

## CHAPTER 9

*Wiesława Gadomska*

### NATURAL AND CULTURAL VALUES OF THE ŁYNA RIVER VALLEY IN OLSZTYN

#### Introduction

The Łyna is a river which flows across Olsztyn Lake District (*Pojezierze Olsztyńskie*) and Sępopol Lowland (*Nizina Sępopolska*). In the town of Olsztyn, the Łyna forms various spatial and landscape relationships, typically appearing between an urban area and a river, which manifest themselves as varied proportions between natural and man-made components, and together constitute the urban environs of a river. When analyzing the town's street plan and comparing it to the actual situation, the course of the river within Olsztyn can be divided into three distinct sections, different in saturation with natural and cultural assets.

In the southern section, a wide river valley lies on the bottom composed of peat bog developed from a lake. The most interesting is the middle section of the river, which cuts through the centre and the Old Town of Olsztyn, where the river becomes much narrower and the banks are higher and partly reinforced. The unique character of this river section is attributable to the cultural and natural components, with the man-made features being clearly dominant. It is this merging of natural and cultural values in the Old Town of Olsztyn that is the town's greatest asset. Strolling in the park situated on the river's banks, we can discover the most valuable historic buildings, such as the Gothic castle and St James's Church, medieval fortified walls or the neo-Gothic garrison church. The landscape dominant features, i.e. old church spires and the castle tower, appear among tree branches. Such a diversity of views is valuable for recreation as it makes the whole route along this section of the river valley more attractive. The last section of the river in the town flows through the Municipal Forest. There, the river often changes its course, carving broad bends and pools. The river banks are raised and steep walls, forming a gorge of highly varied height.

Within the town of Olsztyn, the Łyna should create a consistent, recreational route for strollers and cyclists. The suggested programme and spatial solutions should conform to this overall objective.

### **Natural and cultural values of the Łyna River Valley in Olsztyn**

In any town, a river is an important component of the urban layout, landscape character and the town's identity. The origins of towns built on rivers are usually connected with the natural conditions and functional opportunities that riverside location provides.

For urban development, the most important factor is the set of natural conditions, including the geographical location of a town, its topography, the world of plants and abundance of water which has influence on the formation of green areas in a town. There are many examples of towns in which the beauty of nature, varied landscape, old tree stands or water bodies have had a strong impact on their development over centuries (TOLWIŃSKI 1963). Water, including small and large water bodies, is of great importance to landscape composition. A natural waterfront, unlike the stiff, anthropogenic structure of a town, is an organic component in an urbanized space, worth emphasizing and displaying. It is a natural component in a town's spatial layout.

Olsztyn is cut by the Łyna River, flowing from the south to the north. The Łyna is an important landscape axis in Olsztyn, a town which has grown on both banks of the river. In the structure of the European Ecological Network (EECONET), the area covered by Olsztyn Lake District, including the town of Olsztyn, is specified as a core area of international importance, and assigned no 13. The Łyna River Valley lies in the nationally important ecological corridor no 13. With 11 lakes within the administrative borders of Olsztyn, the town distinguishes itself among other urban areas. In the total surface area of the town, water bodies (lakes and rivers) cover up 1,100 ha, which is 9.9% of the town's area (*Studium Uwarunkowań...* 2001).

### **Location and geographical environment of the Łyna River Valley**

The Łyna originates from water-rich sources located at 155 m above sea level, about 2 km north-east of the village Łyna (about 35 km from Olsztyn). The total length of the river is 264 km, of which 190 km is in Poland. It is a second order river and flows into the Pregola River, in Kalinigrad Oblast, which flows into the Vistula

