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# Disappearance of the Limestone Architectural Heritage in Central Poland - Trends and Challenges

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**Abstract.** Koło Basin is a geographical region located in central Poland, where in the period from the mid-XIX century until the late of 1960s the traditional rural construction had been developing architectural features of a unique character. The structures in that area were not being constructed using wood, which was the most common construction material used throughout the Polish lowlands, but limestone, mined at small local quarries. Their emergence is a result of a specific terrain of the discussed area, where in the vicinity of villages Rożniatów and Czepów, as well as the little town of Poddębice, a layer of Cretaceous sedimentary rocks reaches to the surface. An estimated number of 3,000 structures in the region was erected using this material. These include houses, homesteads, barns, churches, manors, mills and other rural buildings. Research conducted by the authors between 2011-2017 revealed that a little over 2,300 of these structures still exist. In the recent times, the speed of removal of these buildings, which are such a characteristic feature of the region's cultural landscape, rapidly increased. There are at least a few causes of this phenomenon. The depopulation of the rural areas results in abandoning of the farms, which thereafter soon become derelict and devastated. Most of the residential structures made of limestone in the past centuries does not meet the current utility standards. Therefore, they are frequently taken apart, and being replaced by new structures made out of modern construction materials and integrating universal design projects. More frequently as well, the owners of such structures are upgrading and expanding the existing construction, having the existing limestone elements covered with layers of thermo-isolation and plaster. These changes involve also farm utility structures for agricultural production. Since Poland's accession to the European Union, the rural areas of the country begun a definite expansion, but also a change in its profile and scale. As one of the side-effects of modernization of farmsteads, which were to increase their profitability and competitiveness, old structures are being abandoned and demolished. The civilization growth in Koło Basin and its surroundings results in the improving of its populations' living and working conditions is definitely a positive development. It'd be beneficial however that it proceeds in a more harmonious and balanced manner, preserving the unique cultural heritage of the region. In authors' opinion the actions which had been taken by the local authorities so far towards the protection and the preservation of these assets of cultural heritage for generations to come do not guarantee success of the undertaking. There is a necessity for forming and a subsequent firm execution a complex plan for protection of the limestone structures in the region. Authors point to the fact that the rural limestone architecture existing in Koło Basin is unique in the scale in this part of Europe.



## 1. Introduction

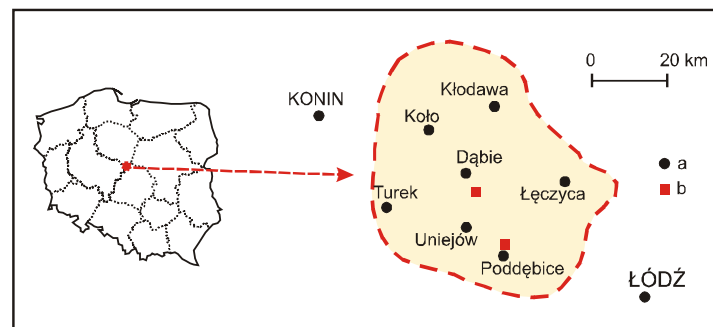
There exists a multitude of aspects of the role of the traditional rural architecture in the modern times. Looking from the historical perspective, it provides insights into the stages of development of rural settlements, thus making it possible to determine their history. Ethnographers will most likely find interesting the study of the period when the traditional rural construction can be identified with the vernacular construction - the expression of the humanity's primal need for creating for oneself, for one's family, livestock and crops, the conditions of safety from the external influence (such as weather), thus leading to the improvement of conditions for living and working. These actions, fundamentally endowed with a cultural or ethnic distinction, which led to the development in the rural landscape areas endowed with unique characteristics in regards to construction, architecture, construction materials used and the functionalities of the erected structures. One of such elements characterizing the rural construction is the use of the locally accessible natural resources - such as stone, wood or clay. The craft of constructing rural residential and farm buildings was passed on from one generation to the next, often only verbally. In modern times, when construction is approached as a complex engineering endeavour, based on scientific analysis, codified rules and laws, the engineering skills of the population engaged primarily in agriculture, reaching to the common sense intuition and natural ingenuity, can be recognized as nothing short of amazing. Their architectural experience was developed over decades or even centuries of practical approach that would efficiently work. The proverb "necessity is the mother of all inventions" very well describes the practical and pragmatic aspect of rural architecture and the main motivation of its creators. The traditional rural architecture is often an inspiration for the architects and engineers of today, as they pursue original solutions, structural forms, functionalities or architectural details. In many aspects, the old rural structures show closer alignment to the paradigm of balanced architecture than the modern ones - much more harmoniously integrate into the natural landscape. Therefore, there are numerous reason for which the traditional rural architecture should be an object of efficient protection and preservation. Nevertheless, this valuable element of the cultural heritage vanishes at an increasing pace, due to modern economical, social and technological transformations of the rural regions. This process continues to transpire, despite the many efforts taken in various areas of the world to prevent this trend from escalating. This phenomenon and its characteristics are presented in the following materials, using as the example the traditional limestone rural architecture existing in one of the regions of Central Poland.

