

## **Hypothetical Reconstruction of the Forum Novum of Leptis Magna. Design Rules and Cultural Influences, Materials and Construction Techniques**

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### **ABSTRACT**

In the monumental complex “basilica - forum - colonnaded street” of Leptis Magna in Libya there are morphological and construction principles that will mark the architecture of the third century AD, in particular the peculiar characters of Severan architecture. For the first time in the history of the Roman Empire, there is a “monumentalization” of the artistic language of late imperial age that we will find in the architectural and decorative productions of late antiquity.

The research focuses not only on the cultural influences which helped to define the Severan architectural character in Leptis Magna, but also on the analysis of the forum novum<sup>1</sup> through a new image that underline its artistic and architectural qualities as synthesis of different cultural influences. In detail and without any order they are:

- a general plant with some tricks hiding the different rotation of the pattern, such as trapezoidal rooms or different spans of the order;
- the surrounding porticos defined by columns supporting arches instead of horizontal beams;
- the decorations realized with an excessive use of the helical drill, generating a very strong “chiaroscuro” effect;
- an enclosure-wall characterized by elements of entablature resting on free columns or pilasters, depending of the importance of the wall.

This architectural principles were perfectly integrated with the existing context and with the Roman models, creating a compositional and constructive harmony between East and West, that made the site one of the most famous and luxurious in North Africa.

**KEYWORDS:** Leptis, Magna, New Forum, Severan Architecture, Third Century A.D., Origins of Late Antiquity



# 1 SEVERAN FORUM

The inclusion of the new forum in a city already strongly established gave birth to an irregular shape of the entire area, such that the builders strove optical tricks and techniques daring to bring the site as regular as possible. The analysis of the axes and rotations of the individual monuments compared to the monumental complex shows as the need of an organic plan that had adapted to the old urban setting has forced the Severan unknown architect to design trapezoidal spaces of variable size, which absorb the rotations of the meshes. This arrangement is shown, in plan view, in the geometry of the arcades and into the spaces between the basilica and the forum and the colonnaded street and the forum. Integration of the new buildings with the existing ones is resolved in a perfect way that, following the spaces, you can not perceive all the irregularities of the site.

