The bridge of Bassano is a work offered to the citizens, the visitors, and the students of the matter, as an example of historical and architectural permanence; a manufacture which was first built as a simple crossing and that has became through the years the real symbol of the city.

The bridge becomes a monument and is delivered up as an element of great importance for the city configuration; as a voluntary or obliged point of pause, as a clot for inhabited buildings, business activities and handicraft. It is offered like a support to the multiple sides of the city, able to create a place, a vital space, loaded with means, functions and historical deferments.

The departure point is the locality in which the wooden manufacture is laboured: Bassano del Grappa; Bassano is certainly one of the most singular Venetian citizens that has risen along the borderline between the plain and the hill. The bridge thus becomes the artefact needed to combine two natural separate places; a crossing that contains in itself the implications of a separation. Bassano means Brenta, Channel of Brenta and Valsugana. It is in this axis that the history of Bassano has always run, along with the history of its wooden bridge, as testified by a wide list of images and documents that reconstruct its shape since the Medieval Age. The new connection can be without any doubt considered as an important sign of environmental modification produced by human beings.

From the 1200’s and through the centuries the bridge has always remained respectful towards the tradition: several generations of carpenters, builders, designers have perpetuated its original shape, which has always been considered by the local population as a sort of limes.

The structure during its 700 years of life has suffered from recurrent destructions caused by the terrible and sudden floods of the river, but every time
it has been rebuilt with the same features and materials which have always been considered the only ones suitable for its peculiar position.

The city has always had a tormented relationship with its river, as it often happens on a geographic and climatic border, where the water course frees itself from the deep valley which leads to the Nordic world of mounts and forests, transforming itself from a torrent into a river and facing this way the free adventure in a cultivated and urbanized Venetian campaign.

The conception of the bridge as inseparable from the urban plan of the city, planned as a hinge and a focal point from which the image of the city appears through its original relationship with the natural atmosphere and especially with the river. The fluvial landscape of the Brenta, that lengthens throughout alpine spurs and the low plain and rests on a weak layer, is conceived as a moment of fragile and sensitive equilibrium between hydrogeological system and anthropic landscape.

The morphologic model of the Brenta’s alluvial system is divided in three parts because of the various geologic components which have contributed to its formation; the central part from Bassano to Piazzola is characterized by several water courses which interface themselves forming the typical islands of the interlaced channels morphology; a typical feature that produces a continuous transformation of the fluvial appearance. The strong slope of the water course after the section of the mounts is the cause of a continuous transport of rough material, gravels, pebbles and sands; one of the main reasons of the degradation of the structure of the wood of the bridge.

In fact, the first norms that guaranteed the respect of the manufacture came from the old city Statutes of 1259 and 1295, which protected it thanks to a detailed system of rules: the duties. Nevertheless the receipts brought to the municipal cashes by the transport of goods and the human passage were not always enough to cover the expenses for the simple maintenance of the lumber.

Some new kind of protection towards the fluvial atmosphere were adopted just after the quick expansion of the Venetian possessions, with the constitution of a new organization: the State of Mainland, in contrast with the State of Sea.

The bridge in the centuries

The more reliable document testifying the existence of the bridge in Bassano is the written of Geraldo Maurisio, who in its Cronica describes the meeting, happened in 1204, between Ezzelino III, coming from Brescia, and its servants, in «platea, quae est a capite Pontis Baxianis» (Maurisio, 1726). This place seems to be the ancestor of the present structure, a fact which is also proven by the loan contracted by the city of Bassano in 1222 «for laborerio pontis Brentae». The bridge then is mentioned in the Papal bulls of 20th and 21st October 1227, which guaranteed the protection of the Pope to the minors of the convent «ecclesiam Sancti Donati de Angarano sitam
in capitae pontis de Baxiano» (Verći, 1779), and fixed
the mutual positions of the church of Saint Donato
and the bridge, which was probably sited to the North
if compared with the present position, in the slope of
the river turned to the city.

From then, with regular expirations, the archive
papers have recorded numerous participations carried
out in order to restore or to rebuild ex novo the
construction, which was repeatedly threatened by
different menaces: the frightful floods, called
brentane, the continuous usury of stilate. Against
which the numerous rafts, which journeyed in
menada along the course of the Brenta directed to
Venice, violently hit, and man’s steals of lumber from
the bridge, built, like today, with wood of bay oak,
larch and chestnut tree.

