“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation
in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation
in Rome Metropolitan Area

ANIENE RIVER
PONTE DI NONA DITCH
BELLA MONACA DITCH
OSA DITCH

URBAN RIVER REHABILITATION CONFERENCE
Dresden, 21st – 23rd of September 2005
“Ripples in the Pond”: Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area

Main problems of secondary water courses:

...are rooted in the city’s uncontrolled expansion waves of the last century, when urban sprawl, the so-called “Borgate”, have covered large areas of the Roman periphery, causing major problems.

- in the provision of basic infrastructure services,
- in the sanitary sector,
- in the social structure and
- in environmental resource management.

Until today, authorities are struggling with the re-qualification of the Borgate areas in the City’s periphery and, with the absence of strategic urban planning, solutions often have to assume bottom up, patchwork character.
“Ripples in the Pond”: Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area

Tor Bella Monaca and Borgata:
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation
in Rome Metropolitan Area
1998: the Tor Bella Monaca borgata was subject to a European regeneration project “Urban”

Original project: the rehabilitation of the ditch for about 1 km length as an accompanying measure

Proposal: to use the European finances to include the urban reality

Aims and objectives

• to make the water course project a vehicle for public participation and bottom–up urban regeneration
• to tackle the obvious environmental problems around the former water course and to bring it back to a more natural state,
• to offer an innovative contribution to the urban regeneration of the Borgata, meaning to have a nature based project become a motor of local development and identity
The state of secondary water course network

Period from 1890 – 1970 urban sprawl:
- the presence of water courses was partly ignored
- completely built over or
- used as sewage canals.

In the 80s and 90ies:
- crisis management by administration
- construction of sewage collectors alongside the water course

However, still today, not every area is covered by the sewage infrastructure, so large urban sprawl areas still use natural water courses for sewage transport.
“Ripples in the Pond”: Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area

The state of secondary water course network

- **Limited capacity** of sewage collectors; provided with overflows that discharge mixed sewage into the natural river beds when the limits are reached.

- Rainfalls in the Roman area tend to be heavy and violent, and the Roman area is traditionally water rich (1000 mm/year in a few month).

- Every major rainfall produces a capacity overflow in the collectors and thus waves of virtually untreated sewage and garbage flood the water courses and accumulate downstream.

- Accumulation downstream in Aniene and Tiber Rivers, inner city areas, massive fish dying.
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation
in Rome Metropolitan Area

REHABILITATION OF THE FOSSO TOR BELLA MONACA

SMALL BAD SMELLING WATERHOLES REMAIN AFTER RAINFALLS IN THE BED OF THE DITCH

AFTER THE IMPLEMENTATION: PUTTING CLEAN WATER INTO THE DITCH THAT HAS BEEN PURIFIED IN THE WETLAND TREATMENT

CONSTRUCTED WETLAND SYSTEM

COLLECTOR

DITCH

WATERHOLES

SEWER OVERFLOW

DITCH TUBED

SEWAGE FROM HOUSING

DITCH

SEWAGE FROM HOUSING

DITCH
Natural experiment for urban regeneration

The basic idea: get some clean water back into the natural river bed, as a basis for the subsequent rehabilitation measures reshaping of the banks, widening of the section, a flood retention and sedimentation basin, log crib walls, willow cuttings, vegetated block stone embankments, planting of native water plants, shrubs and trees, etc..

The proposal:
- clear water with natural sewage treatment plant (subsurface flow) and clearing ponds with water plants (FWS),
- use project to regenerate the neighbourhood and create connection to urban identity
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation
in Rome Metropolitan Area
“Ripples in the Pond”: Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation
in Rome Metropolitan Area

Urban regeneration:

The natural sewage plant was proposed as a public garden and park, with foot and cycle paths, a footbridge to the Bella Monaca ditch, children’s play areas, information stands, etc.

• experiment for the integration of water course rehabilitation, water management and natural depuration in urban areas, thus make it a kind of pilot project for the definition of a new type of ”public garden–implant”.

• low impact–low cost alternative,
• adaptable for other areas in the Roman periphery
• adequate for the given mix of urban sprawl without infrastructure, low density and large non built up areas with degraded and derelict land
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation
in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area

**Obstacles: Administrative problems and collective consciousness**

- technology to new, too green, too soft
- too urban (by 1998, only 30 natural sewage treatment projects in Italy, none of them in urban area)
- no commitment by local and central authorities
- Technical problems due to complete lack of preparation and support or even interest by the local authorities.

Many of the proposed bio soil engineering measures could not be carried out because of wrong information about the parallel collector or missing responsibilities for abusive sewage outlets.

