

Tevero Cavo: An Ecological Enfrastructure for Rome between Past and Future

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Abstract

We believe that the new frontiers of Information Technology have to deal with the central role of Infrastructures in the existing city. Indeed, this new generation of infrastructures will allow the 'redirection' of the development. To arrest developments in "Green fields" outside the cities and redirect developments towards "Brown areas" in the existing cities we need infrastructures of new generation. In this historical moment, a development phase has to focus on the use of urban voids in the existing city to stop the endless urban sprawl. As an example, here I present and discuss the urban project "Tevero Cavo" in Rome.

Introduction

Tevero Cavo is the name of an urban project developed between 2012 and 2018 – in the Faculty of Architecture at 'Sapienza – Università di Roma' – within the university chair of Antonino Saggio. This project involved Ph.D. students, graduating and senior students, in designing almost three hundred projects for the northern sector of Rome, which is marked out by the presence of the river Tiber. The design proposal sees the river Tiber as a new generation infrastructure based upon five essential principles ranging from multifunctionality to ecological systems, from mobility to information networks, up to the relaunch of the civic and symbolic role of the infrastructures to foster interventions in the built environment. In this way, the river acts as a fly-wheel to invert the direction of the development, shifting from the constant erosion of the agricultural land to the rehabilitation of small and significant abandoned urban areas.

Rome: Two Foundings one Tiber

The project 'Tevero Cavo' profoundly relates to the city of Rome, and Rome displays a peculiarity. It has two origin myths, and both connect to its river, the Tiber indeed. The first is a pastoral and autochthonous one; it has a damp culture, made of woods, forests, and animals. Romulus and Remus, sons of rape and abandoned in the water, were found inside a basket in the Velabrum (the swamp area between the Capitol and the Tiber Island) and breastfed by a she-wolf. The second one is a myth of foreign extraction (anti-autochthonous); this myth is grand and heroic: the light of the fate takes the place of the wood's moisture. At dawn, Trojans arrived at the Tiber's mouth: defeated indeed, but valiant and beautiful. In the Aeneid, there is a passage that recalls the docking at the Tiber's outlet: "At this moment, gazing from the sea, Aeneas saw a vast forest. Through it the Tiber's lovely river, with swirling eddies full of golden sand bursts into the ocean..."

Indeed, the more you study ancient myths, the more you find the components of reality. It was thought that the Iliad and the Odyssey grounded in legends, then Troy was conclusively discovered by Heinrich Schliemann. It is a fact – thanks to years of archaeological excavations and Andrea Carandini's scientific work – that the base upon which Rome developed has its roots in the Etruscan culture. Therefore, do not the two different origin myths regarding the founding of Rome – one autochthonous and the other one cultured and of foreign extraction – clearly explain the marriage that characterises the Etruscan culture itself? A culture that does not arrive as pre-formed, but comes into the world following the hybridisation between a na-

tive culture – the Villanovan one, deeply connected to the earth – and an external that is more advanced in the fields of thought, art, and writing.

The Tiber digs

Rome strongly links to its orography. The city develops on a volcanic area, continuously moving and waving. Volcanoes are within its DNA: from Bolsena, Vico and Bracciano in the North, to Albano and Nemi in the South, large mouths of fire surround the city. It seems to be shaped by lava elevations that draw a shifting landscape, endlessly variable. Lava's solidification processes – deeply related to rainwater flows, wind, and vegetation – outline the space: the gorges in which water streams erode tuff. In this sequence of movements, and ups and downs, we see the rise of the first villages. The Tiber is a sort of big rift between lithospheric plates emerged after the drop of the sea level. As much as the fissures that create within a dry soil. The river, volcanoes and eruptions shape places, and model the renowned hills.

Giambattista Piranesi, in his drawings and etchings, knew how to represent this magmatic nature made of digs, vegetation, and ruins. Piranesi staunchly fights against both the classical and neo-classic Greek myth in favor of a vegetal, stratified, magic, ancestral, and Etruscan, world of Rome. He repeatedly drew Rome and the Tiber. His drawings are beautiful, touching, and indeed projects 'in fieri'. Therefore, Rome was born on rough and volcanic soil, its founding relates to two myths that see the Tiber in their hearts, and rooted in the Etruscan culture. Fragment and stratification are present: these are the reasons that set the scene for the 'Tevere Cavo' project. However, why does this adjective, "cavo", appear in the title?

