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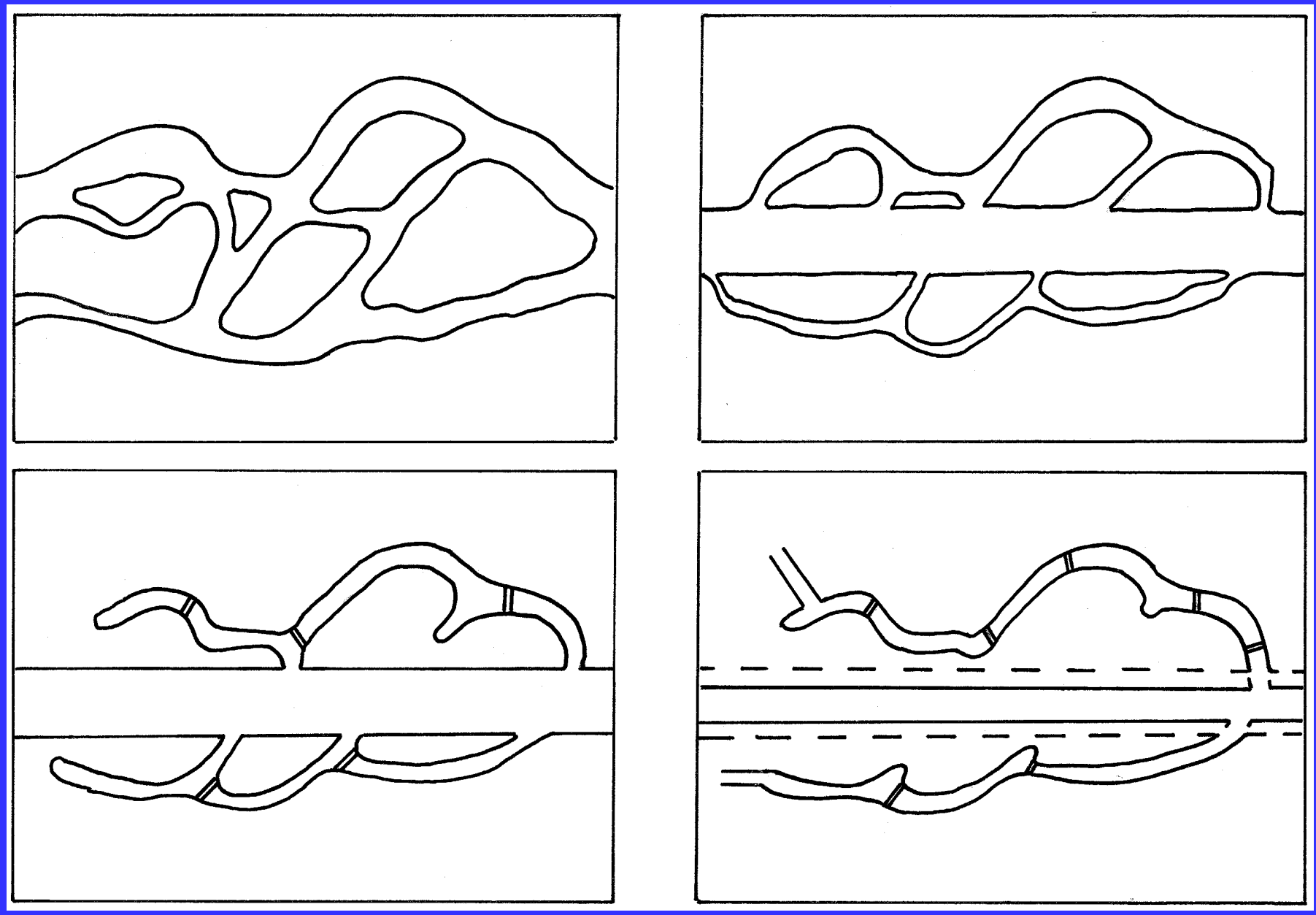
Potentials of the future Danube ecosystems

Danube Monitoring Scientific Conference Publication, [illegible], chapter:

VII.1. Potentials of the future Danube ecosystems

The <u>ecosozological status of the Danube ecosystem</u> and its adjacent floodplains declined proportionally to its anthropogenous changes, which occurred especially in the last 150 years. Shifting of the river to the power plant canal was huge, but only one of many stresses upon Danube.