## 2. Area and subject of research

The most common construction material on the Polish countryside has been wood. Only in the sparse areas of the country, where the rural population had easy access to deposits of suitable rock material, we encounter stone structures. One of such areas is Koło Basin (in Polish Kotlina Kolska), located in Central Poland [1]. The raw material here was being provided by the surface deposits of soft limestones, extracted in small shallow quarries, in most cases going to the depth of 6-8m on the area of up to 1-2 ha. Two of the largest of these quarries used to be in the village of Różniatów, between Dąbie and Uniejów, and on the area nowadays being a part of Poddebice (figure 1). Extracting of the stone material for construction purposes begun first in the middle of the 19<sup>th</sup> century. Initially it was developed by the gentry, in order to use it for construction of manors. By the turn of the 20<sup>th</sup> century it was widely used however by the local peasants. Since that time, for nearly seven decades, limestone was the primary construction material, not only in the rural architecture, but also that of small towns of the region. The raw stone (figure 2) was carefully prepared, using simple stone-cutting tools and then used in erection of buildings' walls, bound together with clay mortar. Ceramic brick provided the supplementary material, used mainly in the corners and lintels, as well as for decorative purposes. In time, the limestone buildings became one of the most characteristic elements of the cultural landscape of Koło Basin and the surrounding area. Limestone structures could be found dozens of kilometres from the quarries from which the material was taken (figure 1). This developing trend had suddenly stopped in the late 1960s. The reason for its downfall is difficult to determine. One of the possible

reasons was the emergence of new materials, such as concrete air bricks, which just like the limestone could be prepared directly at the construction site.

In the years 2011-2017, the authors conducted a survey of a 1200km<sup>2</sup> area, identifying over 2,300 buildings erected using limestone as the primary construction material (figure 3). The range of objects included houses, homesteads, barns, churches, manors, mills and other rural buildings. The estimated number of these buildings might have been even over 3,000. During the survey it was possible to notice that the number of limestone buildings is diminishing with each passing year. This article represents the first attempt of a systematic assessment of this process, identification of the main obstacles in maintaining these objects of architectural heritage. We hope that it might lead to determining the chances for preserving the traditional rural architecture in the present and the future conditions of modern transformation.



**Figure 1.** Area of using limestone in rural constructions in Central Poland a. towns b. main quarries



**Figure 2.** Quarry in Rożniatów (present condition) and typical method of using limestone in traditional rural architecture.



**Figure 3.** Examples of traditional structures erected using limestone



### 3. Results and discussions

Attempting to determine the causes for the advancing diminishing of the traditional rural architecture in Koło Basin (figure 4), it is necessary to examine separately the residential structures from the agricultural structures, even whereas they belong to the same households.