Tevere "cavo"

The idea regarding the slit in the ground where the Tiber flows is only the first reason why Tevere Cavo (empty or void in English) is the name of the project showed up here. The second one deals with the 'Vie Cave' or 'Etruscan Tagliate.' Let us try briefly to understand. We have spoken about the articulation of the land and, on this territory, the Etruscan civilization set itself up and developed. Now, in this land, the Etruscan culture creates a relationship between architecture and environment that cannot be anything else rather than a marriage, a twine between nature and artifact. The section is the key. However, we do not refer only to an operative process. Indeed, the section and the digging reveal a deeper connection. According to the Etruscans, the Earth is sacred and endlessly sends a message. The Earth 'speaks'.

This relationship wholly reveals itself in the so-called "Tagliate". or, indeed, Vie cave. These are processional paths, dug by men in the tuff even fifteen meters high and for hundreds of meters. Vie cave are the symbol of a holistic approach – or systemic as we would say today – to the topic regarding the relationship between nature and artifact. In these, a set of meanings overstepping mere functional data to insert cultural, symbolic, and religious reasons, condense. What we call 'a road' is, at the same time, a processional path, a celebration

of Mother Earth and – functionally and prosaically speaking – a 'quarry' where to extract building material that is used in the construction of temples and most relevant public buildings.

Nevertheless, if we relate with the modern conception of a quarry, and with the Etruscan Tagliata as a proper quarry itself, then we understand the presence of a systemic twine that profoundly inspires us. An action – the digging – made not only for one reason but roundly for many. Much of our work on this topic cobbles together these ancient echoes - these endlessly recalled 'imprinting' - and the issues related to Information Technology, to develop a critical consciousness that without IT cannot face contemporary crises. Indeed, if on the one hand, the word 'cavo' refers to the orographic history of the fracture and on the other hand to the Etruscan world, the word 'cavo' also mean in Italian electric wire and rope. And a substantial aspect of the work Tevere Cavo is indeed related to the implementation of Information Technology within the Design of new generation. But 'cavo' – and this is the fourth meaning – also stands for 'space' as the substance of architecture, if not the idea of a hollow (cavo) ground that is possible to inhabit and use even below the ground. Hence, if naming means to 'place' something in the sphere of desire, more prosaically we would like to place our action in the design field.

The space of Tevere cavo becomes an ecologic new generation urban infrastructure that orographically roots in real environments and, symbolically, in history. An infrastructure that turns toward the future in the belief that, on the Tiber, depends not only on the past of this city but also most of its future.

The urban sector

Beside this deep soul, the Tevere Cavo project consciously moves around the urban and architectural debate towards the role of the waterways and the city recovery. Let us briefly look at some points. Rivers have always been large natural infrastructures that allowed – and encouraged – the development of cities and civilizations. These are at the base of many large cities in the world. From Paris to London, from Vienna to Rome, from Berlin to Budapest. As places for trades and exchanges, for energy use – like in the case of watermills – or water supply, but also for symbolic and ludic events in the ancient world, big rivers had a critical development even in relation to the manufacturing and industrial civilization. Indeed, watercourses have been the symbol themselves of growth arranging along their bank substantial industrial areas using the river simultaneously as a means of transport and receptacle for production waste. But, once the industrial model entered into crisis, cities found themselves with polluted waters, vast and unproductive industrial areas, and with a bet on how to change this situation

At this point, it is clear that the issue of livability concentrates around and along rivers, and the livability of the urban environment is the fundamental element of competition through which today's cities can attract a highly qualified labor force. Moreover, the effects of the riverside rehabilitation are not circumscribed to the nearest banks, but their

consequences also reverberate in more extensive areas. Indeed, the Tevere cavo project does not only relate to the riverside but also to a deeper area approximately one kilometer of depth from the river itself. Mainly, we are talking about the part of the city that follows the flow of the Tiber from the dike of Castel Giubileo in the North to the door of Piazza del Popolo in the South, and it is enclosed by the vast hills of Monte Mario in the West and Monte Antenne in the East.