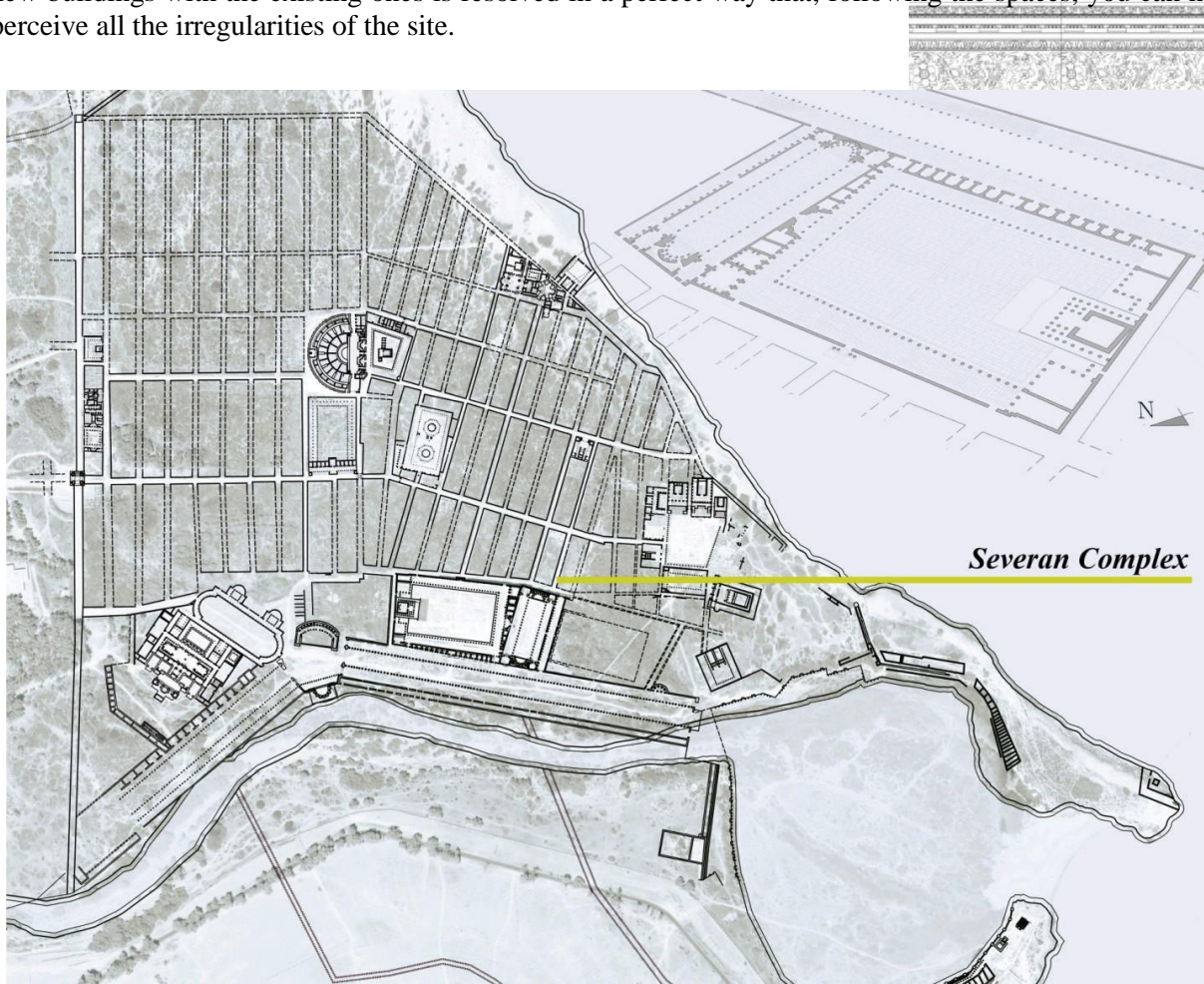


Figure 1: Original design of Leptis Magna in the Severan age and planimetric view of the monumental complex “basilica - forum - colonnaded street”

The original gorgeous design of the architect provided for a double forum space symmetrically respect to the longitudinal axis of the basilica<sup>2</sup>. A second area of equal size to the existing forum, with basilica as pin, was supposed to be built for a colossal transition from the old forum to the great baths of Hadrian, at south-east of the long colonnaded street leading to the new harbour. The imminent opening of the new severan complex because of the visit of Lucius Septimius Severus to the city, together with the lack of funds, typical of a period of economic crisis<sup>3</sup> had led to a hasty completion of the work. It includes, as well, the reason why some decorative details were left without finishing and set itself the need to improvise architectural solutions rather unusual. In addition, it had been completed only one of the two forums provided, located in the south-west of the city.

