Medieval watchtowers of the mountainous areas of the Abruzzi Region: typologies, construction techniques and territorial landscape

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Introduction

The Abruzzi region is a border area with many building typologies of fortifications. These structures show the construction methods in the various eras. These buildings were widespread on the territory, on the coast and in the hinterland to ensure the security of the state. In order to know the transformations of the fortified settlements in the region, it is essential to analyze the historical-political and social events.

This territory is the northern limit of the kingdom of Naples; it has been dominated over the centuries by the Lombards, Normans, Swabians, Angevins and Aragonese. These situations make different architectural kinds. The small ancient urban centers were formed in close relationship with agricultural and rural development, as a result of economic and social relationships that have created a continuous landscape [1].

The geographic characteristics and the elevation of the mountain massifs affect the types and use of materials. The river valleys delimit a system of fortified structures. Along these valleys there are the historical access routes to the internal areas and the crossing roads coming from other territories: the *Salaria*, the *Caecilia*, the *Claudia Valeria*, the *Raussa*. The presence of the watchtowers along the coast integrates with the fortified structures of the hilly urban centers overlooking the Adriatic coast.

A greater number of defensive buildings are to the north, towards the Tronto river border with the Marche region; between the cities of Civitella del Tronto, Teramo, Montorio al Vomano and the sources of the Aterno. A high concentration of these architectures is present around L'Aquila and on the hills above Avezzano. The latter are also strategic because they were built on the border with Lazio. Another group of fortifications rises between Celano, Pescina and Sulmona and is opposed to the fortified system of the first valley of the Pescara river.

These two areas, separated by Morrone Mount, are in the territory controlled by the castle of Popoli, which dominates the homonymous Gorges. This passage, so called *la chiave degli Abruzzi* (the key of the different districts of the Abruzzi region), allowed communication between the coastal-hilly area and the Apennine mountainous area and, in general, between the Tyrrhenian and the Adriatic coast. In the southern part of the region, however, there is a lot of isolated fortresses. The only actual grouping of castles and watchtowers can be found along the Sangro river, especially around the Lake of Bomba. The analysis of these types allows to define some specific criteria necessary for the study of the single building and of the set of fortified works in the territory.

All these architectures are part of a system of intervisibility, control and defense of the state, in some cases based on a material mimicry. The first type found along the coast and within the river valleys is that of the watchtowers. The landscape is strongly characterized by these structures. The medieval watchtowers in the hinterland, and the Renaissance defense structures along the coast, had three main functions: control, sighting and signaling. The coastal towers, after the modern era reform, have rectangular or square plans, with a recognizable typology. The isolated towers placed along the river valleys or in the highlands of the inland areas, maintain a typically medieval shape. The towers have a square,

rectangular or, in some cases, round and polygonal plan, such as the tower of Goriano Valli and that of the castle of Beffi, both in the Aterno valley.

In the L'Aquila area, during the Middle Ages, the watchtowers had a mainly square and round plan. Polygonal plans, or those derived from the combination of a square and a triangular shape, are exceptions that broaden the typology, but they do not constitute a rule (Fig. 1).