Within this large setting, marked precisely by the hilly areas on the Western and Eastern side of the river, we see the rise of at least five urban sectors that we named: the Olympic Bend, Northern Rome, Foro Italico Vittorie, Parioli-Flaminio, Prati. Particularly, in the Olympic Bend area – but also in part of the other sector – we have run the first census of abandoned and underutilized spaces. They belong to these different categories:

- Abandoned or underutilized industrial and productive buildings;
- Under the viaduct areas, traffic dividers; Green areas and abandoned and underutilized river bands; Free areas, build-able but unused lots, unfinished and in the state of abandoned buildings and urban complexes.
- Areas belonging to public buildings that are visibly under or misused – these include garden, parking lots, storages, schools' common areas;
- Gas stations and small stores, both still productive or already abandoned.

The areas eligible to these categories have been recorded in a shared map (search for “Tevere cavo” in Google Map or go to goo.gl/HSmviY). Each of these areas links to a specific record in the designated Blog that contains further information regarding the specific area and, above all, the titles and the authors of the different projects proposed for that lot. Every link progressively leads to the project development. Overall, we are dealing with almost three hundred proposals allocated to approximately 50 areas. Now, let us see the principles that move a “next generation urban infrastructure” like Tevere cavo is.

Five Principles

As said, infrastructures, whether artificial like streets, highways and railways or natural like waterways and water paths, have always been a fundamental tool for development. They have been the fly-wheel that – in a few decades in the XIX century - led us to the doubling, the triplication, and the decoupling of the building stock. But starting in the 1960s of XX century with the crisis of the traditional industrial society and model of production, many industrial areas were abandoned and furthermore the more our cities expanded, the more abandoned areas, empty and dilapidated buildings they left behind.

As is known, in the current historical phase we have to entirely limit the agricultural soil consumption. However, even though we have to restrict soil consumption, we surely cannot stop the development! The answer to address this topic is simply “to invert the development direction”. From the expansion toward free land to the re-use of

existing but abandoned or under utilized parts of the cities. Anyway, to do this and to focus towards the recovery and the usage of urban voids, we need, indeed, new generation infrastructures.

Five fundamental features mark the latter. They have to be **multitasking**, that is doing multiple things at the same time, and active towards the direction of a sustainable development, and able to create **green systems** (specifically not only they do not have to pollute and waste a few energy, but – above all – they have to insert active cycles of decontamination and depollution). They have to guarantee quality mobility, which we call **slowscape**, and a vector towards digitization of the city to form an **information technology foam**. Lastly, they have to be able to **galvanize** souls and instill citizens value in public space.

Multitasking

A new generation infrastructure must be able to carry out multiple functions at the same time, weaving and strengthening them with one another. The world changes, and in the Third Wave of the Information Society, the idea of multitasking erased the concept of monotasking that belongs to the industrial civilization; the Mixité erased the Zoning, and the Tablet, coming from the Silicon Valley, replaced Henry Ford's Ford T. Indeed, one of the most incomprehensible things for one who has never seen a computer is that it can simultaneously do many things and be structurally multitasking. After all, if we had the chance to visit an assembly line in a car factory, we would discover that, also there, the assembly line and the conveyor belt do not exist anymore. What we would find is a sort of neo-artisan that makes all by himself, and that we would call a robot.

Therefore, a new generation infrastructure has indeed to be multitasking like our computers. The new productive models have changed and shaped the city in their image and likeness. If the Zoning represented an optimized monotasking idea applied to the town, today's parallel and coexisting cycles of the IT society go in the opposite direction. Indeed, the idea of multitasking infrastructures is not new. It only has been erased by the monotasking vision of the world that came with industrialism. Immediately, our thoughts go to the bridge as a place for commerce and living, as a custom or a market. From Ponte Milvio in Rome to Ponte Vecchio in Florence or Ponte di Rialto in Venice, we Italians have many models to which we can refer.

