

# The genesis of architecture and civil construction in Poland as a base for housing for soldiers

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## Abstract

This article presents a problem that, on a daily basis, seems to be imperceptible to unfamiliar people. It outlines the issue of accommodation for soldiers of the Armed Forces of the Republic of Poland and describes how the issue was dealt with in the past. Having a place to live is one of the most important factors for a person. The fulfillment of this condition significantly influences the sense of his / her security - the second most important need of every individual.

**Keywords:** construction, accommodation, need, object, soldier

## 1 Introduction

The accommodation of soldiers since the dawn of time has posed a serious challenge to the jurisdictions that govern them, from tribal rulers to state structures. In this discussion, in order to present the overall complex problem of accommodation for armed forces soldiers, the history of the development of housing construction intended for them, inherent in the planning of cities, housing estates and military facilities, is outlined, and the physiological and psychological aspects of housing design, referred to as housing ergonomics, are indicated.

### 1.1 History

The issue of accommodation for armed forces is a constant need of the professional army, present both in historical times and today.

The social, economic and systemic changes that took place in Poland in the 15th century were reflected in the growing construction needs. The rapid development of secular construction began and new building patterns emerged, which determined the face of the Polish countryside and city during the formation and strengthening of the Polish nobility system.

The castles and strongholds located on Polish soil, so far erected for de facto only defensive purposes and fulfilling logistic functions for troops (rooms for armed teams, granaries, warehouses, horse stables), began to change their character and purpose. In the fifteenth century, the knights began to exploit land goods in an increasingly direct way, transforming into landed gentry, and their manors grew into larger and larger economic centers, often linked with farm buildings, in which there were apartments of armed men and their families.

At the turn of the 15th and 17th centuries, the average manor house comprised a complex of wooden residential and farm buildings, grouped around the yard and fortified by an embankment or fenced. As the society grew richer and the cultural level increased, the requirements for the number of rooms and chambers grew [2]. For the wealthy nobility, the house was usually made of brick, usually taking the shape of a residential tower (or its derivatives), it was equipped with a shooting range, treasury and, for security purposes, it was separated from the rest of the manor with a moat.

The increasing cultural diversity of the state developed a cosmopolitan moral elitism among the nobility and made its seats undergo faster changes than noble courts and were more dependent on the evolution of European architecture.

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The greatest magnates, laity and clergy, as well as reigning kings and dukes, usually resided in castles, which were constantly modernized, caused by, among others, the proliferation of firearms [5]. The functions of the houses - until now classified as strictly residential - came to the fore. Many new buildings began to be erected, situated among other complexes for which they were disposition centers. The new, economic functions of the seats resulted in a retreat from the isolation of castles in hard-to-reach places, dictated solely by defensive reasons, at the same time, economic buildings were separated from the castles, growing as large outer baileys, in which there were apartments for the families of the castle's crew.

The new customs influenced the expansion of the castles in terms of representation, i.e. the palaces erected in them imitated fashionable, foreign patterns and obtained a monumental architectural setting, as did the castle gates, the decoration and inscriptions of which became an expression of the cultural and social elitism of the owner.

At the end of the 16th century, fortified castles ceased to be the seats of magnates and began to play the role of administrative centers, warehouses and apartments for soldiers and their families. They remained in their current role for longer in the eastern borderlands, which throughout the 17th century were a permanent territory of wars.

Peasants were the only group of society whose housing needs did not increase, which was the result of the peasants becoming increasingly dependent on the nobility. The construction evolution of the cottage stopped at the turn of the 15th and 16th centuries and for a long time there were only a few simple variations. As the farm and serf economy developed, the manor began to interfere with the development of the village. Building regulations began to be issued and modernized buildings with typical, traditional forms and layouts were erected more and more often. Therefore, rural buildings have never been identified as a place of military housing. Rather, they were perceived as military quarters during marches, exercises or war battles.

The economic boom significantly complicated the socio-economic structure. The gap between a small workshop and a capitalist enterprise has widened considerably, creating social divisions. The loosening of the feudal hierarchy of the gothic urban commune did not violate the ideal, strictly functioning order of the city system, but it greatly diversified its buildings[6]. The houses began to grow in depth and upwards, transforming more and more often into a multi-apartment tenement house or a representative seat. Senior commanders lived in such houses, but this was due to their economic and social position. The mercenary (professional) soldiers and their families lived on the same terms as the rest of society.