Lagoon. The area of the river catchment situated in Poland is 5,719 km<sup>2</sup>, and its total catchment basin comprises 7,126 km<sup>2</sup> (*Słownik geograficzno-krajobrazowy* 1998). The Łyna has many tributaries, of which the largest ones are the left-bank rivers called the Marózka, Kwiela, Kortówka and Elma, and the right-bank rivers called the Wadağ, Kirsna, Symsarna, Pisa Północna and Guber. There are several towns located on the Łyna River, i.e. Olsztyn, Dobre Miasto, Lidzbark Warmiński, Bartoszyce and Sępapol. In the upper course of the river, the valley is orientated towards the north, and near the river source it flows in a deep valley, while later it cuts through drained areas and wetlands. In the upper course, the river flows through many lakes, such as Krzyżnowo (Krzyż), Brzezinek, Brzeźno (Brzeźno Duże), Morze, Kiernoż Mały, Kiernoż Wielki, Łańskie (the largest lake in Olsztyn Lake District) and Ustrych. Between the villages of Ruś and Bartąg, the Łyna widens and flows through wetlands. In Olsztyn, the river is partly regulated. Above the inflow of the Wadağ River, the Łyna is raised up for the purposes of a water power plant. In its middle course, between the village of Bukwałd and the town of Lidzbark Warmiński, the Łyna strongly meanders. The river valley becomes broad in its lower course. There, it does not flow through any lakes therefore its current is slow. About 2 km before the state border, the Łyna flows into a dammed reservoir, closed by a dam situated near Pravdinsk in Kaliningrad Oblast.

In order to preserve a rare example of headward seepage erosion, in 1959 a nature reserve was created, named after professor R. Kobendza, the Nature Reserve of the Springs of the Łyna River, which encompasses 121.04 ha at the source of the Łyna River. This is an area of extremely beautiful landscape, where the difference in the height between the bottom of the gorge and the adjacent hills reaches 30-40 m. East of the springs of the Łyna, in the village Orłowo, there is a nature reserve on Orłowo Małe Lake protecting the mud turtle.

The Łyna is a typical lakeland river, and its basin stretches between the valleys of the Pasłęka River to the west and the Rospuda river to the east. Hydrologically, it is an inert river due to the small difference between high and low river stage. This is caused by a number of factors, of which the most important one is the character of the area through which the river flows. The area of the Łyna catchment basin is mainly composed of permeable formations, mostly sands. Besides, in its upper course, the river flows through several

lakes, thus its lake water retention is high. The surface retention, associated with plant cover, is likewise high because over 50% of the area of the river basin is afforested. These factors result in an even outflow of water during the year, which means that the Łyna does not pose flood risk.

The area which is cut by the Łyna presents high landscape values. It was shaped by the Baltic glaciation and has characteristic hilly terrain with many lakes and large forests. In the Province of Warmia and Mazury, there are 67 landscape conservation areas (LCA) and the Łyna flows through three such areas. i.e. the LCA Lower Łyna Valley, the LCA Middle Łyna Valley and the LCA Napiwodzko-Ramucka Forest. The section of the Łyna cutting across Olsztyn is situated in the LCA Middle Łyna Valley (*Rozporządzenie No 21... 2003*).

### **The historic bonds between the town and the river**

The town of Olsztyn was founded by the Chapter of the See of Warmia. In the spring of 1348, representatives of the Chapter travelled from Frombork to a small stronghold located near the present-day town, called Bartązek, with the task of finding suitable location for a future town. The delegates decided to build a castle and a town, which is today's Olsztyn. For defence, a an area in a bend of the Łyna River was chosen, as it was protected by the river channel from three sides, and, in some distance west- and southwards, by the waters of several lakes such as Długie, Ukiel, Fajferek and Kortowskie. To the north and the east, the area of the future town was protected by vast wetlands. The exact borders of the new town were delineated in the town's founding chart dating back to 1353. For us to emphasize the importance of the Łyna in the founding of Olsztyn, it is worth quoting a passage from this document, where the borders of the new town were described: "Therefore, we should begin from the border which runs along the bank of the Łyna River, and then along Kortowskie Lake, whereof to Ukiel Lake and further to the borders of the village Likusy, and afterwards along the fields of this village to the Łyna River, and along the Łyna to the place where this river is joined by the Wadał River. Next, upstream the Wadał River to the border of the village Myki, whereof to the border of Track, and then to the border of the village of Klebark, whereof to the border of the village Szczęsne, and from that village we should return to the Łyna

River, i.e. to the border mentioned at the beginning” (*Olsztyn 1353 – 2003* 2003). In the cited passage, the authors of the town’s founding chart referred to the Łyna several times and delineated the borders along the river course.

