MEMORY OF MODERN POST-MILITARY CONSTRUCTIONS/

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Abstract. The avid pressure that technological progress imposes is also transposed into the built space, which must be able to accommodate the new needs/challenges. But if a device is easy to replace with a new one, a building is not as easily replaceable. Recycling seems to be a key word of the 21st century, but in some situations, it seems a difficult action to apply to constructions that have reached a stage unsuitable for use. The public has positive recollections of the centennial-built space, ruins of a bygone time it witnessed only in books or photographs, which through the lens of the mind appears almost romanticised. On another note, the remains of recent buildings are sometimes seen as an aggression in the built space, ruins of a time that has been witnessed and whose time is still felt. As in the case of post-military architecture that, although laying fallow, is still surrounded by walls with sealed gates, absent of its original usefulness because it is technologically outdated. Military events have significantly influenced the history of the world and that is why the military legacy, in all its aspects, has been important in shaping today's society [1]. These ensembles are often adjacent, but they are not erased from the local memory, because the city is a living organism, in perpetual transformation, that functions as a a coherent system. As the military-built environment began to suffer mutations in the way it is built, it also needed to be in unison with the changes in the society and politics. Therefore, special care was taken in the instruction of the future military cadets in construction. Looking at the evolution of modern military-built environment is there a corelation with the evolution of the construction branch in the military school? Can we deduct that this could be a factor offering more value to some of the military buildings? If we consider the immovable heritage of military constructions as legacy, then it represents an intangible connection through the memory of a place, or an object that can be important from a social or cultural point of view and which can be transmuted in a catalyst object in the socio-cultural environment of a community.

Introduction. The nineteenth and twentieth century witnessed a rapid evolution in military technology and tactics, resulting in alterations to military construction and the repurposing of many military buildings for civilian use. The progressive mechanization of the military system radically changed the rules of war tactics and their needs. Massive changes occurred in the 19th century in Romanian countries, especially through *The Peace Treaty of Adrianople*, when principalities were allowed to move towards the establishment of an autonomous state. Thus, it was possible to establish new institutions and mechanisms to ensure the proper functioning of each discipline. The development of Romanian military-built sites coincides with the start of the military defense system's reorganization. This study investigates the evolution of modern military-built infrastructure through the perspective of training military personnel in the field of construction.

Preserving military heritage helps us understand important societal ideals and traditions. Each country is unique in its military heritage. The rather neglected military architectural heritage must be treated and protected as an important heritage, by ensuring the viability of the cultural heritage, including identification, documentation, research, conservation, protection, promotion, improvement, transmission, especially through formal and non-formal education, as well as the revitalization of various aspects of this heritage. *There is a great need to increase interest in the integrated conservation of tangible resources and intangible values of military heritage sites due to its specific character* [2].

In general, military events have exerted significant influence on the development and historical trajectory of nations, as numerous consequential outcomes can be achieved through military interventions. Thus, the implications of military use have led to influences in the way we see a city in the present. Through *fortifications and defence tactics*, military architecture has played a significant role in protecting cities and settlements from external threats and influencing their physical layout and security measures. With *urban planning*, castles, citadels and military buildings have been frequently integrated into the urban landscape, thereby influencing the overall design and organization of the city. Developments in military engineering and technology, such as novel defensive structures, led to innovations in architecture and construction techniques. The presence of military architecture has influenced the way a space is used, shaping the cultural and social fabric of a community (power dynamics, aspirations of ruling authorities, social hierarchies). But for the Romanian military system, the built environment after the Phanariot regime was in disarray, with many troops operating in rented buildings. The needs of a new established state, also included modern and adapted military that can embody it and the people's aspirations, so the education of the new military troops for the military-built environment needed to shape them akin to the new goals.