At the turn of the 15th and 16th centuries, more and more attention was paid to security and defense. Until now, the main line of defense of fortified cities and castles was the traditional crown of the wall and the attic of towers and buildings, modernized with shooting ranges for firearms. In some places - for better control of the foreground - the walls and towers were raised by stacking their storeys. The introduction of heavier and heavier artillery meant that the medieval vertical obstacle was replaced with a horizontal one - the moats were widened, the line of walls and ramparts was multiplied, which meant that the points of focused defense were advanced.

The arrival of Turks on the borders of the Polish-Lithuanian Commonwealth in 1498 resulted in a hasty modernization of the fortifications of Kraków and larger cities. Until the end of the Commonwealth's existence, the most important Polish fortress was KamieniecPodolski, fortified and expanded under the threat of a Turkish invasion [11].

The evolution of the medieval fortified system was fastest in Italy, where the theoretical foundations of early modern fortifications were born. In Poland, at the end of the 16th century, defensive devices showed more and more similarity to Italian fortresses, and were more and more often made by Italian builders. A revolutionary change, shaping the development of fortifications, was the replacement of medieval towers with bastions flanking each other - squat, pentagonal structures with the main shooting position on the upper open platform. In Poland, the fortress in Rożnów was a reflection of this development process.

In the field of military construction, architecture was introduced as a supplement to general education in the curriculum of secondary and higher schools. Military construction has been fully elaborated in an eclectic manuscript. At the end of the 17th century, extensive architectural treatises for the use of religious education began to multiply. The engineer became a representative of a liberal profession, enjoying the protection of monarchs and other powerful patrons. Engineers were educated people, often owning large libraries, they were recruited from both the townspeople and the nobility. Their activity was usually focused on the art of fortification and siege. Often the military were cultivated together with civilis [17]. They gained their knowledge in the studios of more experienced architects, supplementing it with foreign travels. Such an architect's education system lasted until the 18th century.

The political cataclysms falling on the Republic of Poland did not delay the professional transformation of the architect's structure and did not inhibit the growth of interest in architecture in the upper classes of society. They

also did not interrupt the process of Polish construction, they only limited the scale and level of activities. Over time, the construction movement grew stronger, and Polish architects were in no way inferior to the talents of foreign specialists in this field.

In addition to the traditional trends of civil architecture, a separate place was occupied by the more progressive work of military engineers, whose architectural face was closer to the new doctrines spread in the era of the Empire in the environment of the Paris Polytechnic School.[16] . This phenomenon was understandable in the light of the Napoleonic traditions of the armies of the Congress Kingdom. Among the military construction, the stone and brick fortress architecture of Zamość is interesting.

The great development of technology in the nineteenth century was reflected in Poland in an incomplete and late manner, but it sometimes happened that the introduction of a new engineering solution in the West was only a few years away from the attempt to apply it in Poland. The history of European engineering at that time can be traced in the following years in the projects to connect both banks of the Vistula River. Still, housing construction for soldiers and their families cannot be analyzed as a separate research subject, as it was part of the system of general housing issues in society.

At the same time, it should be emphasized that the history of military construction - town planning and architecture of defensive facilities and military exercise yards has many years. As already indicated, this is a separate issue from the problems of housing soldiers and their families, but it should also find its place in the considerations on this subject.

Noteworthy is the presentation of several directions of military construction that developed in the nineteenth and twentieth centuries. The first designs of military architecture were created in the 18th century, designed by the Marshal of France - Sebastian le Prestre de Vabuan, who for the first time designed residential buildings for soldiers, separating animal rooms (stables) from rooms for people - introducing multi-storey buildings [7]. In the first half of the 19th century, this type of construction was spread throughout the army and was called barracks. The barracks became a common home for soldiers who guarded their lives and contributed to its improvement, and also allowed for rest and entertainment for weary soldiers. To a large extent, they perform the same function to this day.