In 1524, an important innovation marks the history
of the bridge, as it turns out from the Official Records
of the city Council Proceedings, which deliberated a
reconstruction of the bridge with stone and tile. The
issue of the manufacture in stone still remains
incomplete and lacking of existing documents do not
allow a certain reconstruction of it; the only certainty
is the destruction of the bridge caused by the brentana
of 3rd October 1526. As a result of the short and ill-
fated life of the bridge in stone, in 1531, Bassano
finds again its bridge «riedificetur ligneus proat
antiquis erat» constructed «in loco solito e iuxta
solitum» (Official Records of the city Council,
1528–1536, 4/13), which, because of the continuous
restorations, had a little bit changed its aspect from
the original. There was certainly the introduction of
three new supports but the bridge was always built in
wood.

The 30th October 1567 the bridge of Bassano was
swept up and destroyed by another violent flood of
the Brenta. The first plan for a new bridge presented
to the city Council 29th January and planned by an
engineer of Cividale, presented a wooden structure
with a mobile floor system, supported by four stilii,
able to unhook themselves in case of flood.

The innovation was not well received by the
citizens, who appealed again to a consolidated
tradition, and 28th February reached the deliberation
of the Venetian Senate favourable for a reconstruction
of the bridge with the previous materials and shape,
thanks to the contribution of a famous architect from
Vicenza.

Among the surviving documents, the name of
Palladio appears for the first time in three distinguished

Figure 4
Mappa di Bassano e dintorni (Map of Bassano and its
evrons). Anonimo (1557). One of the first imagine of the
bridge included in the representation of Bassano; it is
flanked by towers and sustained by five stilate and can be
considered the manufacture before the Palladian accession.
(Bollettino Cisa n° 16 1974)
Invenzione di ponte in pietra a tre archi (Invention of a stone bridge with three arches) Andrea Palladio (1570). In criticisn’s opinion it is probably the model of the bridge that Palladio designed for Bassano. (Quattro Libri, Book III, pag. 29)

payment notes. The first one dates back to 26th October 1596; maybe when Palladio’s inspection happened. These payments represent a reliable source and confirm the existence of two plans: a balance refers to the first plan of bridge that Palladio had supplied, his independent inventione in stone, that was obviously discarded pro a wooden reconstruction.

Palladio did not hide his irritation and anger caused by the refusal of his plan and attributed to «essi gentiluomini» the responsibility of the choice (Palladio, 1575, Third Book).

Palladio’s words document that the architect did not want, in this particular commission, to produce an original creation, but to create a solid and very conceived work. Faithful to dictates deduced from the method of the Antichi, Palladio, respecting the previous tradition, introduced in the classic order balustrades and capitals supporting the cover.

The wooden structure ordered by Palladio rested on four articulated pylons, but in comparison with the present table in «Four Books Of Architecture», it is possible to discover some variations probably adopted during the phase of construction, or a little after.

At first, it seems already possible to glimpse, in the centre of the profile, an interruption of the balustrade, that can be compared to the present central balcony.

Moreover, while the plan of Palladio was equipped with eight large poles of square section for each of the four batteries, at about two centuries from the participation there were eighteen or more poles for single battery, because of the difficulties in the operations of substitution of the foundations, that pushed proti to employ poles of smaller dimension, but in greater number.

All along the XVII century the expirations, in which the books expenses of the bridge report the restorations executed on the single stilate and the radical repairs, were regular, but with the sweeping flood of October 1707 the bridge completely curved and it was necessary a complete reconstruction that started immediately.

«Deplorabile è la disgrazia succeduta la notte scorsa alle ore sette circa in cui l’impetuosa improvvisa esacerbazione del fiume Brenta ha totalmente asportato il ponte grande» (Official Records of the Council, 19 agosto 1748); it was 19th August 1748, and the procedures of emergency for the construction of a temporary footbridge, in the vicinities of the Door of Brenta, started immediately. Contextually to the collection of the materials
dragged by the waters, a letter of the Doge (Pietro Grimani) informs us of a request for an estimate of expense to introduce to the Magistrate of Waters, on the base of the three plans written up for the reconstruction of the bridge. The plans of Tommaso Temanza, Giovanni Miazzi, and Bartolomeo Ferracina, triggered a debate on the «fabbrica suddetta che abbia nuovamente ad essere eseguita, com'era prima diretta, e disegnata dal Palladio, cui già ne conoscevano il modello.» (Savi Esecutori alle Acque, 30 agosto, 1748)

The cleaning operations on the gravel bed of the river revealed themselves immediately very difficult, because of the insufficient depth of infissione from the poles of the previous foundations, which opposed a strong resistance to every attempt of extraction. Searches addressed therefore on the possibility of constructing pylons in pozolana instead of wooden stilate.