Establishing a modern Romanian army through education. The initial approaches of training for military personnel in the first half of the 19th century were organized as general education. Officers were exclusively recruited from upper-class families with sufficient financial resources to ensure higher education, and the majority were educated in military schools abroad. Consequently, the number of recruitable officers into the army, especially those capable to manage construction was negligible, necessitating the establishment of military education. Following the Order of February 27, 1833, in Moldova, the "*Lesnicioasa învaţătură la lagăr* [3]" was implemented in two stages. The *first stage* focused on the training of teachers, professors and instructors. Initially, they were recruited from the officers of the Russian army who subsequently settled in principalities. The curriculum emphasized mastering Russian military regulations. The *second stage* involved the establishment of schools to train military personnel. These schools were formed under both principalities: *Lancastrian-military schools* [3] intended for lower military ranks to learn reading, writing, arithmetic, history, and geography. The primary objective of these schools was to elevate the level of general culture among those who were to be ranked. The subsequent purpose was to establish a necessary foundation for those who were to prepare for higher ranks.

From the instruction provisionally sent by the Polish general Czaikowski during the War of Independence, it was observed that military training in construction was inadequate. In his correspondence, he provided suggestions on ensuring the necessary military personnel and recommended the establishment of a military school to train staff and engineer officers to draw up plans, conduct topographic surveys, execute campaign work and construct pontoons [4]. In the mid-19th century, military education remained undersized and insufficiently prepared for all necessary specialties. To enhance the educational process, after the unification of the principalities, the government, in collaboration with the Ministry of War, committed to sending students with the highest academic performance to further study abroad on scholarships. According to Army Magazine no. 63 of 1864, approximately 50 Romanian officers studied in France in the same year. To study abroad, they signed a commitment to serve for a minimum of eight years in the army [5].

In 1859, the first engineering battalion was formed on May 30, 1859, in Moldavia. It was composed of civilian specialists who were assimilated into the military ranks. The rank of lieutenants was similar to that of ordinary engineer class I, but they required knowledge of integral and differential calculus, mechanics, geodesy, strength of materials, hydraulics, architecture, fortifications, art and military strategy [6].

Initially, knowledge related to fortifications, construction and the military regulations was assigned to the special weapons department within the engineering division. T*he Ordinance for Admissions and Promotions* within the Engineering Corps of September 14, 1859, laid the foundation for engineering education. Graduates of this school received engineers' qualifications.

The Preparatory School for Engineering (the branch that included constructions) established its headquarters in 1862 in Bucharest. Future cadets had to acquire the following knowledge: general knowledge at an average level (similar to that of a high school graduate) and specialized knowledge: general scientific and humanities culture. They studied Romanian, foreign languages such as French and German, mathematics such as algebra, arithmetic and geometry, history, geography, natural history, drawing, calligraphy, topographical drawing, descriptive geometry, geology, topography, astronomy, tactics and strategy, fortifications, architecture, bridges and roads, administration and legislation, biology, gymnastics and swimming [7].

Students were guided to specializations depending on the results obtained. Those with averages of at least 7.50 were selected for the engineering specialization. In 1860, graduates with the highest grades at the Bucharest Military School were assigned directly to the 2nd Engineering Battalion after a period of five years of schooling. The 1862 regulation specifies that graduates of special weapons have the opportunity to continue their studies in France, Germany and Belgium. Some students studied at the Artillery and Engineer Application School in Metz or Fontainebleau, the Artillery and Engineer Application School in Brussels, the General Staff School in Paris or at various Polytechnic Schools in France and Germany.

During the period 1866 -1870, according to engineer Dumitru Atanasiu, the Romanian military education entered under the military influences of the Habsburg empire, and then in the following period the French military influences began to be assimilated [8].

The short training period and insufficient number of military personnel imposed a need to ensure early practical training. Training camps were established. In the Floreşti Camp, 2-month sessions were formed starting from June 1-July 31 and August 1-September 30. In 1870, the first methodological work necessary for the educational process was conducted as follows: "Practical instruction manual for the school of roadways or campaign fortifications," "Course of military bridges." [9]

During this period, a subdivision of the specialized military schools was formed in order to streamline the training time and obtain as many military personnel as possible in various organizational points: military personnel to deal with the administrative and economic side of constructions, military personnel to manage premises and their maintenance, enlisted personnel to deal with the enactment of military structures and personnel necessary for the design of buildings. This structure was proposed in 1875 and kept operating in roughly the same form until approximately after the Second World War.