In the following years, barracks construction developed by introducing modern and more practical solutions, i.e.[14]:

- a) 1825 - military double beds have been replaced with single ones,
- b) 1875 - the barracks buildings were equipped with washrooms and building heating,
- c) 1890 - barracks buildings were equipped with dining rooms and toilets

Appropriate treatment of the problem of accommodation and life of soldiers is of great psychological importance both in the process of training and educating soldiers. In the period of the Second Polish Republic, Polish military construction developed - due to French and German construction, while in the later period of the People's Republic of Poland - in the construction of the USSR (the trends of French, German and Soviet military construction dominated the European arena).

The outbreak of World War I and II had more impact on construction than on architecture. They caused stagnation in the construction movement and mass reconstruction actions, but did not constitute a breakthrough in terms of concepts and architectural forms.

In Poland, the main breakthrough dates in the evolution of architecture fall around 1925 - when functionalism and other extreme avant-garde trends began to be adopted - and around 1950 - when the trends of architecture, which increased in intensity at the end of the interwar period, expired.[12]. Throughout the interwar period, the clash of traditional and progressive artistic trends in Poland - and throughout Europe - split architecture into a multitude of schools and majors. Several of the most important trends in Polish architecture of the interwar period emerged. Despite keeping essentially in modern shapes, the aim was to achieve effects that contradict the ideological and aesthetic assumptions of the international style.

The problem of the new architecture was not only the clash between progressive and conservative artistic concepts. The first years after World War II showed that the problem is not new building programs and structures. The problem was that next to the architect, the designer of the building, a huge team of specialists began to grow, former studios gave way to design offices, and traditional craftsmanship construction - industrial construction. At the same time, the hitherto established symbiosis of architecture and town planning has co-opted new knowledge called spatial planning.

In a society with a planned economy, the architect has become not only the creator, but also the general coordinator of various economic, sociological and technical processes, and the organizer of the external framework of human life.

World War I finally ended the processes of building permanent defensive fortifications, which were impractical, large in size. After World War II, weapons of mass destruction (nuclear weapons and rockets) were introduced into the military, which completely ruled out the legitimacy of extensive defensive fortifications [10]. New types of weapons introduced into the military equipment required adaptation of the military construction infrastructure. The deployment of troops throughout the country required the cooperation of staffs of various types of troops and services. The key factor in making decisions about the location of troops was the potential threat expected from opponents, the physiographic conditions and the country's development. New types of weapons, on the one hand, minimized the effects of a sudden surprise attack, and on the other, forced the need to build rocket launchers and minefields, as well as command and control posts.

## 2 Current state

After World War II, the Polish construction services were not kept informed about the trends and directions of development of the military construction industry. The solutions used in the Red Army, implemented in general military buildings, were not functional for social and living reasons. The USSR was a monopolist in the field of defense construction and related weapons and military equipment - also in the field of applicable regulations, standards and technical documentation, but the documentation required adaptation to Polish regulations and conditions.

The complexes and objects left behind by the partitioning powers were rated very poorly. They were mostly characterized by outdated technologies and solutions in the field of design, which made it difficult to adapt to the new needs of the army to a large extent. The construction infrastructure of military complexes was poor in installations (heating of buildings, sewage systems, water supply).

The military facilities built in the interwar period were modern, and their technology met contemporary needs and standards. Designers of military facilities and investors knew the solutions used by other military circles in Europe, using their knowledge and experience, among others in the field of defense, airport and barracks construction.

The new Polish borders, the balance of military and political forces, and new military alliances forced the Polish army to adapt its infrastructure to the new, post-war reality. Her tasks included:

a) renovation and reconstruction of military complexes to the extent that allows for the immediate accommodation of military units in them (in accordance with the job distribution, sanitary and hygienic standards and technical requirements resulting from the equipment),

b) successive modernization and expansion of the existing military complexes, adequately to equip the army with weapons, and construction of new ones for newly created types of troops [15].

Military complexes began to function relatively quickly in the first years after the war, however - for the modernized army to function at the highest level, the armed forces had to undergo many reorganization and it was necessary to adapt the regulations to the new tasks.