**Figure 4.** Cases of superseding of the limestone structures from the local landscape

#### 3.1. *The causes of decline of the traditional limestone farmhouses.*

Paradoxically, the large number of the limestone structures of that kind surviving to this day in Koło Basin, as well the rural architecture in most areas of the country, is a result of a significantly slow speed of development, which characterized it until the recent times. Low-income rural population could not afford the improvement of the residential conditions through the modernization of the existing houses or the construction of new ones. Furthermore, modern construction materials were both expensive and difficult to obtain. Therefore, the population utilized the structures built directly after the WW2, or even the older ones - hence those made using the traditional methods and materials.



**Figure 5.** Examples of traditional limestone structures undergoing renovation

During the last two decades that situation drastically transformed. As the starting point of this change we can assume the year 2004, when Poland became a member of the European Union. That made Polish farmers beneficiaries of the common agricultural policies of the EU, including access to direct subsidies. The increase of funds has been first and foremost used by the rural population to improve the living conditions, including the living quarters [2]. In Koło Basin this has been resulting most often in the redevelopment of the existing houses - expanding the living space, adding elements such as avant-corps, bay windows, niches, porches, but also garages, changing the traditional gabled roofs into hip roofs etc (figure 5). Generally it can be said that the tendency is towards reaching the living standards equal to those of single-family homes existing in towns and suburbs. The traditional buildings unfortunately, being of low high and a simple shape, in most cases do not comply with such standards. The gap between the current conditions and those desired lead the owners to the decision of demolishing an old structure in favour of erecting a brand new one, which would fit their needs and

aspirations. The result is in most cases a construction made using modern materials, based on a universal project which does not in any way relate to the traditional architecture specific to the region.



**Figure 6.** Example of traditional limestone structure undergoing thermo-renovation between 2012-2016

In the traditional process of erecting walls using limestone, the rule was that the material was to be visible from the outside. Therefore, the stone was meticulously cut and elements of the wall were decorated using ceramic brick. Nowadays though, the walls are being covered by layers of thermal-insulation (figure 6). The main reason for that action is lowering the heating costs. It's worth noting, that the owners are gladly deciding to improve the thermal characteristics of the houses, as such investments are supported by various institutions, programs and funds, through direct subsidies, favourable loans or tax relieves. Once insulated, the walls are then plastered and covered with paint. Most commonly, these actions are done with a purpose of differing the house from the other ones in the neighbourhood. This way of redevelopment does indeed preserve the original structures, losing however their main characteristic - the exposition of the natural stone construction. A better chance in preserving the original structures might be seen in their adaptation to the role of summer houses, to be used seasonally by the population of the nearby cities. A similar direction is given by the currently thriving rural tourism, which by definition ought to be related to the cultural heritage of the given region, especially architecturally [3]. Both of these directions in the region are currently merely marginally developed, involving several, out of hundreds, of limestone houses.

### 3.2. *The causes of decline of traditional limestone outbuildings*

Within the Koło Basin and its immediate surroundings, the dominating form are individual, single-family farms with crop areas rarely exceeding 5ha. Numerous are those whose area doesn't reach even 2ha [4]. Within the latter, the majority of their owners are seniors who are supported by pensions rather than farm work. As they move in with their kin who chose the life in a city, or as they die, the abandoned structures rapidly become desolate. The small acreage of the farmlands within the Koło Basin makes them incapable in running an efficient and profitable agricultural activity. The future might show the rising of the tendencies of merging of the farms and the dismantling of the unused farm buildings (figure 7). In the past, the farms used to aim for food self-sufficiency. Farmers cultivated cereals, roots, forage etc., and kept varied livestock - cattle, pigs, poultry. This holistic approach was reflected in the construction and planning of the farm buildings, where often a single structure was the host to a pigsty, cowshed, chicken coop and stable, while the attic was used as storage for cereals and fodder. In modern times, the progress of farm specialization requires farmers to have specialized buildings.