The Magistrate of Waters charged Giovanni Filippini and Matteo Lucchese, proti ingengeri, to study the feasibility of the wide supported plan, that unfortunately was never put into work, because of economic reasons.

Definitively discarded the hypothesis of piers in pozolana, the plan was at first entrusted to the Magistrate of Waters, proto Tommaso Temanza, who was soon deprived of this authority by the self-taught Bartolomeo Ferracina, who guaranteed inferior expenses of reconstruction.

Examining carefully the complex vicissitudes of the eighteenth-century reconstruction of the bridge of Bassano it is quite clear that an ideological clash between the supporters of an aulic shape, reaching the Palladian orthodoxy, and the supporters of an empirical construction tied to the traditional wooden bridge occurred; finally, a common coding of the Palladian model was accepted. Also the singular solution of the pylons in masonry, of Lucchese and Filippini, is not substantially estranged to Palladian precepts.

It was only with the work of the mathematician Rizzetti, who produced for the bridge an original and innovative plan, that the real efficiency of the manufacture was put in argument. Rizzetti eliminated every imposed principle and rediscussed the consolidated image of the monument, and all the western tradition with it. The scientist, pushed by an Enlightened spirit, went away little by little from the typical stone constructions, which were too much expensive, and from the wooden ones, which were not much long-living, accepting as his study base the colourful descriptions of chain bridges, seen by catholic missionaries in China. For the bridge of Bassano he processed four versions of the same plan with a chain structure, describing in particulars the putting in work and the future upkeep.

It was only with the definitive support to Ferracina that the hypothesis of the wooden bridge was finally and definitely adopted, a fact that deeply changed the aspect of what had become the symbol of Bassano.

Ferracina’s bridge differed a lot from the previous ones, either in the constructive techniques or in the partitura of the spaces. The new position of foundation poles had disarranged the spans symmetry; the number of columns of the floor system was reduced to four per intercolumn, instead of the previous five. Between the strut node and the pole, the tooth of support was eliminated, in order to avoid an ulterior reduction of the section, which was already inferior if compared to the previous ones, and subdivided in two parts.

In this occasion, Ferracina realized a rammers machine, that guaranteed the minimal labour employment but created some problems because of the inaccuracy and the shunting lines that the poles met crossing the gravels.

Other typological variations emerge observing the profile of the bridge, on which a chestnut tree

Figure 7
Il ponte di Bassano (The bridge of Bassano). Filippo Ricci (1752). In etching is represented the bridge in work during the second middle of the XVIII century; it is carried out on the plan of Bartolomeo Ferracina. (Archives Civic Museum of Bassano)
wainscot detached, completely covering the spurs and the flanks and pushing itself until the balustrade, according to the alpine use.

Anyway the discussions on the bridge did not diminish even after the work was finished, and negative judgments still continued to propagate after the opening of the new bridge.6

The chronology of the restoration jobs also proclaimed a negative verdict towards the new structure. The weaker parts of the bridge were the north forehead *stilate*, the *mantellata* and the bridge roof support columns.

The bridge risen from Ferracina’s plan was destined to a short life, because it was destroyed definitively after fifty years although the frequent rearrangements.

Of the recent history of the bridge we must remember the construction of a temporary footbridge, before the idea of a real reconstruction was taken in consideration after the fire of 2nd November 1813 ordered by viceroy Eugene de Beauharnais.

Just afterwards the planning and directive jobs of the yard were entrusted to engineer Angelo Casarotti.7

The work for the new bridge begun in March 1819 and finished with the inauguration of 4th February 1821, introducing some important typological and structural changes, that substantially did not change its aspect in comparison with the Palladian manufacture.