The Old Town was surrounded by urban fortifications, including a ring (at places – double) of fortified town walls, moats and the Łyna River, which was a natural component of the whole system. The river surrounded the town from the south-west, and made up 1/3 of the perimeter of the town within the walls. The town and the castle were separated from each other by a deep moat. There were three complexes of gatehouses and bridges, giving access to the medieval Olsztyn, such as the Lower Gate and a bridge over the Łyna River known as Hospital Bridge (today, St James’s Bridge), the Upper Gate (preserved until today) and a bridge over a wet moat and another gate, later known as the Mill Gate, which was situated in the northern run of the town walls and served mostly a utilitarian purpose as it led to a watermill. For five centuries, the town’s developed area remained within the boundaries set by the town’s fortified walls. Over the same time period, the course of the Łyna channel was not altered. For the town’s residents, the river was a source of potable water and helped maintain personal hygiene.

Changes in the spatial structure of Olsztyn began in the early 19<sup>th</sup> century, when some of the town’s buildings were erected outside the town walls. Two suburbs were created, on the opposite sides of the Old Town – one behind the Upper Gate, to the south-east, known as the Upper Suburb, and the other one behind the Lower Gate, called the Lower Suburb.

In 1818, the town council reported that the Łyna in the town was 24 feet wide and 5 feet deep, and that it was floatable and navigable. For the river to be used as a water route for floated timber, its trough had to be frequently deepened and canals for moving floated timber away from the main river course had to be constructed (WAKAR 1971). In 1825, the Łyna was regulated from today’s Municipal Hospital to the place where the castle watermill stood. The river regulation works included mainly the drying-up of riverine marshes. The section of the river along with the adjacent area under St James’s Bridge was commonly nicknamed “Olsztyn’s Venice”, as the houses which stood there almost touched the river banks. Directly on the river banks, residents built piers and berths, for rowing boats and

canoes to moor. The local residents also had small wooden sheds, where they could keep small flocks of water birds.

### **Spatial relationships between the river and the town, and the river's natural and cultural values**

The Łyna River flows through Olsztyn from the south to the north. There are some short sections of the river in the Old Town and the Municipal Forest that run parallel to latitude. The length of the river section dealt with and analyzed in this paper is limited with the border points set where the river channel cuts across the administrative borders of Olsztyn. The initial point is located on the southern border (A) and the final one on the northern border (Ł), according to the flow of the river's current. The length of this section is 14.5 km (including 3.1 km of the river which runs along the town's administrative border). Additionally, some other characteristic points were established, such as the points where the river channel is spanned by bridges and railway bridges (Fig.1).

The difference in the water table of the river between the northern and southern borders of the town is 13.5 m, thus an average hydraulic gradient was about 1‰. This head gradient, however, is highly varied along particular subsections of the river. In the southern part of the town, near Armii Krajowej Avenue, it is small, only slightly exceeding 0.1‰, but along the section flowing through the centre of the town and the Old Town, up to the weir near Nowowiejskiego Street, the hydraulic gradient reaches 0.5‰. The largest natural head gradient is over 2‰ and appears along the section of the Łyna passing through the Municipal Forest (ZAPRZELSKI, KRUPIŃSKA 2005).

When flowing through Olsztyn, the Łyna River creates many diverse spatial and landscape relations with the town's area. These relations appear as changeable proportions of natural and anthropogenic components, which together constitute the urban riverine environs. By analyzing a street plan of the town and comparing it to the actual situation, it becomes clear that the fragment of the Łyna River within the town's border can be divided into three distinct sections, different in the spatial and landscape characteristics (GADOMSKA 2007):

- the southern one, whose surroundings are composed of natural and cultural elements, with the natural ones dominant;

- the middle one, whose surroundings are composed of cultural and natural elements, with the cultural ones dominating;
- the northern one, whose surroundings are totally composed of natural elements, with only trace cultural components.