From World Heritage via national park to „protected“ landscape



Interpret changes of the natural environment from the view of secular changes !

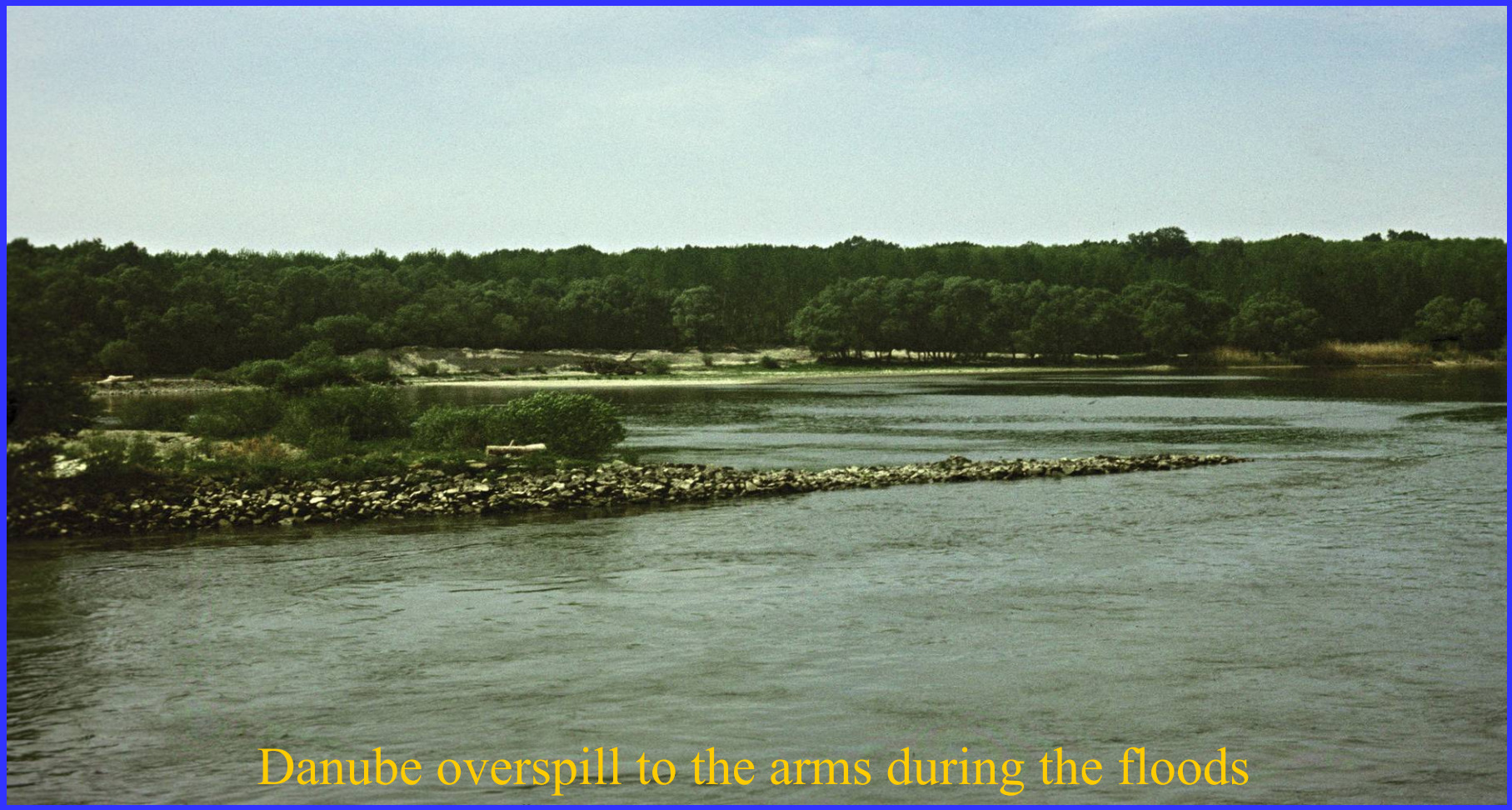
The reference state does not mean the perception of the last 3 generations :

Danube in the past had not created favourable conditions for permanent transitional floodplain forests. On the contrary, such a large river must have created a permanent retention capacity in the form of wetlands and flooded meadows.