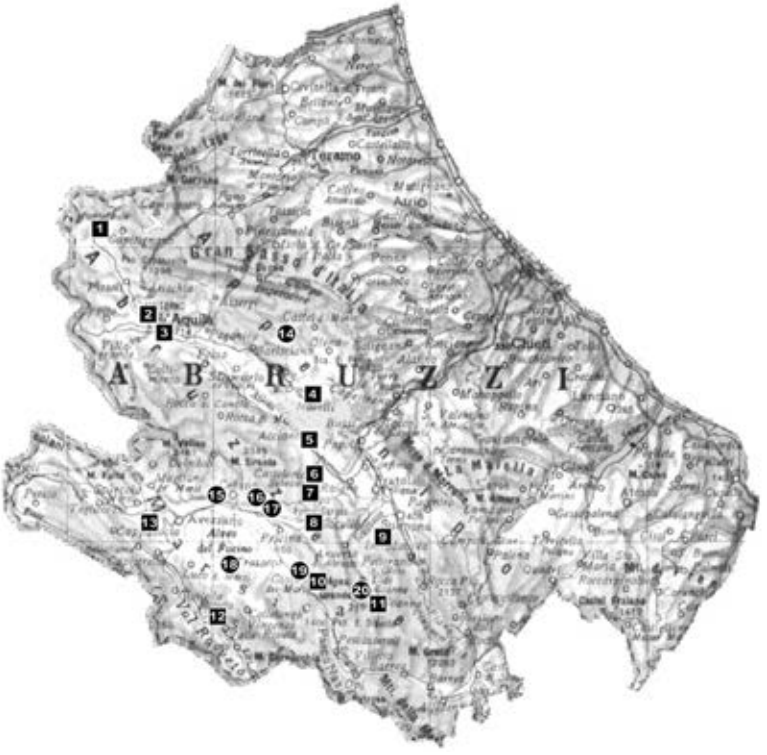

Figure 1: Abruzzi region, Province of Aquila. Square towers: 1) Montereale; 2) San Vittorino; 3) L'Aquila; 4) Civitaretenga; 5) Molina Aterno; 6) Gagliano Aterno; 7) Casteld di Ieri; 8) Cocullo; 9) Introdacqua; 10) Bisegna; 11) Scanno; 12) Civita d'Antino; 13) Corcumello. Circular towers: 14) Santo Stegano di Sessanio; 15) Santa Iona; 16) Aielli; 17) Collarmele; 18) Trasacco; 19) Sperone; 20) Villalago.

The triangular towers can be identified in the literature with the term "strut"; an example of this is the tower of the Beffi castle, in the Aterno valley (Fig. 2). In the area of analysis, the latter are always near to other fortified architectures, even if presumably at one time there must have been isolated struts, or at least implemented as the first element destined to later play the role of a keep [2].

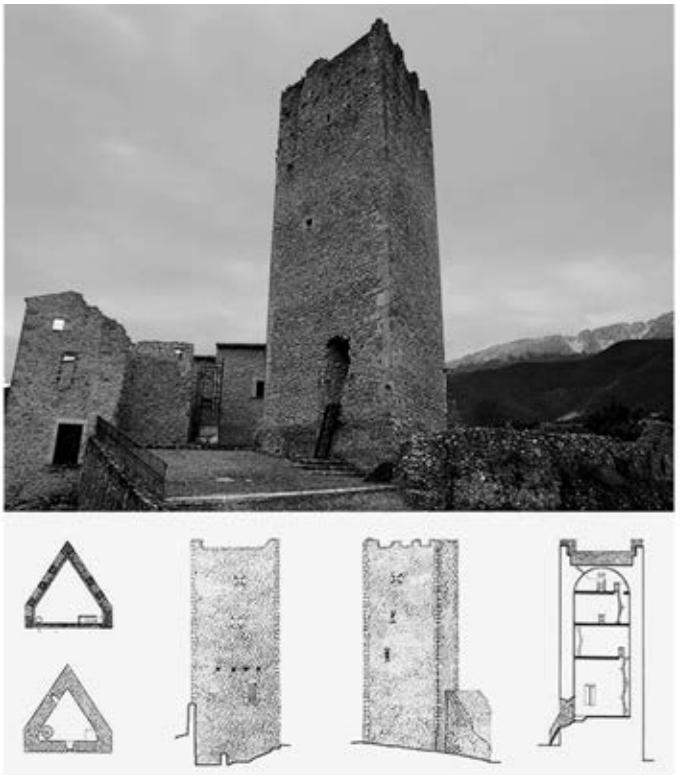

Figure 2: Triangular tower of Beffi, Acciano. View, plans, elevations and section taken from the survey. [Lab. of History, Department of Architecture, Unich]

The evolution of these fortified structures, of the L'Aquila area, is part of the broader phenomenon of fortification [3]. Many scholars identify the cause of the beginning of the fortification in the defense needs widespread after the Saracen raids and the Hungarian invasions. Wickham [4], on the other hand, proposes a theory based on the evolution of functions and settlement needs that determine, over the centuries, a transformation of the military settlements and castles. He proposes the birth of the castle from the transformation of the farmhouses into *villae* and, therefore, from the processes of centralization and subsequent fortification of the rural villages. More recent studies try to provide a reading that takes both aspects into account, focusing on the variety of reasons through which, between the ninth and thirteenth centuries, the Abruzzi settlement structures and their defensive architecture evolved.

Historical construction site, building types and techniques

During the Middle Ages, there were numerous construction sites involving local workers and those from beyond the Alps. These construction sites are started both in the religious buildings and in the isolated towers and castles. The professionals involved often used stone as a building material. The stones used, as confirmed by the inspections, come from quarries, erratic boulders and ancient monuments, stripped of their ashlars. Finally, the watchtowers placed near the waterways were built with materials from the river beds. From these sites come the river pebbles of various sizes and the more or less fine gravels for the mortars [5].

