

DRAVA RIVER FLOODING IN VARAŽDIN AND KOPRIVNICA PARTS OF PODRAVINA (DRAVA RIVER REGION - BETWEEN CROATIA AND HUNGARY) IN THE PERIOD 17th - 19th CENTURY

O POPLAVAMA RIJEKE DRAVE U VARAŽDINSKOJ I KOPRIVNIČKOJ PODRAVINI OD 17. DO 19. STOLJEĆA¹

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SUMMARY

In this paper, the authors speak of Drava River flooding in the area of Varaždin«s and Koprivnica«s Podravina during the 17th, 18th and 19th centuries, placing this micro region into a wider, Central European context. The first detailed plans for Drava regulation are brought up, originally dating back to late 18th century. Regulations were needed to keep the local population safe from relatively frequent flooding, which brought significant danger. Drava water regulation was so important, as flooding brought harsh consequences. For example, 19th century flooding affected the population so some people, living in areas along Drava, were forced to move across the river to vicinity of today«s village of Gola. Additionally, flooding had impact on administrative changes, so 1829/1830 flooding caused the village of Drnje to lose a number of administration functions, which were moved to the nearby village of Peteranec, safely away from river flooding.

Key words: Drava River, flooding, change of river flow, river regulation plans (hydro-regulation), environmental history, early modern period, Croatia

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Ključne riječi: rijeka Drava, poplave, mijenjanje riječnog toka, regulacije rijeka, povijest okoliša, rani novi vijek, Hrvatska

The very name Drava holds its elementary natural importance. Some authors find the origin of Drava (German-Drau; Latin-Dravus) in ancient Indian Sanskrit, where Drava means river stream; the ancient Indo-Germanic »dra« means »to rush« to »speed up«. Hence, Drava would mean »a river of quick stream«.

Drava wells in Tyrol in Austria, near the old settlement Tolbach, today«s Dobbiaco, set up in Dobbiaco Field of the Italian province Trentino- Alto Adige. Two main wells of the river (high elevation at 1.228m and 1.192m above sea level) collect mountain water, receive minor tributary Alps streams, flowing to San Candido (former Innichen) and Prato alla Drava (former Winnbach) in Puster Valley (Pustertal). After only 15km flow, Drava river enters Austria (its total length through Austria is 257km).

Drava is one of the largest European rivers. Its flow connects 5 Central European countries - Italy, Austria, Slovenia, Croatia and Hungary. Drava is 749 km long, 305 km is in Croatia. Drava is the right tributary to the Danube river, as a part of the Black Sea basin.² Drava is not the longest, nor the largest tributary to the Danube (larger ones are Tisa and Sava); however, in many ways Drava surpasses other Danube tributaries. Namely, Drava is mountain/lowlands (Alps/Pannonian valley) river; in its upper flux, all the way up to Maribor, it has a significant slope and a high speed flux; yet, approaching lowlands of Podravina, the river bed widens up and depth is between 4 to 7m.³ In Podravina region too Drava still has a significant slope, three times of the river Sava in Posavina lowlands,⁴ ; thus, even here Drava does not really have all the attributes of a lowlands river.⁵

Drava river-system is narrow and elongated. Most tributaries of Drava join in the Alps part of the basin. Since it wells up in the Alps, most of the water mass is formed right there, mostly of snow and glaciers. This is why Drava has an ice-snowy water regime, with summer water-level and flow maximum, and an overall minimum in February..

Drava has always had a great influence on people living by the river; however, in the past, »people did not live on Drava river banks, everyone living by Drava was leaving«.⁶ Settlements were formed quite away from the river, yet they were always in danger of possible flooding. Although flooding presented a clear danger to the population of neighboring area, but the water remained for a while, helped vegetation and it all fertilized the lands and improved its quality for agriculture. In time people realized that various hydro technical works, like melioration, forming, clearing and channeling river bed and connecting different river flows improved the soil and affected hydrographic relations. Prior to hydro-regulation, Drava was frequently flooding levee surrounding areas.. Consequences were difficult for the local population, sometimes affecting certain settlements along Drava.

Drava would frequently meander, changing its water bed. All big meandering took place after big flooding. For example, in the past, Stormed village in Petrijanec parish used to be by the river; due to flooding and river bed meandering, the village center was moved from the river.⁷

² *Vode Hrvatske*, 17.

³ Kovačić 1957, 120.

⁴ *Vode Hrvatske*, 19.

⁵ Drava među panonskim rijekama ima najveći prosječan pad pa stoga i u donjem toku ima brži tok od ostalih rijeka. Živaković-Kerže 2002, 41.

⁶ Težak 2004.

⁷ Zorković 1995, 73.

There was a 16th century dispute between Varaždin citizens and Ivan Ungnad, the owner of Varaždin old castle. During one of more devastating flooding, water penetrated through the territory of the city of Varaždin, forming a tiny islet in the middle, between the old and the new water flow, called Isle of Zrepičar. By applying city limits, the old water bed remained in the north, so the Isle of Zrepičar fell under jurisdiction of the city of Varaždin. In spring, citizens used to send out their cattle to the isle for pasture until autumn. Beside shepherd cots, the isle had no other buildings whatsoever, as no one was there to live. When in 1543 the baron Ivan Ungnad became owner of the city castle, he decided to usurp this isle and turn it into his own property. His governor of the castle, castellan Juraj von Bothar started inhabiting the isle with refugees from regions under Turkish invasion, without prior consent of the city magistrate. This is how north of Drava a new settlement emerged, Novo selo village, which still exists to this very day. All the way, up to the mid 20th century, it belonged to Varaždin area, despite the fact that it was built on the opposite river bank. Today, the village belongs to Međimurje county. In 1549, Varaždin people complained of trespassing and protested before Zagreb Kaptol.⁸