**Figure 7.** Examples of abandoned limestone structures and their desolation

Together with the increase in farms' production, the structures change as well in regards to their size, design, technical installation, specialized equipment or even a specific micro-climate. The way of storing crops changed as well, as with increasing frequency the cereals are being stored in silos and the fodder in clamped bales. Hay, commonly used in the traditional farms, is also increasingly often being sold for biomass. Old barns therefore lose their utility, being turned into storage areas, at best. Due to the mechanization of agriculture, buildings need to be adapted to the purpose of garaging, use or repair of sizeable vehicles. The traditional structures were being made in times where the use of horses in farms was common, and the majority of farm work was done using hand tools. All these factors contribute to the understanding the difficulties in adapting the traditional structures to the needs of modern models of agriculture. Traditional rural structures conform with traditional agriculture, therefore the support offered by the state and local administration for modernization and restructuring might be a factor significantly contributing to the marginalization or even disappearance of the traditional forms agriculture.

### *3.3. The modern utilization of the traditional stone construction material - the current status and future prospects*

Limestone quarry in Różniatów, which at least for several decades has been the main local source of construction material in Koło Basin remains operational to this day. Under the current ownership however, the mining operations are conducted only at seldom. Within the last 10 years, the limestone mined here was used for constructing merely a couple of structures - two farmhouses in an ethnographical museum (figure 8a), several merchant pavilions in the communal marketplace (figure 8b), utility buildings at the football field - all located in Uniejów and a fire depot in Ostrowsko, a village near to Uniejów. All of these investments were funded by the local authorities of Uniejów, within whose administrative borders the quarry is located [5]. The situation is not any better when it comes to the use of the material by private investors. It is sporadically used in the modern projects for

decoration purposes or minor construction utilization (figure 8c, 8d). It should be noted that during its period of popularity, the local limestone was a relatively cheap material - both to mine and to process. Nowadays it is being considered an expensive or even luxurious material. This might be the reason why most investors opt for the use of industrially-produced imitations of a natural stone.



**Figure 8.** Rare examples of the modern use of the traditional stone material

#### 4. Discussion and Conclusions

Recognizing the historical, aesthetic and landscape value of the architectural heritage of the rural areas, many authors concentrate their efforts on forming a scientific foundation for the protecting and preserving it for the future generations [6], [7], [8]. Regardless the region or the country in which the traditional rural architecture would be subjected to a complex analysis, the method is universal. It consists of the reconstruction of the historical construction techniques, determining the specific architectural, constructional and material characteristics, cataloguing of the existing structures, together with their detailed categorization [9], [10], [11]. Recently a particularly developing trend is to explore the ways of re-using the traditionally constructed rural buildings in the modern social and economic reality [12], [13], [14]. Preserving the original functions of these structures within this trend is considered favourable, but not essential. Such approach has rational and pragmatic foundations, proving that its representatives realize the inevitability of the civilization progress and acknowledge the inherent right of the inhabitants of the rural regions to improve their conditions in which they live and work. Assuming that the rural population is obliged to adhere to a status quo of the traditional buildings in their ownership - in order to comply with higher perspectives and public interest - is fundamentally unjust. Its proponents should first of all answer the question whether they themselves would agree to live in a folk museum, where time had stopped. It is also an approach which is set to



fail. Ultimately it's the owner's prerogative to preserve the structure's original state, to modernize, to rebuild, to demolish or to abandon it. Decisively more likely to succeed in protecting of the architectural heritage is the approach focused on local and regional education, reawakening, supporting and gentle stimulating of the regional identity and building a feeling of community having its own history and valuable cultural heritage which that community itself has to cherish and expect other to respect. A significant role in that process is given to institutions of local self-government and NGOs.

In the region analyzed by the authors in the article, the factors that make that superior approach are being severely neglected. Therefore, if the imminent future will not transform, the traditional rural limestone architecture might vanish completely - despite the objective durability of the construction material or the significant number of existing structures. In midst of the currently occurring profound transformations of the agricultural system of the Polish countryside, it's unlikely these factors alone would be of a significant role. The many transformations of the Polish folk architecture are represented by mere handful of relics structures. Time will tell whether the current pressure of modernity will make the traditional limestone architecture will share that fate.

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