The reasons for the use of these materials are to be found in the geo-morphological structure of the L'Aquila area and in the abundance of stones obtained from rivers or from quarries present, above all, in the northern part of the province [6]. The *spolio* technique is used, especially in the northern territories of the province, in an indistinct way both in religious architecture and in fortifications [7]. The square towers were built already in Roman era. This typology increased from 1059 when the Normans, settled in Puglia, began to make raids in the Abruzzi's territories [8]. Furthermore, around the city of L'Aquila, the territorial organization was based on a fortifications in any place.

These architectures were not organized in a real network, because the various feudal lords enjoyed a lot of autonomy in the management of the fiefdoms.

With the advent of the Normans, Abruzzi region returned to be part of the southern control orbit and this led to the creation of new communication routes. The axis of this road network became the *Via degli Abruzzi*. It, in eleven stages, connected Florence to Naples [9]. This route crossed inland Abruzzo, from the Sella di Corno pass to the Cinquemiglia plain, along the Aterno valley and the Peligna valley [10].

The revival of trade and the desire for control led *Ruggero* II of Sicily (1095-1154), to the decision to reform the borders. The King mainly fortified the territories bordering the Church's State [11]. In this period, the defensive system of the Abruzzi region was also reorganized. The impulse to build new fortifications and to restore the existing ones [12] allowed the establishment of a control network that had grown over the subsequent centuries.

However, the Norman interventions were limited, for the most part, to the restoration and modernization of the existing towers. This decision was made both to save resources and because there was a desire to strengthen crucial points within the network of routes and roads already identified in the Lombard era.

Many of the works created by the Normans were destroyed by the seismic events that followed one another in these territories. The surviving fortified architectures were profoundly altered by the interventions of the following centuries. Between the 10th and 11th centuries, Pietro da Celano (second half of the 13th century-1212) also fortified the territory within the fiefs of Celano and Albe. It is assumed that Peter also built numerous watchtowers to support the existing fortified system. The fortified architectures were built along the road that, from the Ovindoli pass, headed north and on the routes that crossed the upper valley of the Liri and Sangro rivers [13].

In the years of transition between Norman and Swabian domination, the *da Celano* family managed to bond with the new Lords. In fact, in the political changes that characterized this period, Pietro da Celano laid the Emperor Henry VI of Swabia (1165-1197), facilitating the domination of the Swabians in the Abruzzi territories. This support was very important for the strategic position of the county ensured a smoother passage to the south for the troops.

The Abruzzi region, hindered the Norman domination, promoting the Swabians and then divided into factions, decades later, in the struggles between Frederick II of Swabia (1194-1250) and the Church. As soon as Frederick II came to power he decided to set up a protectionist policy and control of the borders and of the whole L'Aquila and Abruzzi territory. The Emperor created a well-organized network of equipped architectures, towers and castles, directly dependent on the state. Frederick of Swabia promoted the construction of new fortified architectures (towers and castles). The new and pre-existing defensive works were integrated into an uninterrupted line of control that spanned the whole kingdom [14]. The cost of maintaining the fortified structures fell on the state coffers.

For this reason, the Emperor used, as in Norman times, the local workforce as required by the law that imposed the working hours owed to the feudal lord by the people. However, the death of the Emperor interrupted the implementation of his ambitious military program [15]. Frederick II had managed, however, to fortify the territory more carefully. Its

system was based on the planning of interventions and on the adaptation of existing structures involving, at various levels, state officials, feudal lords, planners and the population.

Although the interventions carried out during this period are difficult to recognize, the documentation allows us to understand how there had been a renewal of the design methodology consisting in the preventive analysis of the existing and in the production of projects for the newly built structures [16]. The most significant buildings, for example, are found in the towns of Introdacqua, Castel di Ieri, Pescina and Tione.

The watchtowers in Goriano Sicoli (remains in the parish church), Collelongo and Civita d'Antino (towers with reduced height) are relevant. The Introdacqua tower (Fig. 3), built on Mount Plaia, is an example of a particular walled tower. The watchtower is composed of a vertical square-plan element, enhanced by a polygonal wall perimeter with an inclined base that surrounds the tower itself, built at a later date. This typology is halfway between the isolated watchtower and the dungeon. Simone I di Sangro [17] probably built this tower. In 1173 Simone I extended his dominion over this fief as well [18]. The watchtower stands on the highest site in the country. The surrounding wall, with a hexagonal plan of seven and a half meters on each side, has an entrance facing south which, raised from the road level by about three meters, is surmounted by a lowered arch.