Compared to the other military branches, the admission to the Engineering programme was the most demanding. Only the students with the best grades from the military school or civil school were selected. The exam consisted of several tests including: mathematics, descriptive geometry and drawing. [9]

Increasing developments in military warfare have led to a decrease in the importance of the visible built environment. With the exception of representative structures, other buildings throughout the century began to be less visible/noticeable. This can be seen even in the education system, as with time, schools of construction and courses such as architecture diminish in importance. In the first half of the 20th century, the Ministry of Defence collaborated with civil schools of construction and architecture sending a few students to study extensively. Between 1964 and 1967, a few students from polytechnic schools and architecture schools were integrated directly into the defence system. With the development of new weapons and engineering programs, the construction education programme was reduced as importance, concentrating mainly on structure, function and less on the architecture.

The evolution of military education in Romania reflects efforts to build a modern and capable military force. Military schools and training programs played a major role in developing the technical and tactical expertise of Romanian officers and non-commissioned officers, equipping them with the knowledge to defend the nation's interests. At the same time, military heritage, including historic fortifications, barracks and training facilities, shaped our cultural environment and identity.

Influences on the modern military architecture. We can observe that the attention given to construction process and architecture is greater at the start of the modern era when there was not only a concern for developing the military defence system of the nation, but also for establishing an image for the society that aligned with political views of the time. Between the 1850-1900 in the architecture of barracks, examples of projects implemented in states with a military tradition in Europe were used. For example, the barracks of Malmaison were built on principles from the

French army [5]. To the end of the XIX-th century a shift begun: carefully constructing buildings, designed to satisfy the needs and psychology of the Romanian soldier[x]. With the establishment of a local architecture school and a need to express the idea of a national identity through architecture, at the beginning of the XX-th century, elements of neo-romanian style were gradually introduced into the military architecture.

Other architectural styles that we can observe on military buildings are the neo-gothic (The Military school of Iași), neo-classic (Palace of the National Military Circle), realist-modernist (The Military Academy Carol I) etc. With the changes on the political scene, a new style had to be introduced to the public. With the soviet regime, in the 1950's, the preferred architectural style was the realist-modernist, including ornaments depicting soviet symbols. The architectural morphology of the military building's façade has been an element influenced or coerced depending on the political views and the needs of the defence system. This led to the need of well-prepared military personnel (architects, engineers, military construction workers etc) in the sphere of architecture. At the beginning of the modern military system, the education system prepared personnel for understanding architecture and construction. But as the military defence system grew rapidly, given the need to establish itself for national defence purposes, taking into consideration the conflicts that swept Europe and the need to constantly adapt to evolving military technology, the discipline of military architecture and construction shifted to the utilitarian. As explained above, the number of architectural specialists was insufficient, at first caused by the lack of trained professionals and later on because the preference shifted to instructing people in different defence branches. Another reason in the diminishing of interest in architectural representation was the increasing need for many provisional structures. This started with the Second World War, a time where there was an increasing need for temporary structures, usually tents, with the advantage to be rapidly installed in considerable numbers. The change in war tactics and technology led to the need of a transformation in military defence constructions. Camouflage, efficiency and functionalism have gradually become the focal point in building, leading to temporary and pre-engineered constructions.

The decreasing need for new constructions that could hold a representative meaning and the increasing need for developing the standardisation of the army led to gradually concentrating the military construction education mostly for infrastructure (such as railroads, bridges, tunnels etc.) and pre-built structures. Also, the gradual shift of military constructions to the outskirts of a community made the new military structures less visible and less connected with the residents.

The shrinking of the military-built environment. A restructuring of Soviet military bases had been planned since 1987 following the Warsaw Pact, but shortly after the U.S.S.R. collapsed, the Cold War ended, and a massive restructuring of military bases occurred not only in the former Soviet sphere, but also in the United States [10].

Studies relating to the urban regeneration of former military bases took place in Western Europe, but United States were the forefront. Immediately after the bases became inactive in the 1990s, the problem of their reintegration into the economic and social spheres of their communities began to be considered. Manuals for the conversion of these areas into civilian circuits were also developed, programs for the conversion of former bases into functions accessible to civilians were created, and sponsors that would involve not only local authorities, but also the population in the area were enrolled [11]. Their goal was to a lesser extent related to military heritage, but rather to socioeconomic and urban revitalization. In contrast, in Western Europe, urban revitalization programs of post-military sites also considered their tourist potential; therefore, the potential of military heritage was studied thoroughly.