Some of the vital components of the project were only carried out through the private initiative of the planners, such as the input for two years of planning laboratory with the kids of the adjacent schools, participation initiatives within the neighbourhood, the pressing for a maintenance contract for the whole area, the analysis of the chemical composition of the treated water etc.
“Ripples in the Pond”: Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation
in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation
in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation
in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation in Rome

BELLA MONACA DITCH
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation
in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation
in Rome Metropolitan Area
“Ripples in the Pond”:
Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area
"Ripples in the Pond": Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area

Obstacles: Administrative problems and collective consciousness

the project has encountered multilevel obstructions on the administrative plain:

– fragmentation of competences for planning, water issues, nature protection and waste disposal,
– barriers between administrative units that don’t match landscape units or river drainage basin (WFD)
– notorious lack of comprehensive planning,
– widespread lack of implementation of regulations
– hostile attitude towards new approaches
– little financial resources
– inertia of planning system
“Ripples in the Pond”: Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area

**Obstacles: Administrative problems and collective consciousness**

...even more limiting than the common inertia in administration is, that there is *little or no problem awareness* in the first place.

If *problems are not perceived* as such, be it for deeply rooted habits of ‘laissez-faire’ style land use management, or for *exploitation of resources* instead of sustainable development, then *solutions are neither sought nor welcome*.

When eight years ago, the Tor Bella Monaca rehabilitation project was proposed and accepted, the City of Rome authorities didn’t quite know what they were heading for.... *Creating problems*....
### Integral planning (Wilber): All Quadrants

<table>
<thead>
<tr>
<th>Upper left (individual interiority)</th>
<th>Upper right - (individual behavior)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal responsibility of users and leaders</td>
<td>Water quality, quantity, distribution</td>
</tr>
<tr>
<td>Environmental awareness</td>
<td>Structural index</td>
</tr>
<tr>
<td>Personal Integrity</td>
<td>Soil bio engineering methods</td>
</tr>
<tr>
<td>Value Meme structure (<em>spiral dynamics</em>)</td>
<td>Technical solution</td>
</tr>
<tr>
<td>Information and education</td>
<td>User habit</td>
</tr>
<tr>
<td>Private initiative</td>
<td>behavioral patterns</td>
</tr>
<tr>
<td>convictions and beliefs</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lower left (collective culture)</th>
<th>Lower right (collective systems)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional land use techniques</td>
<td>Law and regulations</td>
</tr>
<tr>
<td>Approach to water use</td>
<td>Water Framework Directive</td>
</tr>
<tr>
<td>Respect of and attitude toward laws and regulations</td>
<td>Polluter pays principle</td>
</tr>
<tr>
<td>Environmental awareness, cultural approach to nature, meme structure</td>
<td>Strategic spatial planning</td>
</tr>
<tr>
<td>Openness to innovation, participation</td>
<td>Landscape planning</td>
</tr>
<tr>
<td>Administrative habits</td>
<td>Urban systems</td>
</tr>
<tr>
<td>Openness to sustainable uses</td>
<td>Open space policy</td>
</tr>
<tr>
<td></td>
<td>Provision of basic infrastructure</td>
</tr>
<tr>
<td></td>
<td>Administrative system</td>
</tr>
</tbody>
</table>
"Ripples in the Pond":
Problem Solving with Secondary Water Course Rehabilitation in Rome Metropolitan Area

<table>
<thead>
<tr>
<th>Integral planning (Ken Wilber): AQAL All Quadrants All Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upper left (individual interiority)</strong></td>
</tr>
<tr>
<td>Personal responsibility of users and leaders: single persons, private initiative (green)</td>
</tr>
<tr>
<td>Environmental awareness: beginning with new generations</td>
</tr>
<tr>
<td>Personal Integrity: abusive system</td>
</tr>
<tr>
<td>Value Meme (spiral dynamics): blue, red</td>
</tr>
<tr>
<td>Information and education: beginning</td>
</tr>
<tr>
<td><strong>Upper right - (individual behavior)</strong></td>
</tr>
<tr>
<td>Water quality: extremely bad, IV, V</td>
</tr>
<tr>
<td>quantity: 1000 mm/a, distribution winter month</td>
</tr>
<tr>
<td>Soil bio engineering methods: limited, presence of sewage collector, solid rock, lack of water, lack of rain, lack of maintenance</td>
</tr>
<tr>
<td>user habits: violence, destruction, little problem awareness</td>
</tr>
<tr>
<td><strong>Lower left (collective culture)</strong></td>
</tr>
<tr>
<td>water traditionally abused</td>
</tr>
<tr>
<td>little respect of laws and regulations</td>
</tr>
<tr>
<td>low environmental awareness, cultural approach to nature: abusive</td>
</tr>
<tr>
<td>v-meme structure: blue, red in periphery</td>
</tr>
<tr>
<td>little openness to innovation, participation</td>
</tr>
<tr>
<td>Administrative habits: inertia, little problem awareness</td>
</tr>
<tr>
<td>Openness to sustainable uses: beginning</td>
</tr>
<tr>
<td><strong>Lower right (collective systems)</strong></td>
</tr>
<tr>
<td>Law and regulations not comprehensive, not implemented, habit rights</td>
</tr>
<tr>
<td>Polluter pays principle: not applied</td>
</tr>
<tr>
<td>Strategic spatial planning: crisis management</td>
</tr>
<tr>
<td>Urban systems: planning by doing, social problems in periphery, violence</td>
</tr>
<tr>
<td>Provision of basic infrastructure: crisis management</td>
</tr>
<tr>
<td>Administrative system: competition</td>
</tr>
</tbody>
</table>