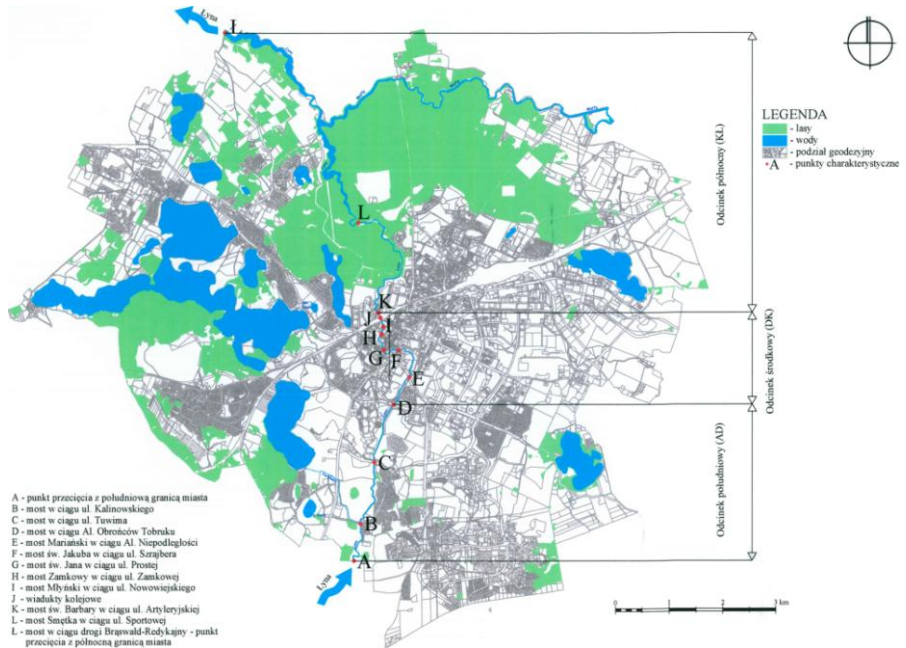


Fig.1. The Łyna River flowing through Olsztyn, with the established characteristic points and sections. *Source: own research.*

### The natural values of the southern section

The length of the southern section is *ca* 3.5 km, from the southern border of the town (characteristic point A) to the bridge in Obrońców Tobruku Avenue (point D). The width of the Łyna where it cuts the southern border of Olsztyn is over 20 m. The river banks there are marshy and inaccessible. The depth of the channel in the main current is 2.5 m. The river valley along this section is wide, reaching about 400-600 m. The channel of the Łyna along with the belt of bank vegetation are a habitat for many communities of aquatic and rush plants. In regards to the covered area, *Phragmitetum australis* associations, consisting of bulrush and common reed, predominate. These reedbeds are heavily cut during the vegetative season. Another plant commonly observable in the river channel is reed mannagrass,

most frequently found along the analyzed section of the river. There are also small patches of sweet rush, which along with reed mannagrass create complexes of associations (ENDLER 2000). The bottom of the valley along this section represents bog developed from a lake, thus it is wet and crisscrossed by numerous drainage ditches. The river valley is a remnant of a former flow-through lake, the fact which is evidenced by the post-lake deposits going down to the depth of 10 meters. The peat layer was created due to the disappearance of a trophic lake. This former lake became shallower when it was infilled with arenaceous deposits, followed by organogenic sediments (organic debris gyttja) and calcium carbonate deposits (meadow lime) (OLKOWSKI 1975). Peatbog vegetation developed as the former water body was overgrown with plants. This was a gradual process, progressing from the lake's edges towards the centre. Nearly all the area of the peatbog is overgrown with common reed. Single trees or their small groups comprise mainly willow and alder trees. In the middle of the peatbog there is a mineral islet overgrown with a compact tree community, including mainly pine, birch and alder trees (Phot.1.).