Even the old river´s inundation area (prior to WW II.) ment the necessity not only concentration of the original flow capacity within a much smaller area , but also decrease in diversity of biotops and species composition.

If we have, in spite of this, to define **the optimal ecological state**, ***it will be that, which most converges to*** **the genuine natural state (not to the adaptively natural one).**

The previous pattern of anastomosed water courses is renewed only seldom as it requires discharges higher than 4000 m3/s



Danube overspill to the arms during the floods

The agreed discharge in the old river bed does not cover the whole bottom. Spontaneous overgrowth is ecologically interesting, but endangering the flood control.

Transect at Vojka, spring 2003

Previous natural seasonal dynamics at Dunajské kriviny

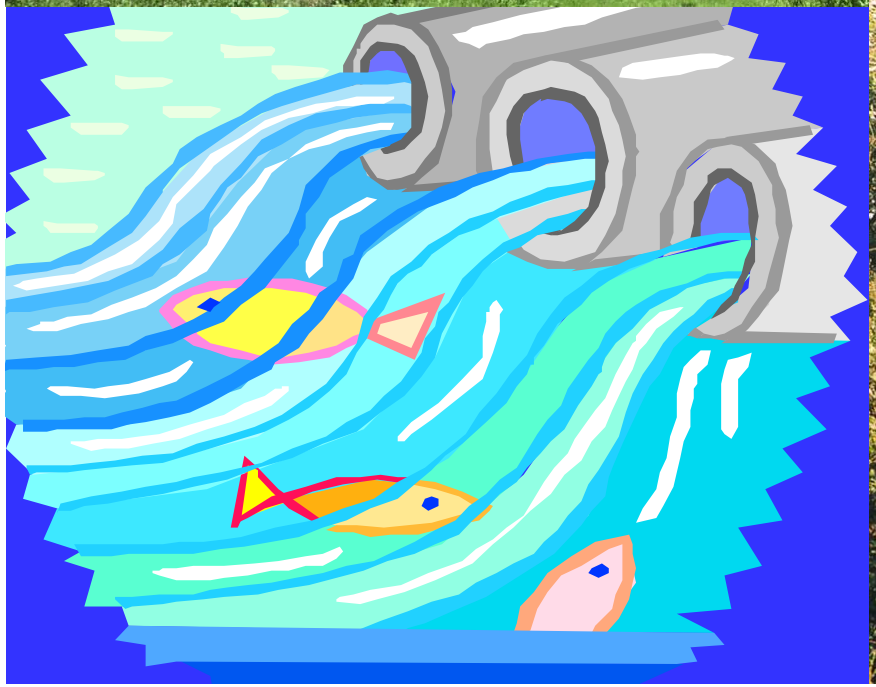

Spring 1991


Summer 1991


Autumn 1991


Summer 1993 (the first after)