The most important variation were not directly observable in the completed construction. In fact, it was in the foundations that Casarotti introduced an important innovation; the reconstruction, thanks to the use of new structural formulas for the support pylons, guaranteed a survival solution to the wooden manufacture through a differentiated load reaction induced by the sudden movement of waters. At the same time the engineer succeeded in conjugating Ferracina’s unchanged *partitura* of the cover structure to the Palladian formal characteristics. Casarotti, moreover, cut the eight columns of the *stilata* near the water surface, and introduced the threshold beam in which there was a double order of pillings fixture in the gravel bed of the river. Seven poles were than added to the foundation of each *stilata*, passing from five to twelve poles for single foundation.

In this case the columns position is not so closely bound to the foundation poles, and becomes a guarantee of precision in the execution of the supports, reducing the difficulties during the maintenance operations. Moreover, the chestnut tree cover of the *mantellata* is completely eliminated remaining in reduced section only along the wire of the floor system, proposing again the old theory of side balusters deprived or the central balcony.

Thanks to the introduction of the variation in the foundations the new structure of the bridge, compared with the frequent destructs during the last ages, had a much greater longevity.

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Figure 8
Il ponte di Bassano (The bridge of Bassano). Sebastiano Lovison (1826). The new bridge of Bassano recently reconstructed on the plan of the engineer Angelo Casarotti. (In Incisioni Bassanesi, n° 394)

Figure 9
Foto del ponte nell’estate 1945 (A photo of the bridge of Bassano during the 1945 summer). Anonimo (1945). An imagine of the bridge after the German attack in Bassano during the Second World War; to testify the importance of the manufacture it can be seen a temporary footbridge in order to guarantee the connection with the city. (Archives Civic Museum of Bassano)
Casarotti’s bridge resisted for more than a century, surviving to the enemy strafings in the First World War thanks to several restorations that were adopted with the usual, customary rhythm. It was instead fatal the partisan attack of 1945, followed by the complete destruction caused by German troops; nevertheless, the bridge was completely revived two years after thanks to alpini’s works.

The subject of the hardest work of reconstruction was the stilata of the bridge towards Angarano, which was entirely reconstructed, the two spans that supported it, the cover and the stony portal of Angarano side.

It is important to remark the complete substitution of the ancient riveting of union of wooden parts, with the introduction of a metallic fastener and threaded passing bolts; moreover, for the structurally collaborating elements, cylindrical wedges and slabs bites were introduced.

After the alluvium of 4th November 1966 a radical structural restoration was executed on the bridge by engineer Benetti; stilate, docks to trickle of water with the relative support poles, balustrades and practicable plain were reconstructed after they have endured the force of waters, that had caused the bending of the entire bridge.

Drillings for the construction of four poles were executed, upstream of each stilata, of 1.25 meters diameter, pushed to a 10.50 meters depth from the dock plan, in order to guarantee the stability of the bridge during the necessary time to complete the restoration plan. On the basis of the developed inquiries emerged a substantial difference of piling diameter between the data of the plan and the real situation. Moreover the poles witness were completely flaked and damaged on tip by the rammer blows, because of the encounter with a bench of consisting conglomerate, that prevented them to penetrate further down. It was certainly for this reason that the flood, after having dug the advanced gravel bench, had broken and thrown away with himself every support depriving the first stilata of the bridge of the necessary support, and it was necessary to demand a new type of foundation in order to protect the stability of the structure for the future.

During the June of 1980 a series of restorations were considered necessary, as a result of an inspection of the support structures. It was a series of works of ordinary and customary maintenance because of the degradation produced by the usury and the severity of the weather visible through superficial analyses.

On the basis of more accurate analyses, followed up by verifications of the structures of the threshold, of the columns under the docks of the stilate ones, and the relief of 6th February 1981, the necessity of a wider plan emerged. An onerous situation came to the light, especially in the stilate towards Angarano where a sort of progressive damaging could be observed and elements seemed to have endured a greater degree of usury. The consolidation work operated during the 60’s in the first foundation of the Angarano side was repeated on the remaining three stilate; new cavazzali were delivered up, resting on the poles constructed in 1966, using the new poles of dock fixed in the sides of each stilata.