Phot.1. Trees on a mineral islet. *Source: the author's photo*



Along the left-hand bank of the river, there is a man-made dyke, used as a footpath. In this part of the river, man's interference with the natural environment is small, thus the highly valuable natural assets are worth being preserved.

### **Cultural and natural values of the middle section**

The middle section of the Łyna River is different. To the south, the section borders with Obrońców Tobruku Avenue and its northern end reaches the railway bridges spanning the two banks of the river on the edge of the Old Town. The length of this river section is about 4 km. Along the whole run, the river becomes much narrower. This change in the river width is mainly caused by a change in the rock formations through which the river cuts, and in the southern part of this river section they consist of raised post-glacial formations, mostly composed of boulder clay, which create steep banks of the river valley on each side of the river. In the northern part of this river course, the east bank of the river valley is composed of fluvioglacial sand and gravel, whereas the west one is made of formations developed from dead-ice moraine sand, gravel and boulders (RUMIŃSKI 1996).

It was along this fragment of the river that suitable conditions were found for the location of many of the town's buildings erected during the six centuries of its history. Along this river section, the most valuable historic buildings of Olsztyn can be found, such as the castle of the Chapter of the See of Warmia, St James's co-cathedral, remnants of the town's fortified walls including the High Gate, the old town hall. The exceptionally high natural values of this section of the Łyna River consist in the uniquely good conditions for displaying particular historic edifices as well as the whole complex of the buildings in the Old Town. Around the castle and along the river cutting through the Old Town, lies a park, called Podzamcze Park, which covers 12 ha. The park is a traditional destination among the town's residents for strolling and relaxation. It has attractive location and encompasses many landscape interiors, for which the Łyna River is a scenic axis (Phot. 2.).

The history of the park goes back to the turn of the 19<sup>th</sup> and 20<sup>th</sup> century, when it was set up through the adaptation of some 19<sup>th</sup> century gardens situated on the Łyna, near the castle (including

a garden next to Harich's Villa, a park-like garden around the Schlossgarten Restaurant or a park near the Officers Club building), which were inter-connected with a network of avenues (KNERCER, LIŻEWSKA 2005). Noteworthy is the imposing old tree stand, in which maple, small-leaved lime and European white elm prevail among deciduous trees while the coniferous trees are dominated by Norway and blue spruce. The park joins with a footpath along the Łyna River, which leads to Jakubowo Park and the Municipal Forest, situated north of Castle Park.

The merging of natural and cultural values in this part of the town is of great value. While strolling in the green park, we discover the town's most valuable historic buildings. The dominant components, such as the old church spires and the castle tower, appear among tree branches. This changeability of views is valuable for recreation and perception of the landscape. In the northern part of the park there is a weir bridge. The raised water level reminds us of the former water mill that had stood here since the town's foundation. Comparing today's views of the town along the Old Town's section of the Łyna River with analogous sights recorded in the early 20<sup>th</sup> century, the unchangeability of the skyline of Olsztyn's oldest, historic part becomes noticeable (Fig. 2.). The fact that current and historic views of the Old Town are identical attests to the high value of the section of the Łyna River that flows across the town's historic centre, which lies in the permanent and authentic character of the architectural and urbanistic components (GADOMSKA 2007).

### **The natural values of the northern section**

In the northern section, the Łyna River flows through a deep and meandering valley. The river channel widens a little and the river flow is more natural. The length of this section is about 7 km (including the 3.1-km fragment flowing along the town's border). To the east, the river valley consists of rock formations composed of fluvioglacial sand. The western border of the valley is mainly composed of raised postglacial formations of dead-ice moraine boulder clays as well as sand, gravel and boulders of dead-ice moraines (RUMIŃSKI 1996).

