defend the rampart. This is the way the barbican came into being, which strengthened and deepened the defence. At the close of the 15th century barbicans were equipped with bulwarks (e. g. Cracow, Toruń) and finally also with bastions. This is why they were frequently referred to as *gate castles*.



The flanking tower system. The terrace arrangement. (In the middle) The protoform of the terrace-rampart: the field one, the siege one, the bombard position. The drawing shows the simplest movable form. There were also positions for several cannons surrounded by a palisade or hoarding (after Durdik). Terraces, however, include mainly various forms of fortifications related to traditional ramparts but adapted for the use of heavy throwing weapons, particularly cannons, which required more room. Selected commoner variations. Because of their complexity each example is accompanied with a diagram showing the arrangement of the defensive elements. A. Variation termed the „rampart” variation here, exemplified by a section next to the gate in Długa Street in Gdańsk, c. 1380 (after Massalski and Stankiewicz). B. „Forerampart” variation exemplified by a section next to Floriańska Gate in Cracow, which was located in front of the former rampart after 1422 (after the author). C. „Terrace-flanking tower” variation exemplified by a section next to Wronecka Gate in Poznań, 15th century (after a drawing by Braun-Hogenberg, 1618). D. „Rampart-flanking tower” variation. Fragment of Malbork, the Middle Castle (14th/15th century), the west front with the gate (after Górski). (Below) Reszel, a section of the gate front (c. 1505) with the castle’s shell keep, visible on the left side (14th century) (after Materna). Adapted by J. Bogdanowski.

Generally speaking, the terrace became a critical form of defence, in which old fortifications were adjusted to modern firearms. Then it became a starting point of the formation of the bulwark system and subsequently the bastion system. Were not bulwarks, bastions and tangs systems peculiar variants of the terrace?

Translated by Zuzanna Poklewska-Parra