Changes during the following years



Bodícka brána 1
prior regularly flooded depressions

Now overgrowed by Negundo

Bodícka brána 2

Doom of shallow waterbodies

Kráľovská lúka,
remnant of an
important side arm

as example of
„lucky“ management

We consider the **present state of the old riverbed of the Danube as**

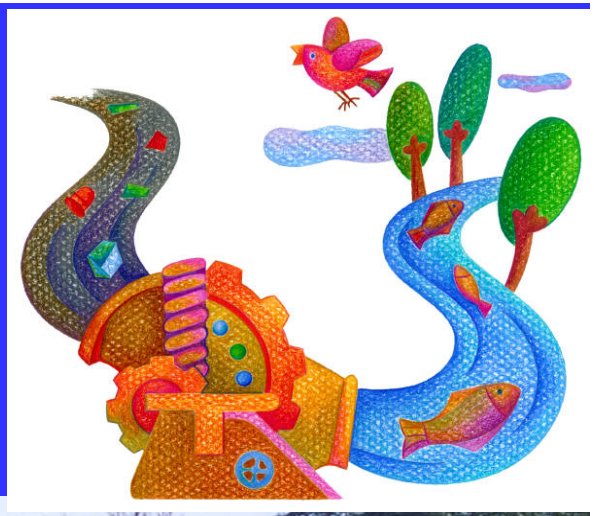
ecologically dysfunctional

and, from the viewpoint of heavy navigation also

needless.

Therefore, it can be abandoned so far as concerns the discharging of water. However, it cannot be filled or successively overgrown by floodplain forests because of its ***flood control role.*** *Instead, it must be maintained without cost consuming technologies (removal of growths, dredging, etc.) as a corridor* ***able to lead discharges exceeding the total aggregative capacity*** *of the bypass canal, the rehabilitated river arm systems and floodplain forests on both riversides.*

The river´s memory



Šulianska brána, 30. 5. 2003

The landscape and flow of the river, which forms it, can again return to equilibrium after a well considered intervention

Principal preconditions:

It is **not possible to optimise all** parametres of the ecosystem

It is necessary to provide inundation by a natural flow rate matching to its size and to restore, in this way, **autoregulation of the naturalness**

Limits to restoration:

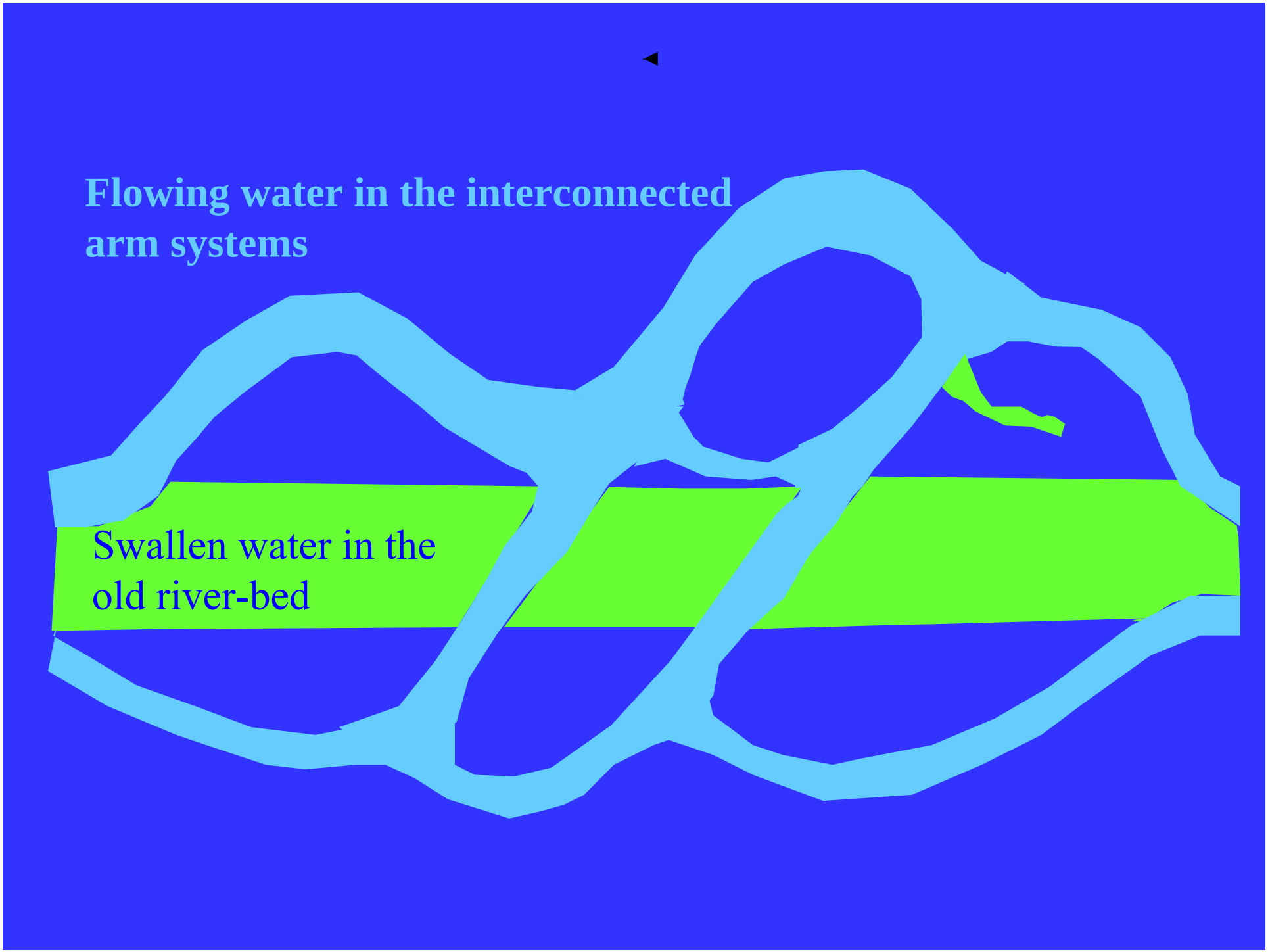
The **existing hydraulic structure** (power plant and its regime)