However, also elsewhere there are fantastic examples of them. In Iran, for example, there is an exciting multitasking infrastructure, the Khaju Bridge, where the dike serves the bridge, the bridge serves strolling, and the shelters are useful to public spaces. All the Tevere cavo projects try to be intrinsically multitasking. To make an example, if we have a green area we want this to produce energy and to be an exciting aesthetical and educational space. If we have a sports facility, we expect that the athletes' movement will contribute physically to shape the public space instead of only contributing to the building's energy supply. If we design a bridge, this must be a collector for rainwater, a device for air purification using particular algae inserted in the guardrail, and an emitter of information and performances. Moreover, the asphalt has to produce energy

through the presence of piezoelectric elements underneath the road surface. Is not e river per sé one of the most multitasking structures one can think of?

The second keyword is Green systems. If the manufacturing industry had to dominate and exploit natural resources, the information one could give value to the latter, and the post-industrial civilization man can finally deal with nature. At least in high-tech countries, this change of direction opens up new opportunities for a historic “reparation”. Today we can reconstruct nature within the city. In high-density built areas, which have regions and buildings abandoned by factories, we can inject green, nature, and facilities for leisure.

Therefore, our challenge is to let the Tiber be an active element within the city’s ecological system. It is not only a matter of de-pollution, but concerns a more complex project that deals with making the river a proper “driving force” for a series of principles and behaviors that connect with culture and technology to operate a concrete turnaround: from being a pollution and decay collector, to become a fly-wheel for a significant shift. From this point of view, the Tiber – in an ecologic terminology – takes on the role of a “source area”. The presence of Green Systems, and in this specific case the Tiber, permits the creation of a system of green and leisure areas for citizens. Citizens can indeed move along its course, and this uninterrupted navigation is also guaranteed to the plant species – and partly to the animals – in the soil and the subsoil, along with the banks and naturally in the water and the silt. The existence of these significant source green systems allows additionally connecting and giving value to smaller areas and systems – in jargon ecologic islands.

The ultimate goal is to help to control the climate, to create shaded and cooling areas, to have green lungs, to foster the accumulation of rainwater, and to ensure uninterrupted fruition for inhabitants, animals or botanical species. On certain days and hours, proper mobile ecological islands can connect to the Tiber and transport-plant-seed botanical and animal species (this idea comes from Robert Smithson and inspired the astonishing project – designed by Diana Balmori’s office – that imagine a series of movable and floating islands on barges over the Hudson canal in New York), or work (it has been already done in cities such as Amsterdam, Dresden and Zurich) with special “cargo carriages” that nightly bring waste to clearing houses.

Furthermore, the active role of these infrastructures can also deal with times of crisis. Many cities are gearing up not only for what regards standard problems (traffic, pollution, temperature increase) but also for catastrophic events. Forefront of this topic is the city of Rotterdam that studied the implementation of water squares, and underground water storage basins that can help in case of flooding or, instead, be used in other times of the year. Of course, the processes are not supposed to happen in one fell swoop but gradually. They have to match de-pollution systems and civic re-appropriation process, often implementing multifunctional ludic/athletic and – at the same time – de-polluting and environmental. Another way is to develop remarkable systems to enhance the status of green areas, and that will be injected like filamentous systems into the architecture,

into new bridges, and in the recovery of abandoned buildings.

Slowscape

Clearly, the Tiber cannot live detached from the idea of being a means of transport. It is a common belief that speed is not the only parameter for urban mobility, but other quality parameters can be taken into account: landscape and natural ones, others regarding healthiness and sociability, etc. This is a well-developed trend line that includes pedestrian paths, maybe suspended like the New York’s High Line or the Paris’ Promenade Plantée, or focused pedestrianization or with bikes routes. The hypothesis of using the Tiber this way has been suggested many times, but it always failed because mobility along the river is not seen as a “system” to be reactivated according to the others, but rather as a mere “plug-in” to insert – as it is – in a system that doesn’t accept and en-‘More slowly’ allows inhaling the ‘scape’, the urban, the archaeological and the natural scenario (and often all the three together). In a country rich in historical, artistic and environmental resources, these are the ideas on which we should build policies, plans, and sustainable projects for tomorrow.