In the past, Drava water regulation works were also carried out to protect from flooding. There is a document from 1609, witnessing of possible transport of large rocks to nearby Drnje village, to help build defense.⁹ There is a possibility that rocks were actually used as firing material, transported on river boats all the way from Varaždin. This data is important, as it shows that Drava river (up to the village of Drnje) was navigable in Koprivnica region. If indeed it was rocks for Drava water regulation, this is an important fact on river regulation in Koprivnica area.¹⁰

There are also historic documents to witness Drava regulation in Varaždin area. In parliament session held 5/6th October, 1633 there is a mention of opening riverbed of Dravica nearby Varaždin. From the following year 1634, on 6th of November there«s a notion to open Drava backwater channel, nearby Varaždin.¹¹ It seems that in 1649 there were great water regulation works on Drava river, aiming at building protection against flooding.¹² The Varaždin parliament session held 4/5th November, 1654 a panel was appointed to organize rebuilding new waterbed for Dravica nearby Varaždin.¹³ In 1678 measures against flooding were introduced to protect from flooding of Drava near river port of Zavrča and city of Varaždin, as well as part of Podravina region (Podrauinias).¹⁴ Public works in embankment of river in Podravina, and nearby Varaždin were being mentioned in 1692.¹⁵

Water regulation works on Drava nearby Varaždin were held at the turn of 17th century, in 1696 and 1698.¹⁶ When the news on numerous flooding of rivers Drava, Sava and Kupa in 1698 announced perils to the landowners and estates along these rivers, committees and panels were established to fight flooding; they had powers and authorities to engage in river embankment works. The same year it had been decided that embankments and bulwarks were to be built alongside rivers Sava and Drava.¹⁷

⁸ Horvat 1993, 79-80.

⁹ Državni arhiv Varaždin (dalje DAV), *Arhiv grada Varaždina*, Radikalni arhiv, II, br. 958; Androić 1968, 63.

¹⁰ Petrić 2000, 76-77.

¹¹ Zaključci Hrvatskog sabora (dalje: ZHS), knj. 1, 24, 36.; Vujasinović 2000., 36.

¹² ZHS, knj. 1, 148.

¹³ ZHS, knj. 1, 191-192.

¹⁴ ZHS, knj. 1, 382.

¹⁵ ZHS, knj. 1, 548.

¹⁶ ZHS, knj. 2, 87, 173.

¹⁷ ZHS, knj. 2, 177-178, 184.

River Drava had, together with river Mura, tremendous influence on marketplace of Legrad,¹⁸ especially after its »movement« or relocation from Međimurje to Podravina in the beginning of 18th century. Legrad had a particularly interesting location at meeting point of two rivers, Drava and Mura. River Drava made further communication difficult with its functional region, from early 18th century toward south (less obvious), and later on toward north (more obvious). Northern gravitational area had greater loss due to Legrad«s special place as a central settlement in the region.

»Relocation« of Legrad from Međimurje to Podravina was best described by historian Dragutin Feletar, who believes that it actually happened in 1710, during a major flooding of Drava; unfortunately, he never mentioned how he got that particular year. In writing his book on Legrad in 1971, he witnessed the presence of remains of old Drava riverbed, today barely visible at all; I quote »Former riverbed of Drava from the south is still visible to this day, enabling us to follow soil configuration from Orešac (north of Veliki Otok), along the hamlet of Čerepane, further across the road to Legrad near Kebl and further east to Đelekovec. Certain backwaters and lowered terrain here is still a kind of »document« what had happened in 1710. ...«¹⁹ Another data confirming that Drava indeed had run south of Legrad dates back to 21 February, 1691 and originates from Legrad«s parish records. It indicates that in those days certain parish people from Legrad had been scheduled for marriage; it had been recommended to hurry up to Legrad, while there is still thick ice on the river surface. As in those days Drava had been running between Legrad and Ludbreg, it's obvious that in those years the river had run south of Legrad.²⁰ Dragutin Feletar described the course of Legrad's »relocation«: »Huge mass of water turned into giant flooding wave was rushing and destroying everything it ran into; after it had eaten the river bank, it went further north, fusing in with Mura river; the sloping terrain only helped; after the catastrophic flooding, people of Legrad found themselves stranded on a river islet, surrounded by Drava; further evolution turned the southern Drava fork dry, and the remaining water moved to northbound flow.«²¹ Mirela Slukan Altić thinks that by 1710 Legrad had been developing between Drava main current (in the south), and a backwater channel north from the main flow. During 1710 flooding, north canal became the main flow, and the former dried into an adjoining backwater channel (in the south).²² However, this theory is a bit questionable, as Spalla«s plan from 1671 clearly shows that Legrad had not been surrounded by Drava, and the only Drava flow had been marked south of the settlement.²³ Although, almost 40 years had passed between the