It was found that in Romania the situation of post-military sites is quite precarious. The less-transparent attitude of the authorities has transformed these areas into unattractive places for investment. As is the case of industrial heritage, within large cities, for some investors the land value for real estate is more important. Some sites were purchased by private owners for such ideas, but following the financial crisis, the market shrank and most of them were only partly demolished, their status being even more precarious now. On the other hand, the lackluster budges and investments at the local or county level is another factor that prevents their valorization, few local administrations allowed themselves the budgets to provide security of the sites in order to prevent possible vandalism. Other ground requires work for decontamination. The study by FATE states that such actions can be carried out with the support of the Ministry of Environment and Forests, but due to current budgets, local public administrations do not have the capacity to prepare non-reimbursable financing projects for decontamination works. As a result, some of these sites have a desolate appearance, of abandoned ruins, with undesirable effects on the environment [12].

Another factor in the slow process of the revitalization of ex-military buildings is the level of representation. Compared to the more recent military buildings that were built out of necessity, we can argue that military architecture from the 19th to the middle of the 20th century engaged with the public. Some of the buildings had programs that needed to impose themselves: to attract the general public like the Military Circle buildings or to express security and dominance like The Military Academy from Bucharest. Consequently, these types of buildings are easily assimilated by the residents' perceptions.

Thus, we can see that the transformation of military buildings can lead to a couple important points.

a. Conversion to civic spaces: Former military bases and facilities can be repurposed into community centers, libraries, and cultural hubs, thereby fostering a sense of shared ownership and connection among local residents.

b. Preserving historical significance: The adaptive reuse of military buildings can maintain their architectural and historical significance, serving as tangible reminders of the community's past, while simultaneously providing modern amenities and functions.

c. Economic revitalization: The transformation of military infrastructure into commercial, residential, or mixed-use developments has the potential to stimulate economic growth and generate employment opportunities in the region, thus benefiting the local economy.

d. Environmental sustainability: Repurposing existing military structures can be a more environmentally sustainable approach than demolition and reconstruction, thereby reducing waste and minimizing the carbon footprint associated with redevelopment.

e. Community engagement: The process of transforming military buildings can incorporate community input and participation, fostering a sense of ownership and pride among residents and promoting reconciliation within the community.

Conclusion. The training and education of military personnel in the branch of army constructions has been a constant concern for the authorities since the start of the Romanian state. The emphasis was placed on training personnel even before they specialized in order to raise the general level of knowledge of the entire cadet squadron. But at the same time, through the study of standards and documentation from more advanced allied armies, efforts were made to implement particularly the laws and regulations that best served the needs within the Romanian army. The 19th century was for military construction education a period of experimentation: external sources of study were used, instructors were trained with the help of the Russian, French or Austrian armies, students were sent to study at specialized schools, etc. Constrained by the minimal experiences that the army had and the need to develop rapidly, construction education had to be very efficient. Emphasis was placed on the practical side by organizing training camps and on-site visits. From the archive documentation it resulted that in the case of theoretical study the emphasis was on understanding mathematics, descriptive geometry, topography and construction. Although several of the descriptive geometry teachers received training in France, for the construction courses we could not identify a specific source. From archives and specific written materials, it panned out that there was a concern at least at the infancy of the state to incorporate a national architectural language in expressing the facades and adapting the functional building configuration to be better used by the soldiers, there were no mentions of how those things were executed or what were the main principles used. But even so, we can still determine that these buildings, now relinquished for civilian use, still have a presence in the memory and evolution of the community. On another note, we can say that the attention in construction study for architecture was also influenced by politics and military tactics.

The evolution of the built military environment became less conspicuous, and the camouflage of military structures within civilian contexts gained increased significance. Following a substantial influx of buildings that became suitable for civilian use, the public experienced a sense of saturation. With the exception of prominent edifices, numerous structures remain unrecognized, even by local communities. It can be implied that the diminishing emphasis on architectural education in military institutions, coupled with the predominantly utilitarian nature of these buildings, resulted in a society less informed about the value and importance of the existing post-military-built environment.

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Figures.

FIGURE 1 - Admission board for military constructures. Source: MAPN archives.