The issues of accommodation have always been of particular importance after the end of hostilities and demobilization, when the armed forces had to act in peacetime. The reborn Polish state faced the problems resulting from the different functioning of the army in times of war and peace for the first time in the 1920s, once again, under completely different conditions, after World War II, and finally for the third time after the transformation of the armed forces into an army professional. In the post-war reality, the act of 27 April 1951 on the accommodation of the Polish Armed Forces was adopted, which resulted in a gradual reduction in the pool of flats for accommodation and under the management of military housing authorities, and an increase in the number of social flats. The families of military retirees, their heirs and other people not related to the military had the right to stay there. Subsequent adopted laws regulating the problem of housing resources in the Ministry of National Defense led to a situation in which only one third of the over 170,000 apartments managed by military authorities was occupied by soldiers in active service. At the same time, there were no separate permanent quarters for several thousand officers and professional non-commissioned officers, which forced them to be accommodated in dormitories and in common quarters.

In 1995, the Act on the accommodation of the Polish Armed Forces was passed, which was to rationalize the expenditure of the Ministry of National Defense and introduce a new system of satisfying the housing needs of the armed forces. A new entity was established to carry out these tasks; Military Housing Agency, from which the duties in this area were taken over in 2015 by the Military Property Agency.

The implementation of tasks assigned to the services responsible for housing stock management in the long-term development plan of the Polish Armed Forces required conscious and planned cooperation of all professions involved in

the process of drawing up and implementing the plans. Basing the management of housing resources in the Ministry of National Defense on the legally valid, universally binding, forward-looking plan for the functioning of the Polish Armed Forces created new opportunities and set new planning tasks in a previously unknown scope, which consequently led to an intensive development of research and studies in the area of interested fields of science and technology. The aspect of environmental protection has also gained significant importance, and shaping the human environment has gained economic and social importance.

In the literature on the subject, the planning of accommodation for soldiers and their families and the management of existing housing resources has been defined as *"social activity aimed at the planned development of a specific area in order to create good living conditions for people"* [9]

place in the conditions of progressive and conservative social ideas. The following factors played an important role in creating a modern theory and practice of building housing estates and housing for soldiers and their families: [8]

- economic - economics of building houses and operation of devices, efficiency of the estate as an organism,
- political and social - priority of social interests over private,
- planning - spatial composition of architecture and greenery,
- technical - equipping housing estates and flats for soldiers and their families with engineering devices, i.e. water supply, sewage systems, city cleaning plants, hard surface streets, mass transport devices and other devices in the field of technical infrastructure.

While striving for the proper socio-economic model, the aim was also to:[13]

- planning and implementation of the economic and spatial layout of service and production facilities, ensuring maximum satisfaction of the cultural and material needs of soldiers and their families with a minimum amount of burdensome work,
- creating the best possible living conditions for all residents.

### 3 Conclusions

One of the fundamental difficulties in developing a land development plan for the construction of military estates was the failure to keep up with the economic planning with the development of a long-term plan that was comparable to the spatial plan.

Despite the common use of the term "city", "military settlement", defining this concept is not easy, because it changes in time and space and has many meanings. The city should meet three important elements, which include the legal and formal status, socio-economic functions and concentration (people, production, services, trade, administration, investments, means of good and value and means of defense) [3].

Spatial planning began to use the concept of a city-forming function - defined as the range of services and production that the city's population provides to people outside a given city - external activities.

For a better understanding of the subject - the principles, methods and techniques of spatial planning, it is necessary to compare many factors that are the subject and object of planning, to characterize the relationships between them and to try to systematize various forms of planning. Among many factors, the following should be distinguished: [1]

- human / social - the planning goal is humanistic, the subjects are people-soldiers and their families, formal / informal unions and organizations (family, housing estate residents, social groups, service and work teams,
- service / work / creation - meeting human needs requires organized work, the provision of services and the production of goods (the basis for planning in this area can be found in socio-political, technical and agricultural sciences),
- spatial / physical-geographical - human life and activities take place in a specific space, in a specific place on the earth's surface, with a natural environment characteristic for this place. As a result of human activity, the natural environment is transformed and then we deal in spatial planning with the human environment - more or less transformed and urbanized,
- movement / changes / dynamics - displacement and changes occurring in time and space may concern both the transport of people and objects, as well as changes in the distribution of productive forces and service facilities,

as well as changes in land use, population distribution and socio-political relations in a given area and specific time.

In spatial planning, the methods of cartographic and photogrammetric interpretation are of great importance, and the knowledge of the equalization calculus and probability theory is helpful in analyzes and planning considerations [4].

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