Various Tevere cavo projects work towards a direction that connects to archaeological and landscape issues. Among the many designs, we can find dockings that graft into vast urban parks, and simultaneously host technological centers and inhabited bridges, or reconnect Ponte della Musica with the layer of the river. Other projects deal with paths and accesses to the Foro Italico complex, and also with cycling routes and surface mobility that connect different functions and buildings that are compatible with the docking.

For example, let us think of what it means to leave our car near Castel Giubileo’s dike, visit the technological center there developed, and then take a boat and reach Ponte della Musica and then the Foro Italico, or take a bus to arrive at the Auditorium. Maybe, the technical time can be shorter using a car (as long as you will not get stuck in a traffic jam along Via Flaminia) but the quality of your experience will be incomparably better. Hence, reflecting upon how to implement mobility that also uses the course of the River has to be done systematically, taking into account all the links with the other mobility systems, and the many functions hosted on the river banks, with a totality of elements that stay together and coexist.

Information Technology Foam

We are getting used to the existence of Open Data (authorities, companies, public offices, organizations, and individuals, more often are obliged to network some information). Through Open Data small revolutions are accomplished. Indeed, they can be captured by whoever wants and, for example, be used to develop an app that permits us to know in how much time the bus will arrive at our stop. These are ‘free apps’: not necessarily created by the company that supplies the service. But this is only the simplest level. Actually, information can “interconnect” to shape new models: do the buses are delayed according to temperature? Or according to the age of the driver or economic incentives and rewards?

At this point, we can accomplish an unexpected jump. Not only the infrastructural systems in the existing city can spread primary or secondary information regarding themselves to build up interpretative models, but they can also collect other kinds of information. Imagine an urban train, a bus, a taxi or a means of transport on water. Along with this past, it is possible to collect data as if in a satellite that, instead of being in orbit, moves within the city and through its infrastructures, either the natural or artificial ones. Necessary information like the one regarding security and traffic, but also pollution, heavy rainfalls, water density, etc.

Furthermore, as said before, information can connect to create models, not only interpretative models but also implementing ones. And here architecture and urban planning are coming off the sidelines. This information can transform physical facts within the city to make the latter real-time responsive to the change that information and models - in which they are connected - require. If pollution triples, if the city is under a terrorist attack, if rivers are about to flood, we suddenly realize that the questions that bind information and physical transformations are merely essential.

Even an intermediate informative state, between gaseous (the cloud) and solid - when information turns into objects as a printed book or as a constructive/technological component - does exist, and we can imagine it as foamy. This kind of information is already structured in models linked to physical elements like materials, components, and systems: indeed, they are models almost ready to be operative and quickly to shape spaces, situations, and structures. This information technology foam wraps up the urban environment in which we live and where we will increasingly live. Indeed we can start to crew new generation infrastructures implementing information technology foam first! Our infrastructures can be activated with sensors that capture data of different typologies and collect them in the control room. The data can serve specific goals (imagine water pollution or water rise or security), but on the other hand the data can be used to create models and apps to activate a new way to use the infrastructures. While in a traditional way of thinking it can be considered important to start with major and very costly interventions (for example in the area of water de-pollution), indeed the contrary can be true and is exactly information technology that can ignite a new process to use infrastructures. "Soft first" in this respect can be a good formula.

Galvanize

Therefore, the idea lying behind Tevere cavo deals with the existence of a series of different components. The Tiber becomes a place in which "we can invert the development direction", and where converge positive and virtuous practices for environmental, social, sustainable, and economic issues. The effect is reverberating: it does not affect only the Tiber itself, but instead, it is systemic. Now, one of the critical aspects of the whole operation is the role of new infrastructures that must have a deep meaning for the community to galvanize souls and hearts, to represent the necessary existence of the public and collective sphere. In ancient times, big walls

ran for kilometers to fence the city - or for thousands to divide countries - but, as Romulus had in mind when marking Rome within hills of lava with a plow, walls performed the highest symbolic meaning rather than a mere practical function. They used to denote the existence of an entirely new system of values and laws. The sense of these infrastructures was often so crucial that it was rooted in myth and, within this, in drama and crisis (Michel Serres, *Rome le livre des fondations*).