Six years later the last jobs, the alarm was launched by the skin-divers of the civil protection who, engaging in a practice, noted a precarious state of conservation of numerous poles under the docks stilate. An anomalous lowering of the level of gravels was found, which favoured the abrasive action of waters near the foundation piers; therefore the historical foundations, although integrated with the new supports, did not guarantee the safety of the bridge. The pilling was in an advanced state of decay, and its tip was completely eroded, especially in the
1838 C. A. Scapin

Figure 11
I lavori del 1990 (1990 works). Ufficio Tecnico (1990–1992). To the left a particular of reinforced concrete pole tip and the conditions of the piling before the intervention; to the right the intervention on the damage a column with bars in retroresina. (Archives Technical Office of municipal of Bassano del Grappa)

central part of the stilata, and also did not guarantee the support to the threshold structures.

An ulterior macroscopic threatening element to the stability of the bridge was the vehicular traffic, that continuously subjected the structure to the dynamic action of vibrations. The situation of uneasiness in the section of the floor system was amplified by the same constructive characteristics of the practicable plain, because of the present fissures in the wainscot of the roof, that guaranteed the correct aeration and avoided the stagnation of the water on the overseer bituminous conglomerate, but also favoured the creation of funnel holes on the road-bed road, produced by the action of winnowing caused by the vibrations of the traffic.

The problem of the static functionality of the bridge system was joined by an unavoidable wearing down of the finished parts provoked by the atmospheric agents, a generalized ungluing of the assemblage nodes and a deterioration of the pictorial pigmented applications, that were joined by the progressive sliding of the cover mantle.

Because of the condition of elevated degradation the works directly begun in the river bed, through a general change of the carrying structure of the stilate. The new foundations did not visibly modify the aspect of the bridge, because the four poles for each single stilata are always immersed, also during the periods of lean of the river, and normally covered by gravels. The plan previewed a system of foundations on cement poles braces independent from the previous supports. A wood bean, cavazzale of threshold, rests on each brace of poles.

This system of braces poles-cavazzali has the task to support the threshold, on which the eight columns for single stilata rest, carrying the bridge floor systems.

In the carrying structures the damages to the lumber were extended to almost all the elements, so it was necessary to demand the generalized substitution, a fact that would have involved the complete taking apart of all the bridge. In order to obviate the problem some recovery techniques of the ancient lumber was realized, choosing to repair the structural elements using conglomerates of epoxide resins and quartziferous sands in order to restore the great lesions, adhesives in pure resin for the small lesions
and bars in glass resin for the assemblage wood-conglomerate, and using wooden caissons for the reconstruction of the original shapes for the poles that presented some erosion symptoms.

Table A
The section of the bridge during the years. The reconstruction of the section of Bassano's bridge through the documents, the plans, from 200's to nowadays: 1. The first wooden bridge, resting on two stilii; 2. The stone bridge work between 1524 and 1526; 3. The wooden bridge resting on five stilii, in work during the second part of 1500 and before the Palladian project; 4. The bridge reconstructed on the basis of Palladian's suggestions in 1570; 5. The bridge with the modifications in 1570 and 1748; 6. Section of the reconstructed bridge with pozzolana pylons on the basis of the project of Filippini and Lucchese in 1748; 7. The catenary bridge reconstructed through the descriptions of Giovanni Rizzetti in 1750; 8. The section of the reconstructed bridge on the project of Bartolomeo Ferracina in 1750; 9. The bridge of Angelo Casarotti in work after 1820; 10. The bridge after the reconstruction of alpini in 1945. (Reconstruction edited by the author)
Table B
Sections of the bridge during the years. The reconstruction of sections of the bridge through the documents with the more significant variations: 1. Section of the bridge reconstructed on basis of the Palladian treatise; 2. Section of the bridge after the reconstruction of Bartolomeo Ferracina; 3. Section of the bridge reconstructed on the project of Angelo Casarotti; 4. Section of the current bridge. (Reconstruction edited by the author)

The present bridge

The current description of the bridge allows us to pick out some multiple constructive elements of a manufacture that, thanks to its dimensions and complexities, is still today rare and precious, and that also gives the occasion to recall the traditional constructive denominations: those which are used in technical documents relative to the bridge from the end of the last century onwards.