¹⁸ Legrad se spominje od 1384., u XV. st. dobio status trgovišta (*oppidum*), od 1610. ima grb. God. 1643. Ferdinand III. je L. dodijelio privilegij slobodnog trgovišta, a sredinom XVII. st. se kratko spominje kao grad (*civitas*). U XVI. st. ulazi u sastav posjeda Zrinskih koji u L. uređuju sjedište Legradske ili Međimurske kapetanije izgrađivši protuosmansku utvrdu 1567. god. L. je kratko bio pod osmanskom vlašću (1577.-1579. i 1600.). U XVII. i XVIII. st. u Legradu su razvijeni trgovina i cehovi (*Stari ceh* - 1677., *čizmarski* - 1697., *brodarski* 1717., *tkalački* 1747., *mlinarski* 1768. i dr.). Od 1671. djeluje tridesetnica, a od 1682. se spominje solana. Krajem XVII. i početkom XVIII. st. sa više od 3000 st. L. je najveće naselje županije Zala, te jedno od najvećih naselja u sjeverozapadnoj Hrvatskoj. U blizini je kratko postojala utvrda Novi Zrin (1661.-1664.). L. se meandriranjem, nakon poplave 1710. našao na desnoj, podravskoj obali Drove. Nakon što je od 1848.-1861. bio u sastavu Hrvatske, L. je do 1918. u sastavu mađarske županije Zala. Pod mađarskom okupacijom 1941.-1945. Kat. župa se spominje 1540. Od druge pol. XVI. do početka XVIII. st. većina stanovništva su protestanti. Kat. župa je obnovljena 1641. kada je izgrađena drvena crkva. God. 1769.-1784. sagrađena je današnja barokna crkva sa zaobljenim svetištem u kojemu su vrijedne zidne iluzionističke slike. U parku se nalazi grupa pilova iz XVIII. stoljeća. *Hrvatska enciklopedija*, 487.

¹⁹ Feletar 1971, 107.

²⁰ *Spomenica župe Legrad*; Feletar 1971, 107.

²¹ Feletar 1971, 107.

²² Slukan Altić 2002 (b), 118.

²³ Klemm 1986., 193-202.

years 1671 and 1710, it's possible to agree with data provided by Dragutin Feletar, claiming that Drava inched its way north of Legrad only in 1710 flooding.

It's clear that »relocation« of Legrad from Medimurje to Podravina meant disruption of functional, physical ties with gravitational zone even in terms of population. In some 70 years time, from 1698 to 1771, Legrad population decreased for more than a 1000, or over 40%; we assume that depopulation could have been influenced by »relocation« of Legrad. Around the year of 1800, population grew, but in 1808 there was another significant fall; after that, in the second half of 19th century, number of people living there stabilized around the figures 2150 and 2350 inhabitants.²⁴

In 1777, more detailed plans of water regulation of Drava and some of its tributaries (nearby villages of Đelekovec, Torčec and Botovo) existed;²⁵ saved documents from 1804 witness of Drava riverbed regulation in Podravina region.²⁶ Inhabitants there had to participate in water regulation of Koprivnica stream. On 17 August, 1779 captain Balaško reported from village Drnje to Koprivnica town magistrate, that his general command had ordered him and his troops to clean the stream of Koprivnica.²⁷ At the same time, there were public works to reinforce embankment against flooding, so in 1810 it was ordered that terrain between Drava river and the embankment was to be reinforced by planting trees, willows and poplar-trees.. Before that, some of the worst flooding of Drava had been recorded. One of them had happened on 3rd of June, 1770, so devastating that people could enter into Drnje church only by boat: all corn, wheat and hay had been destroyed. Mass celebration, held by parish priest Martin Korolija and chaplains Baltazar Zrinski and Mirko Sabo. Parish priest Korolija believed that miracle happened and Mother of God, Our Lady of Drnje saved the church from flooding. Naturally, it has a votive altar of St. Nicholas. New flooding, but a less destructive one, had been recorded on 5 November of the same year.²⁸

Varaždin suburbs were flooded frequently. After 1718 flooding, the Parliament decided that Drava banks ought to be reinforced. Numerous flooding from early 19th century, like those in years 1804, 1807, 1814 and 1827.²⁹ In 1807, Drava flooded the entire Varaždin suburbia, with water in the town itself, flooding all lower roads, basements and alehouses.³⁰ In Spring 1814, Drava discharged from its bed and flooded Varaždin field, bringing mud to meadows and washing away field crops. Water flooded northern and northeastern suburbs, damaged gardens and fences, homes and barns. Water flow was so strong that it broke a few supporting beams on a wooden bridge.³¹

8th century Drava changed its waterbed, as it had done before. Maps from those years show villages like Žabnik and Štefanec further up north, in comparison to today's situation; instead of today's place of Bartolovec, in 1778 there had been only a solitary chapel St. Bartol in the field; old road also known as »*via regalis*« in 1778 led from Varaždin to Ludbreg through the places of Žabnik and Štefanec; villages themselves had a network of intercrossed narrow streets and squares. River Drava, however, had been gradually moving its waterbed toward south, flooding

²⁴ Petrić 2005, 41.

²⁵ Hrvatski državni arhiv Zagreb (dalje: HDA), *Generalkomanda*, kut. 10.

²⁶ HDA, *Generalkomanda*, kut. 21, br. 11/285.

²⁷ DAV, *Arhiv grada Koprivnice*, kut. 6, br. 232/779. Iz iste godine je podatak da je Juraj Vargantolić puškom ranio nekog čovjeka iz Koprivnice. Br. 234/779.

²⁸ *Spomenica župe Drnje*, 74.

²⁹ Težak 2004, 40.

³⁰ Horvat 1993, 280.

³¹ *Ibid*, 285.

away northern parts of both villages, a manor in Štefanec, even the king's road; the map from 1800 shows a newly built road further south from both villages and the first homes alongside. By the turn of 19th century, the parish had been in Žabnik, when it was finally moved to Bartolovec.³² Today, there are only smaller remains of Žabnik and Štefanec. Both places are centered along the new main road, while some inhabitants moved away further south, around St. Bartol chapel completely new village of was built.