The design of an infrastructure connects shape and meaning, a meaning that must be civic, to let the infrastructure be a catalyst of aims and will. In this idea, the Tiber acts as a "new" contemporary landscape, neither nature nor panorama. The landscape is the aesthetic representation, collectively and culturally shared, though still in constant evolution, of a part of the world. The breeding ground where it happens to be is, exactly, the one regarding the design of infrastructures and - in our case - Tevere cavo. Indeed, if the recovery of the Tiber is an indispensable compensation for a city that needs to retrieve green and naturalness, we are not merely dealing with designing a "Park" but rather a new piece of the town and a new urban landscape. This means that - from a functional point of view - the new part of city will characterize itself by a mix of productive facilities, linked to the Information society, that at the same time are ludic, commercial, tertiary, and related to communication and leisure. To work correctly, they have to be strongly technological innervated. We mean cables that provide for networks, both traditional and informative ones, lighting systems, control systems, tools to produce images and messages, and a widespread presence of art. From the depths of history and the overlapping and stratified physical layers, as if new shapes and new potentialities would emerge from the Tiber's banks. The latter are bottom-up inhabited as if they "emerged".

This leads to the multiplication of the zero quota, a multi-level intersection of geometries and morphologies, and design for the soil and objects with different degrees of permanence and stiffness. The strategy of emergency, besides leading the formativeness of the project, indeed has a suitable component because it becomes innate to think about these terracings in relation to the flooding risk of specific areas along the river. Within Tevere cavo, we do not aim to optimize only a single feature, but rather to create a network of connections - and interrelations - in which the collective meaning is the catalyst. An infrastructure that does not aim for what we have dealt with that does not strive for being magically beautiful to galvanize people, remains deaf. In one word we are convinced that the public value of infrastructure have a multiplying effect in the entire society: they not only create the possibility for further development but they create the mental infrastructure for a shared future. They raise the sense of citizenship.

Examples project

Functional mixité, Rebuilding nature, multitasking, Information Technology Foam, Green systems. We need to skim the projects - particularly the ones located within the Olympic bend and the Foro Italico - to grasp what the city could be

after a development project based on designs which are not self-referential, rather open to relationships, to contemporary economies and that strive for collective meanings and values. The current political and environmental situations and the incommunicability between the political world and the administrative one – and the scientific and cultural ones – must not discourage. Project must be thought as necessary act, as it does not stop thinking about change and designs to make it real.

Let us start visiting Tevere cavo from Castel Giubileo's dike in the North, leaving our car nearby the GRA (Grande Raccordo Anulare) or the Labaro stop of the Roma-Viterbo railway. The first project we encounter is "ex.[PO]. A new bridge at the furnaces of Castel Giubileo and technological center for the development of constructive experimentations". We are in an area that since ancient times always had a productive vocation, and now has been transformed into a pole for technological and constructive innovation. The complex extends its field lines in the surrounding park. A boat stop can lead us to the following projects "Rolling Stones. Design for mobile dwellings and riparian zone at the mouth of Tiber". Here, instead of a vast scrapyard, we create a cove to shelter ships but also to have mobile dwellings on the water that be temporarily anchored to live in significant places along the river. If we go further down south, we reach "TeC. Therapy and rehabilitation for horses, in Tor di Quinto", that supplies an extensively requested service in an area where horse riding is commonly widespread. The surrounding rural area becomes systemic for the stables. (all the projects can be examined at the site <http://www.arc1.uniroma1.it/saggio/teverecavo/> from which it is possible to buy or download the book "Tevere cavo una infrastruttura di nuova generazione per Roma tra passato e futuro" eds Antonino Saggio, Gaetano de Francesco, Itools-Lulu.com 2018.