Requirements of the **flood control**

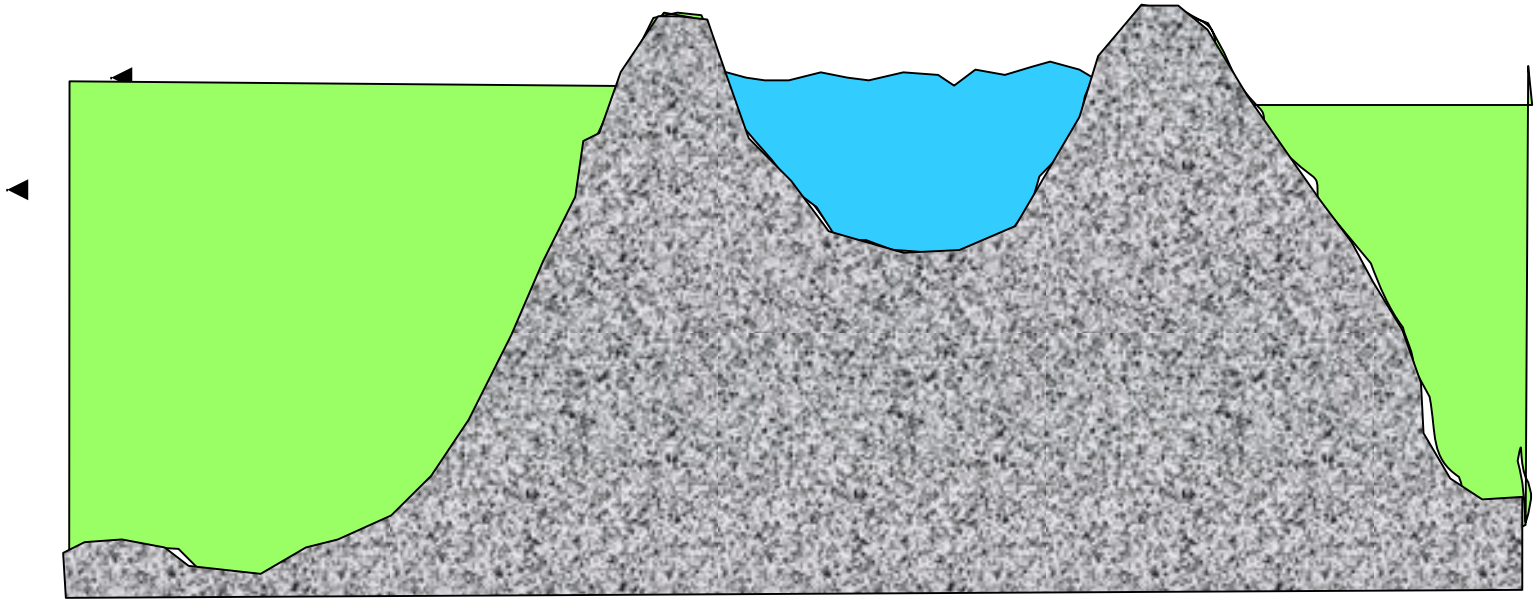
Limits imposed by restoration:

Decrease the intensity of forestry, prefer native species !