Figure 3: Introdacqua tower. On the left view of the south-west front; on the right drawing of the northern elevation. [Lab. of History, Department of Architecture, Unich]

The central tower, with a square plan of five meters and twenty on the side, has the entrance facing in the same direction as that of the enclosure, raised from the floor of the courtyard by about six meters. The loopholes have thresholds, edges and architraves in squared stone. The masonry, on the other hand, is made up of stone pebbles just roughly hewn and joined with mortar beds of varying thickness from about two to five centimeters (0.79-1.97 inches) [19].

Among the watchtowers in this area, the Civita d'Antino tower (Fig.4), founded in the 12th century, is also interesting. The analysis of the typology allows it to be dated to the Norman period. The watchtower was subsequently modified, together with the village. From 1463 the tower and the village were given to Antonio Piccolomini, who obtained the entire barony of Balsorano as a gift. The tower suffered a lot of damage during the Marsica earthquake (1915). This event ruin and unused.

Figure 4: Square tower of Civita d'Antino.

The plan of the tower is almost square (about 6.50 by 6.70 meters: 21.33-21.98 ft). The top part of the tower is compromised by the repeated collapses caused by the centuries-old abandonment and by the earthquakes that hit this area. The outer wall is inclined at the base; this modification was made by the Piccolomini family (15th century). The sloping wall at the base is about five meters high. It is assumed that the watchtower was equipped with a structure for the swooping shooting. The external walls have few openings, with the exception of some slits to which are added two arched entrances obtained in the north elevation. Of these two openings, the oldest is the one placed higher, about ten meters from the original floor, six meters if you consider the current one. The lower opening, on the other hand, is attributed to the restoration of the Renaissance period. The walls are rubble masonry. The external curtain is composed of stone blocks of compact limestone finished only on the outside. The structural and typological choices implemented in this watchtower are found in almost all the other towers analyzed both from the point of view of the masonry equipment and as regards the architectural proportions.

Even Frederick II and his feudal lords, as happened for some religious orders, relied on workers with experience from the eastern territories.

These architects took into consideration the languages and construction techniques of the territories where the crusades took place. The linearity of the laying of the stones and the shapes of the ashlars are a direct reference to the Arab and Byzantine defense structures that strongly influenced the models of these watchtowers [20].

Four years after the death of Emperor Frederick II, in 1254, the importance of the watchtowers and castles of the upper Aterno valley decreased due to the foundation of the city of L'Aquila. Towards the end of the thirteenth century, within the reform of the border fortifications, also in the province of L'Aquila, we witness the settlement of feudal lords of French origin [21].

The presence of French feudal lords determined influences on the types of watchtowers and castles; languages and forms that today can still be read in various fortified architectures. From the fourteenth to the fifteenth century the feudal struggles compromised the state of conservation of the towers and castles causing the destruction of those placed in more accessible places [22].

In the Angevin period there are some interventions characterized by two different phases. The first phase includes the restoration and modernization of the towers located on the coast. The second phase involved the defensive systems present in the hinterland [23]. In recent years, the approach to fortifying remains very similar to that of the Swabian era [24]. In the Angevin period, the watchtowers that controlled the landscape became the most interesting architectures from the point of view of updating techniques and features [25].

There is also a strong influence of the French workers [26] who slowly replace the Apulian masters of Swabian training. Interesting information about the professionals present in these construction sites can be drawn from the documents of the Angevin era. There is a lot of information especially about the French architects of the time of Charles I of Anjou (1226-1285): Thibaud de Seaumur, Jean de Toul [27], Paumier d'Arras, Pierre de Chaule, Baucelin de Linais [28] and Pierre d'Angicourt [29], a name among the best known also because he held the position of protomagister operum curie, that is, superintendent of all works financed by the Crown.

Thus, we are witnessing interventions carried out by architects and engineers employed by the State who created works with their own characteristics, different from the previous types. There was a deep link with French architecture which, mixing with local characteristics, perfected the construction method of the Frederick and Cistercian tradition [30].

In the Angevin era, the architectural culture of the Kingdom of Naples appears independent from the other influences of the period, but sometimes it is little manifest in the Abruzzi area. Some examples of round towers were built even before the Angevin domination, but this architectural typology was mostly used especially with Charles I of Anjou. Strong links existed between the “Leonessa” tower erected in the Angevin citadel of Lucera and some sighting towers in the L'Aquila area (in Aielli, Trasacco, Collarmele and others). In the inhabited area of Aielli, the tower can be traced back, typologically, to the models of the fourteenth century (Fig. 5). The site on which the tower stands was already occupied by a 13th-century sighting structure with a square plan. In later times two defensive walls were also erected, one more internal with three doors and one from a later period that exploited the conformation of the land set on natural steps. This outpost was very important within the Marsican territory, in fact, it was part of a wider control system including the localities of Collarmele, Cerchio, Pescina, Venere, Ortucchio and perhaps Celano.