The vertical carrying structure is formed by four stilate supporting five spans, accompanied by the two masonry shoulders, on the east and west side. In each single stilata various functions can be distinguished: the central part, directly carrying, where the weight of the bridge is transmitted from the columns to the foundation threshold, and from this to the fixture poles, whether with directed support, or through three or four cavazzali for each stilata; the two external parts upstream, rostri, have instead the task to cleave the water course and, connected with the central columns, to strength, through filagne e filagnoni, the entire stilata from the push of waters in flood.

The two docks, placed on both sides of the stilata, to the quota lean, and resting on poles through cavazzali, stabilize the columns on the foundation threshold, allowing the access from the bottom to the structure of the bridge. The stilata rests on a paling of wood elements of old locust-tree, larch, chestnut tree, the oldest ones, and bay oak, the recent ones, fixed in the river bed of the river into a variable depth between four and eight meters. The threshold acts as a base for the vertical structures of the stilata, the columns of chestnut tree, bay oak and larch. The columns, eight for each stilata, are erected vertically on the threshold, and carry out a support activity for the horizontal structures of the floor system of the bridge, those of its plan of stamping, and for the cover.

On the top, in the columns that rise on the part just described, a large beam, cavalla, is placed horizontally, joining them to form the support for the true floor system spreading up amongst the four stilate and the contiguous building structure of the
incomes to the bridge, from Bassano to Angarano. The horizontal structures of the five spans work as the real floor, forming the paving of the bridge. The external parts of the described horizontal structure are protected by the mantellata, in vertical tables of larch, that extends from the advanced share of the street plan to the inferior one of the serraglie; the mantellata is articulated and connected with the cover columns by shaped vertical modillions.

Connected with the kerbstones rest the vertical larch columns of the cover, amongst which the colonnine of the balustrade are arranged. The advanced extremities of the columns are all connected by horizontal beams, dormienti, to which the simple four elements trusses are placed supporting the longitudinal terzere and the overseer larch floor system, to whom the cover mantle is overlapped.

**Conclusions**

The detailed study of the history of the bridge, joined to the analysis of the several methodologies of recovery that in the course of the centuries have followed, brings to an important and fundamental consideration: for all the time a simple and systematic maintenance work has allowed to extend the life of a fundamental work for the Italian architectonic patrimony.

The considerations carried out on the historical document base, or less, on plans, iconographies, on maps, become a useful source of increase of the acquaintances compared with the methodologies that today still can be considered feasible. Only the perpetuation during the centuries of ancient techniques has allowed the maintenance of the structure like it is today, but at the same time the graft of new workings becomes a reflexive cue if compared with the possible methods of execution of restorations and maintenances, thus creating the necessary bases in order to face a plan on a wooden structure. The plan of maintenance of the bridge must comprise, beyond the fundamental characteristic of preservation of the wood in work, also the eventual consolidation and reintegration of the masonry shoulders, and the cleaning of the stone doors.

These are the motivations pushing towards a programmatic analysis of pathologies, and of the participations to execute, because often delays of two or three years in completing the jobs have brought to situations in a so advanced degradation that prevented a re-adaptation of the old wooden elements. An organic and comprehensive plan of feasible techniques on wood, in order to supply the bases for the conservation of the manufacture that is currently in work, without the necessity of creating a plan of a work in the river bed.

The visual examination remains the fundamental instrument for the analysis and has allowed to determine some symptoms of disseminated degradation; but in order to obtain some certainties on the real conditions of the lumber it must be executed some orchestrates analysis, choosing between the less harmful methodologies for physical integrity of the constituent lumber. Endoscopic examinations and the usage of ultrasounds are useful in order to determine the volumetric mass and the discontinuities of the woven, that can apparently look as in a good state of conservation, but could otherwise induce also the more expert students to misleading results.

The survey of the main symptoms of degradation of the wooden material constituting the bridge of Bassano goes executed through a specific source of alteration; subdividing pathologies due to the attack of microorganisms, that find a particularly favourable atmosphere, from pathologies of physical and chemical origin and from the degradations of structural origin.

If in the past in order to protect the surface of the wood the linen oil and the virgin wax of bees have been used, or as in the times of Ancient Rome, practicing holes in the wood in order to inject oiled liquids, during the years, the technique has been sharpened; in recent years, the use of a more effective mixture composed by oil and linen oil guaranteed a durable protection, while nowadays synthetic or microcrystalline waxes are used, to whom fungicides and bactericidal are joined, applied uniformly on the surface to protect the wood; in alternative innovative methodologies are added to the usual procedures always employed to preserve the wood; the technique of protection with water base varnishes becomes in this context a possible answer to the ecological problems of using strongly polluting and dangerous solvents. Substantially all the studies that have been carried out, tend towards the will to recover and to maintain the ability of usage of the whole structure, in
order to make it enjoyable in the best way for the next years, and opening this way a debate on the best methodologies to adopt for a plan that cannot be delayed anymore.