Influence river had on inhabitants can be established by studying demographic movement, particularly so when we deal with flooding and its influence on population that had lived along the river. Although research of demographic movement in late 18th and early 19th century settlements along Drava, as well in those quite distant from the river, showed that no significant demographic change or aberration had been noticed in Drava settlements from settlements in a wider region. For purpose of demographic change in a wider region,³³ we need to explore a longer period of time, establishing whether Drava flooding in certain situation could have influenced demographic change. We can assume, that great flooding influenced resettlement of population, since during the early New era situation was bad and food was harder to transport into devastated areas (flooding destroyed crops).

Drava river flooding influenced future choices for safer locations during the building of new church of St. Martin nearby Ludbreg, between Varaždin and Koprivnica). This was described by Katarina Horvat-Levaj: »Such church building continued its building history of their own landlords - counts Patači of Zajezda - established in Martijanec estates in 1746. Moreover, due to certain architectural designs, majority of these medieval elements would have remained untouched by this very day, had there been no Drava. Losing its role of natural protection, this unregulated river would be, due to snow melting in the Alps and its lower parts, flooding neighboring areas and started to endanger St. Martin parish church. Catastrophic flooding in mid-18th century, as recorded in the parish records, in 1767 caused that new, stone-built church would rise on a safer location. In sync with Baroque-styled spaces, and copying a Baroque-styled Patačić castle in Martijanec, the builders had chosen an elevated location south of the road; although Baroque never had this rule, the church and its shrines were facing east, leaving its representative western front to distant vision and sight from main incoming roads from Varaždin.«³⁴

In 1810, Botovo estate was arguing dangers river Drava was posing and possible threats.³⁵ A devastating flooding of Drava occurred in September 1812,³⁶ the next recorded one happened in 1814.; but for the place of Drnje the most devastating effects were by 1827 flooding; it ruined a bridge across Drava; entire part of the village Drnje was literally ripped away; however, the inhabitants managed to escape; Military Border authorities awarded them with lands on pastures toward Sigetec and Peteranec; Drnje people built new homes there (today's Pemija street). Flooding had such effects that in 1828 state elementary school and military company headquarters were moved to Peteranec (built on an elevated terrain and thus safer from flooding).³⁷ In 1830, more buildings in Drnje had to be relocated and moved due to Drava flooding threats.³⁸ For Drnje, this meant losing a number of central economic and administrative functions; also, it fell in times of economic crisis, stagnation, deterioration and decline even, which can be seen through

³² *Kanonske vizitacije Zagrebačke (nad)biskupije*, 189.

³³ Obadić 2007.

³⁴ Horvat-Levaj, 83.

³⁵ HDA, *Križevačka županija*, kut. 224, fasc. X, br. 531.

³⁶ *Spomenica župe Sigetec*

³⁷ *Spomenica župe Drnje*, n. dj., 3; *Spomenica škole Drnje*; *Spomenica župe Peteranec*

³⁸ HDA, *Generalkomanda*, kut. 45, br. R 39-18.

population decrease. Between 1826 and 1839, the total population of Drnje fell by a third almost, and 1/7 decrease in Botovo. At the same time, Torčec population had 42% growth, Peteranec 1/10, Hlebine a third, population of Sigetec and Đelekovec remained approximately the same. In Prekodravlje, the place of Gola witnessed a 130% increase in population. Interesting thing is, that in the period 1826-1839, except for Drnje and Botovo, there were no other settlements in neighboring areas to experience such a decrease in overall population.

Peteranec parish church documents speak of the 1827 catastrophic flooding: »It was so outrageous flooding, that on 11 June people of Sigetec used boats to reach the first Peteranec homes...«³⁹ Hlebine parish documents says the following: »On St. Barnaba's day on 11 June, in the evening hours, a horrible Drava flooding occurred; Drnje- Hlebine state road was turned into a huge river, bringing devastation to upper villages toward Sigetec and flooding them in the middle; people were leaving homes with children, cattle and personal things running away with cries of anguish and pain toward east, in part choosing vineyards and neighboring villages, with pitiful life awaiting; in Hlebine, water level came up to 3 ells; captain Senjan, company commander and corporal Horvat were able to reach the village main square with the cross by simple boat on state road all the way to Drnje's part of Drava.« Parish priest Jakob Antol added the following comment: »In those days, with sadness I had to witness flooding as huge as the sea in our village; I myself was taking people in with their cattle inside the parish backyard, as it was on elevated ground; as for fields, suddenly they were rich with fish instead of wheat, hayfields had no hay- instead of 8 piles of hay we had none; save us, Almighty, from thunders and bad weather that brings rain and Drava flooding and deliver us.«⁴⁰

In the neighboring village of Sigetec, there were the following records: » In 1827, in the month of June, in the eighth part of Assumption, such a flooding of Drava occurred that people had to flee their villages and Drava ran as flooding stream, grown out of proportion from the rains; yet it did not reach the church.⁴¹ River embankment along Sigetec toward Drnje to shield against streams and flooding of Drava, in 1828 were ordered by former lieutenant Josip Miljanović, in charge of Drava hydro regulation.« After the embankment was reinforced, flooding was somewhat scaled down.⁴² There were cases when Drava ripped the embankment, for example, in 1850, bringing devastation and danger not only to Drnje, but to Peteranec, Pitomača, Đurdevac, Virje and Novigrad.⁴³

Village of Brod was named after crossing (boat, a.k.a. brod,) across Drava; also, the very existence and building of the settlement here could be explained by communication on Drava. On that very spot roads leading from Military Border toward Hungarian province Somogy, into the villages of Vizvar and Bobovec (Babocsa) lying on the left bank of Drava river.⁴⁴ From its beginnings, Brod and its location were considered an easy, favored crossing over Drava; but unsuitable for living; it was threatened by frequent floods; the worst obstacle to further growth and development, however, was the river itself. After each flooding, the settlement would be fretted away, so people would ask for help from military authorities; requests for Drava's regulation, and more frequent demands that population be resettled; in 1777 the authorities ordered the Varaždin military order to take steps and prevent flooding on Drava river.⁴⁵

³⁹ *Spomenica župe Peteranec*; Komorčec, 21.