Another not far significant environmental project is "Logica Eco-Logica. Productive and depolluting park at Inviolatella Borghese," which activates sustainable technologies and uses agricultural production in a depolluting way. Just beyond, in a big intersection between Collina Fleming and the Tiber's bend, we encounter "Eco District Park: urban park, industrial district, and center to educate about recycling", a project that inserts a sophisticated strategy and defines an underground industrial level for recycling. This level is linked to the railway and to the upper park that connects to the city and contains cultural episodes and a proper Museum that aims to give value to the topic of recycling. When the Tiber crosses the big Ponte Flaminio in Corso Francia, we find many projects. First of all, a vast "Park for Renewable Energies and campus for ecological education and consciousness" that extends all the way to Ponte Milvio and – at the same time – designs the banks. The park hosts an education center, produces energy and shares culture. In this park, three projects graft: a "Campus for the study and depuration of water", an "Infopoint and Communication center", that reuse the pillars of a fallen into disuse Bailey bridge, and "Share.It: time bank, youth tourism, swap market".

Continuing along Corso Francia, we find "PARK [ing].A node for the development of sustainable intermodal publictransport and for the biomonitoring of pollution to create oxygen and electric energy". We are in the Olympic Village, and the

project prefigures an innovative intermodal junction starting from the stop of the Metro C line. The proposal deals with the topic of intelligence within multimodal programs, as well as in developing bioclimatic solutions (like the geothermal energy that exploits the heat of the underground Tiber, the collection and depuration of rainwater, the implant in canopies of particular algae and lichens able to produce oxygen. In this case, it is obvious the urban project is not only a matter of mere design, but an arranged set of choices, orientations, and necessities. Moving around the Olympic Village, many urban voids are solved with the new buildings that support the idea of mixité and the five categories that we marked as the keys to operate in information city (living, creating, exchanging, rebuilding nature, infra structuring). For example, the projects "CRISALIDE: Ark of native seeds and farm-to-table market"; "Exile on Main Street: center for music production and sharing"; "Jump. It: horse riding between sport, culture, and science"; "On air, on line, on site: radio station to make the Olympic Village heard"; or – on the slopes of Monte Parioli – "Dream's Factory: repair and sales center for motorcycles", and "E-motion system: wellness centre and Smart Tower at viaduct of Corso Francia".

Within this framework the Olympic Village keeps his peculiarity of functionalism's model city, nearly a symbol of the CIAM's Athens Charter, but his abandoned voids, some areas under the viaduct, and the big parking lot along the axe called XVII Olimpiade, are thought over according to the whole new strategies we referred before in this text. Of relevance is the project "PARK [ing] Hub for the intermodal transportation and bio-monitoring". Between Ponte Milvio and the Foro Italico we find "Smart Plat" a newly designed shelter that performs multiple tasks: it creates shadowed areas, and a small covered square, gives access to information and presents itself as a sort of urban lounge.

Heading back to Ponte Milvio we encounter "Water Playground: Urban happiness system for the phytoremediation and the reconquering of the Tiber", and a series of punctual operations of urban homeopathy marked by the projects "Side by side, Microprojects on the river bank of Tevere," that gives new value to abandoned and neglected areas along the Tiber, and "Rescue Islands", that uses the river as social infrastructure system.

Furthermore, Ponte della Musica becomes a multitasking infrastructure that accomplishes multiple bio sustainable tasks. A new urban ramp that hosts recycling laboratories, and connects a docking on the Tiber with Foro Italico area where "TTC_Table tennis Centre: a building dedicated to table tennis" shows up. This project employs innovative technologies to accumulate and produce kinetic energy.

Finally, in an abandoned and neglected area along the Tiber, over a space called Pinedo, "OverFlow An institution for mother in detention with children close to Porta del popolo," hat proposes protected dwellings for jailed mothers, spring up. An intricate work of social – and historical – compensation on the edge of the old town. From here we can start again sailing the river to find many other projects.