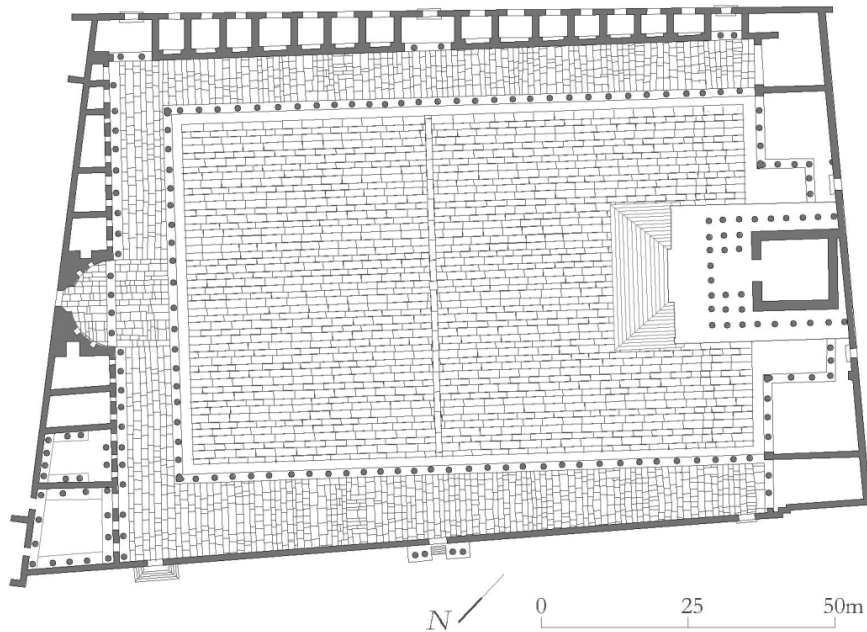


Figure 2: New severan forum plan - Reconstruction of the order of the portico

The quadrangular square stretched for about 9920 square meters was surrounded by arcades, closed on the south-west side from a “ottastilo” temple on the podium, covered with polychrome marble dedicated to the Gens Septimia. On the other side it was enclosed by the three-aisled basilica with a central hall and opposing apses, and by colonnaded street at the south eastern side. The portico ran on three sides of the forum space and the fourth side was connected by the temple, while pillars with semi-columns (so-called at heart) occupied the corners. On a stylobate paved in opus sectile marble with white-blue veins, there were stand up ninety columns about 5.80 meters tall in carystium marble (so-called green cipollino) that stood out on the white of the Attic bases and on the Pergamum capitals (in water leaves with the base encircled by a round of acanthus leaves), made of Pentelic marble. These columns were supporting arches in local limestone with their impost stones that were supporting marble blocks with Gorgon or Atargatis heads towards the square and blocks of limestone adorned by medallions, at the internal portico. On the arches lean an entablature in yellowish limestone composed of a ionic lintel, characterized by three bands separated by astragals, crowned by moulding with astragals and cyma lesbiana; frieze with convex sections decorated by vegetable spirals in relief, also crowned by astragals and cyma lesbiana; ionic frame with modillions and geison band composed by cyma recta decorated by palmettes in relief. In architectural decoration is evident the emphasized use of the helical drill used for its expressive capacity to generate deep grooves. On the top of the first order of the portico, at every column and about 10.50 meters height from the stylobate, there were pillars in proconnesio marble with presumed function of altars celebratory<sup>4</sup>. Morphologically similar to the pedestals of columns, they have, on the upper surface, a base of a small column composed by torus, fillet and apophyge and about 15 centimetres of shaft, with a square hole at the centre of the top. Hardly, in the light of these findings, it can be argued that there were stem of column resting on them because of the atypical nature of the constructive solution. Cannot be envisaged, in fact, that there was a joint which divide in two parts the column with consequent crude interruption of the marble veining. In further, it should be noted that in all archaeological area, during the excavations and after a thorough investigation in situ<sup>5</sup>, it has not found any shaft of the column with a diameter of about 50 centimetres, which could complete such pillars and complete a hypothetical second order<sup>6</sup>. Finally, on the basis of architectural surveys, it is possible to see, on the top of the pillar, four small corner horns. They recall the



type of altar celebratory able to support a kind of copper brazier or a arms triumph according to the model of Trajan's Forum in Rome.

The portico order was covered by a plan system with beams which rested one side on the lintel upper the columns and, secondly, on the wall of the portico. In both cases, the holes of the beams are visible. The decking of the roof, as confirmed by the extrados of the frames, was left blanks and unprocessed because it was not visible in any way. Access to the coverage plan was only permitted for the maintenance of the war trophies or for the use of the braziers during the imperial celebrations. It was possible, in particular, by a small staircase on the back of the exedra of basilica. The exedra was covered by a half dome nearly 15 meters of diameter (which it is still preserved up to the height of the haunches of the dome). It was visible in its entirety from the middle of the square. In the intention of the architect they had to be visible from forum space even the statues placed on shelves that adorned the façade of the basilica. These were never completed, despite having already been put in place shelves (two of which are still in the original place).

The design of the spaces was based primarily on visual perception and understanding through a complex mental process and feelings that necessarily presupposed the use of a subjective reasoning and, therefore, susceptible to optical illusions.

This approach had brought the severan architect to articulate the high portico walls with projecting elements and isolated forms that created a sharp contrast of light and shade. The façade facing the basilica was adorned by corinthian columns on pedestals juxtaposed to the wall and supporting by entablature elements inserted in the walls. Remaining back walls of the forum portico were characterized, instead, by pilasters with attic bases, fluted stems and corinthian capitals and by arches of slabs in pentelic marble replicating the pattern of the portico.