⁴⁰ *Spomenica župe Hlebine*

⁴¹ *Spomenica župe Sigetec*, n. dj.

⁴² *Spomenica župe Sigetec*, n. dj.

⁴³ HDA, *Generalkomanda 1849-1869*, kut. 107, R 39-95.

⁴⁴ Horvat 1933, 46.; Horvat 1941, 18.

⁴⁵ HDA, *Generalkomande Karlovac-Varaždin*, kut. 21.

1780 map provides planned Drava hydro regulation, nearby Brod, showing that Brod location is in the way of direct flooding wave of Drava, thus the frequent flooding; the actual problem was that Drava regulation would not solve threats to Brod by Drava floods. Saving Brod through hydro regulation was directly linked to protection of village Heresznye, being located across Drava, on the Hungarian side, just the opposite of Brod.⁴⁶ In any case, one of the two villages would be hit by Drava water wave. A solution was populating Brod village.

There is a saved document on environmental protection in the period 1781.-1782, with particular description of Drava river: »Village of Brod is 3 hours from Kalinovec, full 4 hours from Đurđevac...,two and a quarter from Sesvete... It lies on the right bank of Drava river, from Ždala forming a borderline with Hungary; the very same border further from Repaš woods is defined by Ždala... Drava in this section has a fast flow, not so high banks, and has sandy riverbed; the river is 150-200 steps wide, at certain points even 300 steps; it has 3 boats (rafts) that can be used for carrying smaller carts, two at most; Upper boat is called Molve raft, the second one is an hour ride away, called Virje raft, and the third one is nearby Brod village. When in Austria«s regions Karnten and Styria hard and long rains start to fall in Spring, when snows rapidly melt; the river then is enlarged so much in such a short time, that it spills over the banks and floods all over this area; the spots where the river floods over are right below the rafts of Molve and Virje, in ditches and lowered riverbed at Mertvica, Medvedička, Nova Mertvica, further below Đukin pathway into Drenovička metical ,ditches Belčin, Crnec and cattle barns Kingovo and Bakovci. This brings extra volumes of water into small tributaries, ditches etc. On the opposite bank, with entire section of the river going through wood being flooded; there only some elevated grounds and wood clearings are safe from flooding. The bursting river in a short time creates islets, reefs where there had been none; soon going down the river becomes unsafe and almost every year sees some boats stranded or sunken; due to flooding, long after the water level drops down, it ruins all roads in this area making them unusable; at some sections, alongside Drava river, some embankments are built; in general, they are of little or no use at all, as they sink down little by little in the end; some get shrubby, some fall down and/or get flooded and taken away by the stream, as the soil here is mixed with river sand and it goes away with water easily. Riverbanks of Drava on both sides are thick with vegetation and apart from the aforementioned rafts, there are no other crossings with Hungary. The best of these rafts is definitely the village of Brod crossing, as it carries light carts and goes to Hereszinye, lying on the other (Hungarian) bank...«⁴⁷

Based on saved data, it«s possible to monitor the process of destruction of entire village, and relocation (resettlement) of population to the same bank of Drava, however, to a new, elevated position, somewhat more distant from Drava (village of Brod and formation of a new settlement (Ferdinandovac, around year 1844). Southeast of the spot, where Ždalica stream (Ždala) is infused into the river Drava by mid 19th century there was the village of Brod; it was located on the right bank of Drava river; in the saved maps and charts from 1845, it«s obvious that Brod village had 3 parallel (main) streets, following direction of Drava flow (north-south),and two smaller streets, vertical onto the main streets in east-west direction. On the left (Hungarian) bank of

⁴⁶ Slukan Altić 2002 (a), 138.

⁴⁷ Đurđevačka pukovnija 2003, 164-165.

Drava river, facing Brod⁴⁸ on the opposite side, there was Hrasinja village (today's Heresznye).⁴⁹ The same structure is on the map dating back to 1780⁵⁰

By looking at the map, we have a visual impression there were twin settlements on both sides of the river.⁵¹ The last remains of Brod village had been abandoned completely; this is clearly visible on the map from 1847. Instead of the former village there was only the name »old Brod«. ⁵² Mirela Slukan Altić is absolutely right to consider Brod one of the most drastic models of Drava influence on settlements; she also believes that since the riverbed had moved, it brought destruction from the new Drava flow.⁵³

According to research by Paškala Cvekana, resettlement of entire Brod population in 1844 was direct consequence from soil erosion from the river, as the village had had canals dug up; the same year a new settlement Ferdinandovac was built,⁵⁴ only a few kilometers away from Brod, due north. Military Border authorities organized relocation to Ferdinandovac of all former Brod inhabitants- »eighty-three families with 830 people from Brod«. ⁵⁵