Limit the recreation to a degree that does not conflict with the environment naturalness !

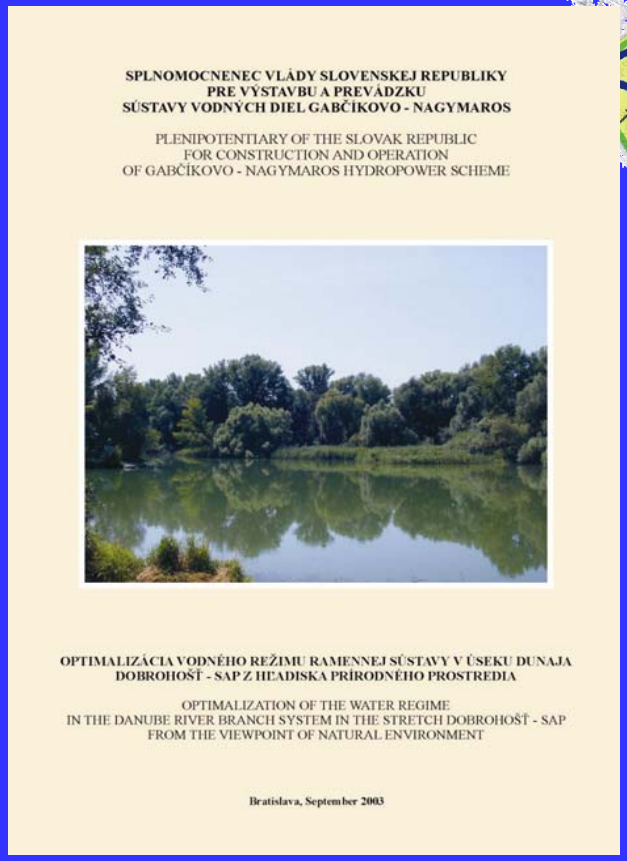

Flowing water in the interconnected arm systems
Swallen water in the old river-bed

Crossing the old river bed



Example of a new eupotamal

Lisický, Mucha (sc. eds), 2003: Optimalization of the water regime in the Danube river branch system in the stretch Dobrohošť – Sap from the viewpoint of natural environment



SPLNOMOCNENEC VLÁDY SLOVENSKEJ REPUBLIKY
PRE VÝSTAVBU A PREVÁDZKU
SÚSTAVY VODNÝCH DIEL GABČÍKOVO - NAGYMAROS

PLENIPOTENTIARY OF THE SLOVAK REPUBLIC
FOR CONSTRUCTION AND OPERATION
OF GABČÍKOVO - NAGYMAROS HYDROPOWER SCHEME

OPTIMALIZÁCIA VODNÉHO REŽIMU RAMENNEJ SÚSTAVY V ÚSEKU DUNAJA DOBROHOŠŤ - SAP Z HĽADISKA PRÍRODNÉHO PROSTREDIA

OPTIMALIZATION OF THE WATER REGIME
IN THE DANUBE RIVER BRANCH SYSTEM IN THE STRETCH DOBROHOŠŤ - SAP
FROM THE VIEWPOINT OF NATURAL ENVIRONMENT

Bratislava, September 2003

Main principles:

The arm systems of inundation have to take over the functions of a bearing system of an anastomosing eupotamal.

To lead the flowing Danube water from one side arm system into the other.

During its crossing of the old riverbed, the water shouldn’t lose its expressively lotic character.

If an agreement about crossing of the old riverbed will not be reached, there could exist two parallel arm systems.

But in this case it would be ecologically worthless or even undesirable to connect them with the backwater ecosystem in the Old Danube.