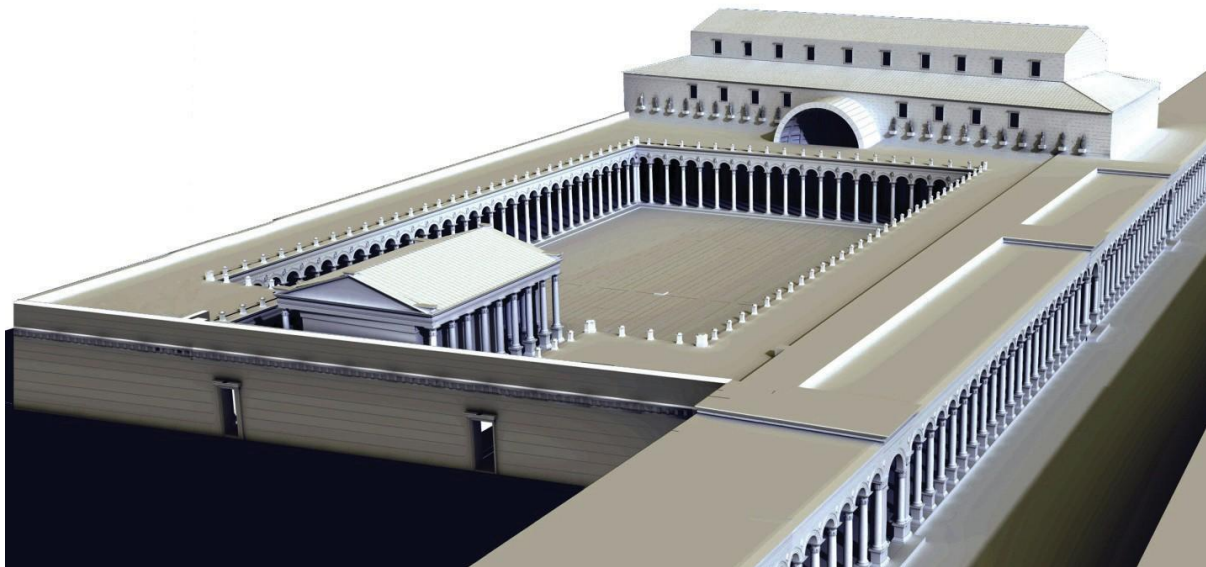


Figure 3: Three-dimensional reconstruction of the forum

## 2 ARCHES ON COLUMNS

The real innovation in the great imperial monuments is due to the presence of columns supporting arches instead lintels. The arch on columns, which carries a crowning entablature, summarizes the research of free and articulated configurations of the late imperial period and summarizes the complex and dynamic rhythm, full of curvilinear movements and special effects, typical of the eastern

Mediterranean and in particular of the syrian area. Here, in fact, there are found the origins of the architectural motif related to a temporal relationship between the Syriac gable, the Syriac arch and the arch on columns.

In the Severan period, for the first time in the representative architecture of imperial power, the continuous arch resting directly on columns appear within the vast public area of the new forum and within the monumental colonnaded street of Leptis Magna. We will find it, a century later, in the peristyle of Diocletian's Palace in Split. Previous examples can be seen in Pompeii in small buildings and in private spaces (eg. the Casa delle Nozze d'Argento and the Casa del Melograno), while, in other figurative applications, it will be found in sarcophagi and reliefs, or in some paintings representation of Pompeii belonging to the second style (eg., in the cubicle wall decorations of the Villa dei Misteri). With Septimius Severus, it is ennobles an architectural system intended to spread widely only a few centuries later, a prelude to the systematic application in early Christian and Byzantine religious structures.



Figure 4: Partial façade of the forum portico

In the severan forum and the colonnaded street of Lepcis Magna, the system of arches on columns is applied in a colossal way (height of over 10 meters, span of approximately 3.15 meters), enough to make it out of all proportion to the conventional canons. The tendency to increase the order in vertical way here reaches the fullest expression in Roman empire.