On the map from 1845, we can that in the middle of former village Brod there had been a square with parish church; St.Nicholas chapel in Brod, had been built, according to Paškal Cvekan, between 1717 and 1719. The chapel was run by Bobovec monks (today«s Babocsa) and Vizvar.⁵⁶ This presented no problem, as Prekodravlje parishes of Bobovec and Vizvar had been governed by Zagreb archbishop«s diocese.⁵⁷ Those had been included in Zagreb diocese until 1777; after that year, they were added to Veszprem diocese..⁵⁸ This is why in 1782 Brod had an independent, self-sufficient curacy.⁵⁹ Due to constant threats from the river Drava, living conditions in Brod were poor, in a 1806 letter, parish priest Grga Štefok described well the life of Brod inhabitants: «Curacy has 475 souls; on Drava there«s a constant care for watermills; each year 1000 souls from Đurđevac military company build embankments, so Brod priest needs to care their religious life and their needs; the church structure is wooden and decaying and a new one should be built. People say Drava threatens the church and all inhabitants of Brod; there«s no adequate location for building the new church; entire Brod area is flooded; people ask for panel to be sent to check out the situation and decide on relocation of entire village. The church misses other things needed for service to God, yet people are so poor they cannot provide«⁶⁰

In 1814. a new parish had been established in Brod, and later on relocated together with inhabitants, to Ferdinandovac.⁶¹ Life was still difficult to the inhabitants, as constant flooding in 1821, 1827, 1833, 1836, 1840 and 1843 kept bringing danger; among major flooding, the most horrific ones were in 1827, when Drava water filled homes and barns, and even in church there was 2 ells of water; flooding destroyed all crops, so people from Brod had to resettle in surro-

⁴⁸ M. Slukan Altić 2002 (a), karta na str. 146.

⁴⁹ U matičnim knjigama župe Vizvar (Republika Mađarska) tijekom 18. stoljeća koriste se oba naziva za ovo selo (Hrasinja i Heresznye). Župni ured Vizvar, Matična knjiga krštenih (1738-1783); Matična knjiga vjenčanih (1735-1806.).

⁵⁰ Slukan Altić 2001, karta na str. 19; Slukan Altić 2002 (a) , karta na str. 138.

⁵¹ Slukan Altić 2002 (a), karta na str. 138, 146.

⁵² Slukan Altić 2002 (a), karta na str. 147.

⁵³ Slukan Altić 2002 (a) , 135.

⁵⁴ *Spomenica župe Ferdinandovac*

⁵⁵ Cvekan 1996, 41, 60.

⁵⁶ Cvekan 1974, 11-13.; matične knjige župa Babocsa i Vizvara donose oba naziva: Bobovec i Babocsa.

⁵⁷ Nadbiskupski arhiv Zagreb (dalje NAZ), KV, Prot. 92/IV; 93/V; 94/VI; 177/I; 178/II; 178/III; 180/IV; 211.

⁵⁸ Lukinović 1995, 28, usp. kartu između str. 24 i 25.

⁵⁹ NAZ, KV, Prot. 97/IX, 269.

⁶⁰ Pismo je objavljeno u: Cvekan 1974, 14.

⁶¹ *Spomenica župe Ferdinandovac*

unding villages to cope with hardship. Pavao Vuk, who in the period 1829 -1843 served as the parish priest in Brod, wrote to military authorities claiming floods endangered the whole village and asked that Drava river be hydro regulated and water channels dug. He suggested that the entire village is relocated and moved a more appropriate place.⁶²

Although from previously stated facts and data we could conclude that life was relatively unattractive in village Brod flooded area, having negative effects on number of inhabitants in settlements alongside Drava, some data are actually somewhat different. If we check out the table enclosed, we can clearly decide, that since early 19th century until permanent resettlement of Brod to a new location in 1844, almost a continuous growth in the period 1800 -1844 in population (nearly doubled).⁶³

On the map from 1780 (first measurement of Drava) and on hydro regulation project (from 1797) there was a proposed intersection meanders, just west of Brod, yet never executed.. According to research by Mirela Slukan Altić, the problem of saving Brod was aiming at the opposite village on Hungarian side - Heresznye. Both settlements were on the opposite banks of the river; and this interrupted hydro regulation possibilities..⁶⁴ Mirela Slukan Altić added some facts to previous research by Paškal Cvekan⁶⁵ relating to catastrophic flooding in 1847/48, when the water pierced through embankment south of Brod and turned a former village into river islet. The panel established that in front of topographically lowest part of so-called Vizvarske jame there had been a meander, and its tip had deteriorated through heavy erosion, it broke down and the water continued its flow in Vizvarski jarak, just south of Brod.⁶⁶ As it was impossible to perform a quality hydro regulation of Drava in vicinity of Brod and Heresznye, the nature itself took care of this problem; river Drava moved the village Brod from its right bank (southern side) to its left (northern) riverbank; at the same time, it moved its flow further away from Heresznye village, holding to its new course until the present day. As we had mentioned earlier, the main reason for resettlement of entire population to a new location was probably digging up water channels, inhabitants of Brod finally decided to south of Drava«s new course, as they had been cut off from Krajina's part of Podravina, they always belonged. The area, where Brod used to be, today's is one of Prekodravlje in Rep. Of Croatia.⁶⁷

During 18th and 19th centuries, several land survey and hydrographic works were performed here; a hydrographic map »Podravina region- from Hlebine to Virovitica and accompanying hydro works« emerged as a product; hydro technical works on Drava river until the second half of 19th century were performed to cut down the river stream, by cutting its meanders. These works helped river navigation. Only then works like embankment reinforcement, clearing and deepening riverbeds, digging drainage canals etc. were initiated. Since the beginning of 20th century, Drava hydro works have been performed more or less constantly. By constructing hydroelectric plants on the river upper stream, Drava has been finally regulated in great part.