**NOTES**

1. Medoacus Major, Brenta’s Roman toponym crossed the primitive nucleus of Marostica and Sandrigo until it met Medoacus Minor in the Bacchiglione, that through the centuries has slowly moved its river bed towards east in the plain area, nowadays spreading from the Astico and the Tesina, in consequence of a process of Adriatic coast’s hollow isostatic lowering, which is common among Venetian water courses.

2. In the first mountain section from the lakes of Trento, Levico and Caldonazzo two small torrents exit, giving origin to the Brenta; the river covers approximately seventy kilometers within the slopes of mounts. The water, penetrating in depth through the karst systems ascends in surface, in correspondence with the sources of Oliero, north of Bassano, and enters the high plain. The course of the river from Bassano to Piazzola is characterized by the channels interlaced morphology, whose changes can be observed confronting the technical papers of various periods. Usually the floods corroded the islands until they made them disappear, or increased them, until they reached a certain stability. In this case a vegetation with plants to medium stalk develops, typical of the ecosystem we are analyzing, like poplars and locust-trees. Usually the channels are introduced as spoon shape, with sand in sides and on the bottom destined of being removed during a successive flood, while limi and the fine sands are deposited in sinkings of the abandoned channels. The last section of the river from Piazzola, lapping Padova eastwards, until it flows in the Adriatic Sea near Chioggia, assumes the characteristics of a meandri system. The last section is subjected to a reduced ability of waters transport, where the fine materials make thinner, because of the typical handles course and the insufficient slope that meets in the territories.

3. The decisional tasks belonged to the Council of Ten and to the Senate, until the constitution of a permanent and ordinary Magistracy composed of three nobles who had to protect waters.

4. These payments represent a reliable source, for the historians, in sanctioning the existence of two plans; the first balance referred to the labour of the first captured model, and the second one, slighter than the first one, for another model wanted by Palladio in order to bring modifications in work course, as suggest Puppi (1996) and Zorzi (1966). Temanza (1770) supports that the first palladian design can be identified, in 1568, as a «inventione» for a stone bridge with three arches, mindful of the shapes of the roman bridge in Rimini, published in the CAP. XIV of the Third Book, without any specifications about the place whom it was destined; according to Maria Azzi Vicentini (1980), the artist had the possibility to prepare a table of the Four Books, dedicated to his ill-fated invention, and at same time to introduce in the presentation some important indications in order to reveal the place on which the factory had to rise, confirmed also by explicit silent of the locality for which the plan had been conceived.

5. A competition for the reconstruction of the bridge was proclaimed and three plans were introduced: the first one by the Magistrate of the Waters, promo, Tommaso Temanza; the second one by the engineer Giovanni Miazzi, who was entrusted to construct a temporary footbridge by the Podestà; the third one was presented by the self-taught Bartolomeo Ferracina.

6. A real campaign against Ferracina was carried out in the city, due essentially to the will of the engineer of Solagna, who provoked the dissatisfaction of the hands, the resignations of some Presidents named by the City Council, and dissidences between the common citizenship. Entering upon the subject, that will have some years passed before the idea of the reconstruction was taken in consideration by municipal; so spontaneously the population of Bassano collected the necessary funds for a reconstruction.

7. The new foundation was constituted by a piling with four braces of cement poles, 10 m deep approximately and a 58 centimeters diameter, armed by stainless steel and covered by metallic sheet.

8. Examining the degradation of wood, pathologies has been subdivided according to their source: biological degradation, caused by microorganism (sub-orthogonal disintegration, presence of vegetation, biological patina, superficial warehouse, pitting, chromatic alteration, lacuna); chemical and physicist decay, caused by the exposure to the solar beams and to the atmospheric agents (wrinkling, crackle, marcescence, spot, erosion); mechanical degradation, of structural origin (helicoidal lack, deformation, cracks, rigid clefts along the fibers, translations, cleavage, spins).
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