The brick and steel constructions of the railway bridges, with three arched spans, where the northern section of the river begins, create a picturesque frame for the Old Town historic buildings on the one side, with the characteristic silhouettes of the castle



Phot.2. Podzamcze Park. *Source: the author's photo.*



Phot.3. The Łyna in the Municipal Forest.  
*Source: the author's photo.*



(źródło: Grabowska C., Olsztyn... s.47.)

widok na miasto i zamek z wiaduktu kolejowego  
– rok wydania pocztówki 1900



(źródło: fot. własna) — zdjęcie współczesne

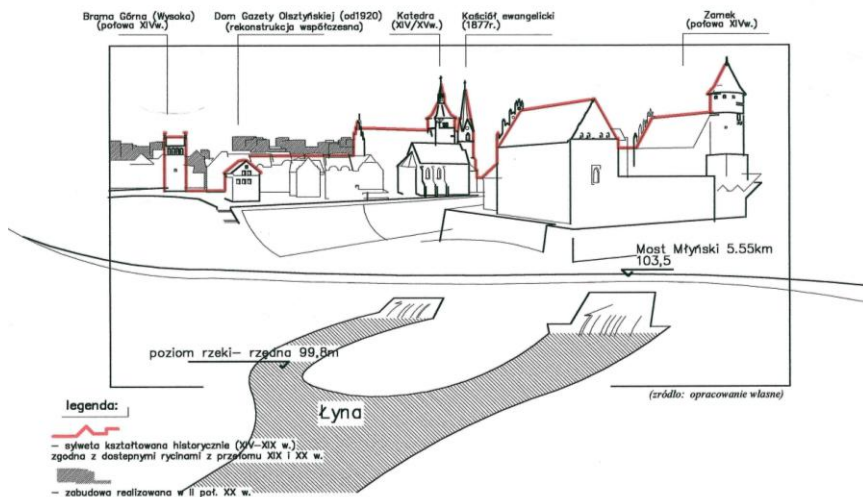


Fig.2. Today's Old Town silhouette corresponding to archival images.  
Source: own research.

and the cathedral, and for the footpath towards the Municipal Forest and Jakubowy Park on the opposite side. The Beautiful Town Society, set up in 1879, suggested creating a walking promenade along the left-hand bank of the Łyna River, which was made in 1884-1886 and consisted of walking path, lined with maple and lime trees, leading to the Municipal Forest (*Olsztyn 1353-2003*, 2003). The Municipal Forest is of extremely high ecological value owing to the old tree stands and high landscape assets (Phot.3.). Over 36% of the forest's area is overgrown with trees more than 140 years old. The dominant species are pine, beech, oak, spruce and birch trees (*Program Ochrony...* 2005). South of the water power plant, where the river creates a large water pool, there are assemblages of floating-leaf plants, such as an association of yellow waterlily and white waterlily. The section of the Łyna River within the town's borders is part of a canoeing trail along the river. The most popular canoeing trips cover 8 km (2 – 2,5 h) from the foot of the castle, though the Municipal Forest to the water power plant.

### Conclusions

The historic buildings which stand near the Łyna River are an important component of the cultural heritage found along the river. This picturesque combination of the historic architecture with nature is the most essential element of the landscape identity of Olsztyn. Such merger of natural and cultural assets is a priceless value in the perception of an urban landscape.

The Łyna and its surroundings are an important element of what Olsztyn has to offer in tourism, recreation and sports. The river is functional with this respect along the whole section found in the town, although it lacks sufficient capital invested in proper management of some of its fragments. Olsztyn has a large amount of ground available to turn into green areas, and much of it is situated in the valley of the Łyna River.

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***Wiesława Gadomska***

Department of Landscape Architecture and Agrotourism  
University of Warmia and Mazury in Olsztyn, Poland  
Prawochenskiego Street, 17  
10-727 Olsztyn, Poland  
Poland tel. +48/89/523-41-54, fax +48/89/523-45-49  
[wiga@uwm.edu.pl](mailto:wiga@uwm.edu.pl)