In Varaždin and Koprivnica areas, the most important hydro technical works were performed in the second half of 19th century. In 1859, the gazette »Narodne novine« vol. 256, 257, 264, 265 have articles about huge flooding in Varaždin, bringing great damage. This is why the town council had the river banks reinforced, thus effectively preventing further flooding. Riverbank reinforcement, embankment, drainage of neighboring fields enabled more intensive use of arable land.

⁶² Cvekan 1996, 40-41.

⁶³ Krivošić 1983, 163; Cvekan 1974, 14; Cvekan 1996, 60.

⁶⁴ Slukan Altić 2002 (a), 135.

⁶⁵ Cvekan 1974; Cvekan, 1996.

⁶⁶ Slukan Altić 2002 (a), 135.

⁶⁷ *Veliki atlas Hrvatske*, 16

Drainage of fields also provided effects in composition of flora and fauna, with decreased number of species that flourish in swamps and marshland. However, even bigger influence on nature could be attributed to building hydroelectric plants. In Varaždin area, in the period 1970s and 1980s, 3 hydro power plants were built - Varaždin, Čakovec and Donja Dubrava⁶⁸. Their construction finalized regulation of Drava stream, with new source of electric energy from immediate vicinity of Varaždin, at the same time cutting down possibilities of flooding to minimum. However, building and operating of hydro power plants natural cycles in the river have been disturbed, which led to extinction of some fishes and some plants species altogether from the river.

For centuries river Drava flooding affected people and their settlements; however, some cases recorded in 17th, 18th, 19th centuries have been relatively good indicator of these influences. In this paper, the author has tried to limit certain chosen aspects of river flooding to destructive environmental influence on people. The paper provides certain basic information on attempts to stop flooding through hydro regulation of rivers.

SAŽETAK

U tekstu autori govore o poplavama rijeke Drove na prostoru varaždinske koprivničke Podravine tijekom 17., 18. i 19. stoljeća stavljajući ovu mikroregiju u širi srednjoeuropski kontekst. Navodi da su prvi detaljni planovi regulacije rijeke Drove počeli krajem 18. stoljeća. Regulacije su bile potrebne radi toga što su relativno česte poplave znatno ugrožavale pučanstvo. Kolika je važnost bila u regulaciji Drove vidi se po posljedicama poplava. Primjerice poplave koje su se odvijale početkom 19. stoljeća su utjecale da se dio stanovništva iz pridravskih područja morao preseliti na prostor Prekodravlja u okolici današnje Gole. Uz to su poplave mogle imati i utjecaj na upravne promjene pa je 1829. odnosno 1830. godine zbog poplava naselje Drnje izgubilo čitav niz upravnih funkcija koje su preseljene u susjedni Peteranec koji je bio siguran od poplava.

BIBLIOGRAPHY (LITERATURA):

- 1) Androić Mirko, Varaždinski trgovac Vinko Perger, *Kaj*, br. 10, Zagreb 1968.
- 2) Blašković Vladimir, Osobitosti Drove i naše granice u Podravini, *Podravski zbornik* 2, Koprivnica 1976., 140-145
- 3) Brozović Rončević Dunja, Rijeka Drava u kontekstu svoga imena, *Ekohistorija Podravskog višegranačja* br. 28, <http://www.podravina.net/pdf/radekhist028f.pdf>, 01.05.2007.
- 4) Cvekan Paškal, Ferdinandovac. *Od Broda na Dravi do Ferdinandovca u močvari*, Ferdinandovac 1996.
- 5) Cvekan Paškal, *Župa i selo Ferdinandovec prigodom 130 godina postojanja: 9.XI.1844.-9.XI.1974.*, Koprivnica 1974.
- 6) *Enciklopedija Jugoslavije* 3, Crn-Đ, Jugoslavenski leksigografski zavod «Miroslav Krleža», Zagreb 1984.
- 7) Feletar Dragutin, *Legrad*, Zrinski, Čakovec 1971.
- 8) Horvat Rudolf, *Povijest grada Varaždina*, HAZU, Varaždin 1993.
- 9) Horvat Rudolf, *Hrvatska Podravina*, P. Kvaternik i dr., Zagreb 1933.
- 10) Horvat Rudolf, *Župe u Hrvatskoj Podravini*, Hrvatska prošlost, knj. 2, Zagreb 1941.
- 11) Horvat-Levaj Katarina, Prilog istraživanju barokne sakralne arhitekture Podravine - župna crkva Sv. Martina u Martijancu, *Podravina*, vol. V, br. 10, Koprivnica 2006., 80-99
- 12) *Hrvatska enciklopedija*, Zagreb 2004.
- 13) *Kanonske vizitacije Zagrebačke (nad)biskupije* (ur. Hrg Metod i Kolanović Josip), Arhiv Hrvatske, Zagreb 1989.
- 14) Klemm Miroslav, Planovi Čakovca, Kotoribe i Legrada iz druge polovice 17. stoljeća u Bečkom vojnopovijesnom muzeju, Radovi, Zavod za znanstveni rad HAZU Varaždin, sv. 1., Varaždin 1986., str. 193-202.
- 15) Komořec Dragutin, *Kronika: 200 godina crkve u Peterancu: 1773.-1973.*, Peteranec: vlast. nakl., Koprivnica 1973.