References

<http://www.arc1.uniroma1.it/saggio/TevereCavo/>



Figure 1. Via Cava presso Norchia



Figure 2. Mappa con una selezione dei progetti di Tevere cavo

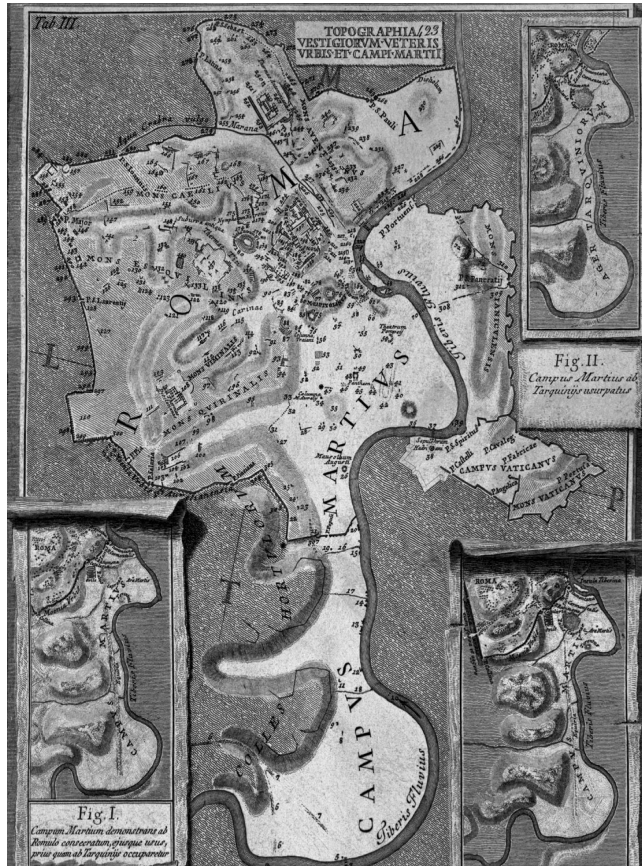


Figure 3. Gian Battista Piranesi, Campus Martius, Roma 1762

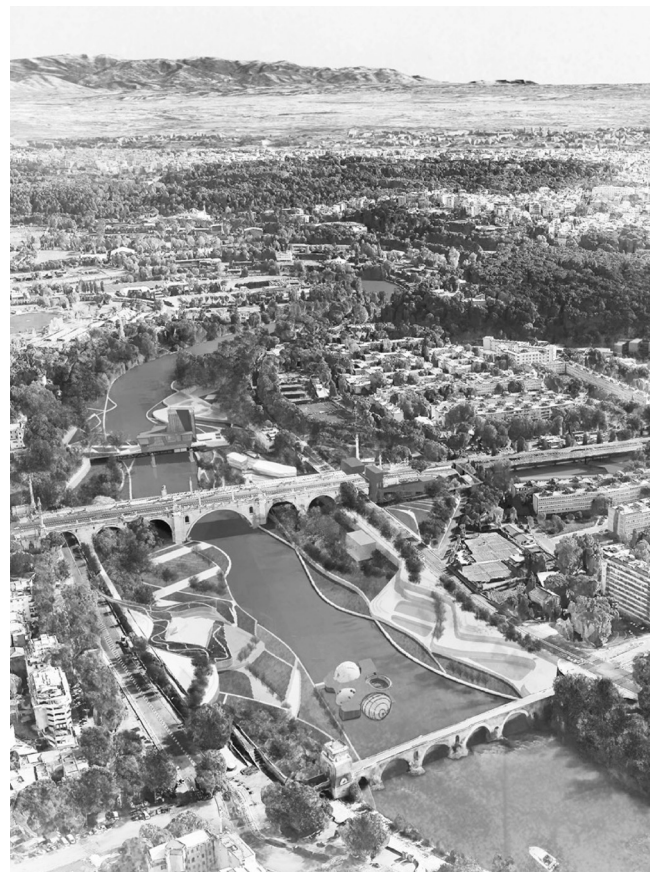


Figure 4. Prospettiva con l'inserimento dei progetti di Tevere cavo nell'area Flaminia (immagine di L. Cavallo con V. Perna)