The structure suffered damage from both the 1915 and 2009 earthquakes. On the stone lintel of a window, on the first level, in addition to the noble coat of arms, the date of construction and the name of the feudal lord who commissioned

the erection have been preserved. In the 16th century the tower belonged to the Piccolomini family; this building was improved with the construction of the vault on the lower floor and the Renaissance windows on the upper part.

Figure 5: Circular plan tower of Aielli

The height of the tower, measured from the ground level, is 17.30 meters (56.76 ft). Its overall diameter measures 9.30 meters, with a wall thickness, in the basement, of about 1.5 meters (4.92 ft). The thickness of the wall tapers slightly as it rises upwards. The internal diameter of the first and second level rooms is 6.60 meters (21.65 ft). The base cylinder is connected by a simple stone frame and a plinth which, shaped in an annular shape, has the function of reinforcement. The octagonal room on the ground floor is partly embedded in the rock. It is entirely probable that the octagonal room, contrary to what generally happened in contemporary isolated towers, did not serve as a deposit. A similar deduction has been reached by noting that the room in question is not directly communicating with the upper floors. This room, covered by an umbrella vault made of stones, has a maximum height of 8.15 meters (26.74 ft). The structure is divided into eight segments by polygonal section ribs that rest on corbels and converge on a keystone decorated with a floral motif. The communication with the outside is ensured by an arched portal open in the elevation facing south-east. A few meters above the main portal there is another entrance for the access to the rooms on the upper floors. This opening is surmounted by a straight architrave and has two shelves at its base. The second floor room is 4.70 meters high (15.42 ft). In the past there were perhaps some wooden floors, in the floors and even on the roof, resting on the recess corresponding to the reduction in the thickness of the wall structure.

Another interesting round watchtower is in Collarmele (Fig. 6); it was founded before the the Swabians domain, but with a wall system similar to the towers of the Angevin era [31].

Figure 6: Circular plan tower of Collarmele

This watchtower, like others, built far from the inhabited centers, with the passage of time has been partially incorporated into the first nucleus of the town. There was no particular military defense apparatus; probably the main function was the control of the territory and the warning of possible dangers signaled by the other sighting towers of the military network.

The Collarmele structure is also a round tower and with straight walls inside to form an octagonal plan. The outer diameter is 8 meters (26.25 ft), while the internal dimension is 2.20 meters (7.22 ft), with a height of about 16.5 meters (54.14). It is open only to the south, with a raised entrance; the portal, without architectural details and with a flat architrave, is high 1.80 meters (5.90 ft). Below its threshold there are two protruding shelves with double projection, the one on the left partially collapsed, which served to support a wooden plank which was supported by a ladder, also wooden, which could be retracted inside the building if necessary.

In this way the tower became completely inaccessible from the outside. Above the entrance there is a stone coat of arms depicting the heraldic symbol of the Berardi, lords of Celano since the 9th century and probable patrons of the watchtower. Unfortunately, due to the continuous seismic events and abandonment, which most of these structures have encountered, the height of the tower is not the original one. The walls, on the other hand, made up of square and regular ashlars recall the southern area walls of the Angevin era.

Conclusions

The kind of watchtowers have structural and formal features derived from the technical construction matters. The masonry is classified according to the conformation and with the size and position of the building elements.

These characteristics clarify the construction techniques related to the location of the towers and their dating. The watchtowers, moreover, placed in a system with the castles and fortified villages of the area, are part of a territorial organization project, for the control of the routes, structured since the Normans and already in the Lombard era. With the Swabians and the Angevins this defensive system became a real network for the control of the borders of the kingdom.

From the fifteenth century, with the advent of modern siege techniques and the systematic use of firearms, the now obsolete system decreased its defensive and sighting effectiveness.

The feudal lords and the population preferred to settle in urban centers, resulting in the abandonment of these specific elements in the landscape.

The only preserved watchtowers are those that changed their original use, such as the tower incorporated within Palazzo Piccolomini in Molina Aterno, the one inside the Dragonetti de Torres castle in Pizzoli and, finally, the building that stands out in the center of the main square of Montereale, north of the city of L'Aquila.

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