⁶⁸ Sever 2000, 12-13

- 16) Kovačić Vlado, Hidrografske karakteristike regije Varaždin, iz Ribić Ivo (ur.) *Varaždin i njegova regija*, Varaždin 1957., 62
- 17) Lukinović Andrija, *Zagreb - devetstoljetna biskupija*, Glas koncila, Zagreb 1995.
- 18) Obadić Ivan, Utjecaj rijeke Drave na demografska kretanja u varaždinskoj Podravini krajem 18. i početkom 19. stoljeća, u pripremi za objavljivanje
- 19) Petrić Hrvoje, Utjecaj rijeke na pogranična naselja. Primjer rijeke Drave u 18. i 19. stoljeću, *Ekonomska i ekohistorija*, br. 1., Zagreb-Samobor 2005, 37-62
- 20) Petrić Hrvoje, *Općina i župa Drnje*, Nakladna kuća »Dr. Feletar«, Koprivnica 2000.
- 21) Sever Zvonimir, *Hidroelektrane u Hrvatskoj*, HEP, Zagreb 2000
- 22) Slukan-Altić Mirela (a), Hidroregulacije Drave i njezini utjecaji na transformaciju prirodnog i kulturnog pejzaža Podravine, *Podravina* 1 (2002), 2, Koprivnica 2002., 128-152
- 23) Slukan-Altić Mirela (b), Legrad - grad na sutoku rijeka i razmeđu država, *Podravski zbornik*, 28 (2002), Muzej grada Koprivnice, Koprivnica 2002., 111-120
- 24) Slukan-Altić Mirela, Hidrografske karte rijeka kao izvori za proučavanje dinamike hidrografskih odnosa, *Hrvatske vode*, 9 (2001), 34, Zagreb 2001., 15-29
- 25) Težak Spomenka, Varaždinci i rijeka Drava, u: *Život uz Dravu nekad i danas*, Gradski muzej Varaždin 2004., 35-46
- 26) *Veliki atlas Hrvatske*, Borovac Ivanka (ur.), Mozaik knjiga, Zagreb 2002.
- 27) *Vode Hrvatske*, Bolić Jovan (ur.), Hrvatska elektroprivreda, Zagreb 1992.
- 28) Vujasinović Branko, *Radovi na uređenju voda u Hrvatskoj u 17. stoljeću*, Hrvatska vodoprivreda, br. 96, Zagreb 2000.
- 29) Zorković Anđelko, *Povijesnica općine Petrijanec*, Općina Petrijanec, Varaždin 1995.
- 30) Živaković-Kerže Zlata, Drava kao os života, razvoja i odnosa kroz povijest (poseban osvrt na donji tok rijeke), *Analiz Zavoda za znanstveni i umjetnički rad u Osijeku*, 18 (2002), Osijek 2002., 41-69

SOURCES (IZVORI):

- 1) Državni arhiv Varaždin (DAV), *Arhiv grada Varaždina*, Radikalni arhiv, II, br. 958 (Državni arhiv Varaždin (DAV), *Arhiv grada Koprivnice*, kut. 6, br. 232/779., br. 234/779
- 2) Đurđevačka pukovnija, *Hrvatska na tajnim zemljovidima*, knj. 8, priredili M. Valentić, I. Hrobec i I. Jukić, Zagreb 2003.
- 3) Hrvatski državni arhiv Zagreb (HDA), *Generalkomanda*, kut. 10.
- 4) Hrvatski državni arhiv Zagreb (HDA), *Generalkomanda*, kut. 21, br. 11/285.
- 5) Hrvatski državni arhiv Zagreb (HDA), *Generalkomanda*, kut. 27, br. 3/13.
- 6) Hrvatski državni arhiv Zagreb (HDA), *Generalkomanda*, kut. 45, br. R 39-18.
- 7) Hrvatski državni arhiv Zagreb (HDA), *Generalkomanda 1849-1869*, kut. 107, R 39-95.
- 8) Hrvatski državni arhiv Zagreb (HDA), *Generalkomande Karlovac-Varaždin*, kut. 21.
- 9) Hrvatski državni arhiv Zagreb (HDA), *Križevačka županija*, kut. 224, fasc. X, br. 531.
- 10) Krivošić Stjepan *Stanovništvo Podravine 1659-1859. godine*, Podravski zbornik, sv. 9, Koprivnica 1983.
- 11) Nadbiskupski arhiv Zagreb (NAZ), KV, Prot. 92/IV; 93/V; 94/VI; 177/I; 178/II; 178/III; 180/IV; 211 Nadbiskupski arhiv Zagreb (NAZ), KV, Prot. 97/IX, 269.
- 12) *Spomenica župe Sigetec*, rukopis, Župni ured Sigetec
- 13) *Spomenica župe Drnje*, rukopis, Župni ured Drnje
- 14) *Spomenica škole Drnje*, rukopis, Arhiv Osnovne škole Drnje
- 15) *Spomenica župe Ferdinandovac*, Župni ured Ferdinandovac
- 16) *Spomenica župe Hlebine*, Župni ured Hlebine
- 17) *Spomenica župe Legrad*, Župni ured Legrad
- 18) *Spomenica župe Peteranec*, Župni ured Peteranec
- 19) ZHS - *Zaključci Hrvatskog sabora* (pripremili Buturac, J; Stanisavljević, M; Sučić, R; Šojat, V; Zmajić, B.), knj. 1-2, Zagreb 1958.
- 20) Župni ured Vizvar, *Matična knjiga krštenih (1738-1783); Matična knjiga vjenčanih (1735-1806.)*.