In the genial severan architect's vision, the portico arched was intended as a pierced wall by large arched openings, responding to the trend of dematerialization of the space and surfaces, typical of the late Roman Empire. Moreover, the raising of the entablature and its detachment from the capitals because of the insertion of the arch, entailed an increase of full volume between the open space and semi-enclosed area. This innovation responds to the taste of the late - imperial and the nature of conceiving spaces by material elision through excavation, plastic removal of material. The traditional architrave resting on a colonnade, which flows along a boundary or a line, gave continuity to the prospectus, while the adding of arches between the columns and entablature articulated the façade, in its uniformity, in a more irregular and disharmonious rhythm. It, in fact, appears as a serial combination of a single module which had been taken out an arched opening. The architect of the time, with the monumentality of this module gives an

idea that appears to reproduce the same pattern of a “triumphal arch” who reiterates along the entire perimeter of the forum space.

From a practical point of view, the arch technique applied to the orders offers the possibility of raising the level of coverage of the first order, with the effect of a greater flexibility in defining the distance of the spans. Thus, it pursues a greater wideness and it is possible to get a free differentiation relatively to the span, made it possible thanks to a variation of the arch rise, from semicircular, become lowered or acute. In the forum portico of Leptis Magna, the angular solution is resolved reducing the width of the spans and elevating the rise of the arches which become lancet arches. Without change the harmony of the whole building, the other arches were slightly reduced the rise and affecting on its shape which becomes oval. An outcome that combines construction techniques and originality of the analyzed characters.

There remains, however, a certain mistrust on the static of the arched pushing system. In fact, about the subdivision of the blocks of the crowning, the entablature continues to keep the length of the span and, in the implementation, to match - uselessly - the joints with the axis of the column.

### **3 THE MODELLING OF ARCHITECTURAL ELEMENTS**

The severan forum gives foundation to the gradual emergence of an artistic concept that, as we have previously noted, is based on sensory and perceptual process. This means, in the field of decorative techniques, the widespread use of the drill with helical cut, that it can corrode the architectural surfaces and generate a well defined “chiaroscuro” effect. It comes, as well, to develop a compositional principle marked by the excavation, by the removal of material. A concept that will spread throughout late antiquity, not only in decorative products, but also in the way of conceiving the built space. This stylistic trend is seen, as early as the first imperial age, in the workshops of Aphrodisias and in the reliefs of Ephesus, which it creates an illusion of plastic form quite different from the Greek. In the Hellenistic period the drill was primarily used in order to separate out the figurative elements and generate half-shadows, while, in the end of the second century AD, the architectural elements are deeply carved. The same ornaments, projected orthogonally forward, tend to detach completely from the background. The final effect is an alternation between empty and full, obtained through deep and thin grooves.

The results of this artistic movement predominate in the architectural and decorative production of Septimius Severus and they anticipate, for about a century, a future desire for change, starting from the formal conception in sculpture and industrial art, to spread it in the architecture. In 202 AD, in Rome, the first emperor of Severan dynasty built a triumphal arch which it will become the model of the late imperial age for the innovative modelling of sculptural ornaments. In his hometown, the pilasters of the Severan Basilica will become famous in the art of history, while into the forum it is possible to identify devices and decorative treatments that fully reflect the characters mentioned above. The pergamum capital shows a strong rootedness of the leaves to the surface that they release at some points, often in a sharp perpendicular cut, such as the peaks of the acanthus leaves of the first turn and the peaks of the water leaves. A similar procedure is adopted for the flowers and acanthus leaves of frieze and decorations of the geison in the frame, as well as in their respective lesbian kyma. The total effect is a continuity of the section line of architectural elements and a decoration system on a parallel plane to the background surface. The excessive modelling of ornamentation reflects deeply the new optical and chromatic perception of the built space, based on a vision from afar, as purpose of conceptual evolution of the old space.

### **4 THE USE OF COLUMNS WITH ENTABLATURE AUTONOMOUS ELEMENTS INSERTED INTO THE WALLS**

In the slowly process of de-Hellenization every material entity abandons its tangible link with the background plan and it become isolated from the surface, gaining ornamental autonomy that does not follow anymore the formal and regular balance. Later on, the single form will tend to serialize in a not organic way and to approach the surface wall, deleting at all the space between the background and visible foreground of the figures. Disappears, then, the classical figurative frame and the individual forms

without such support acquire a partial plasticity, becoming separated and confused within an abstract space that it is appreciable only optically. In this tectonic and morphological study is underlined the use of autonomous systems entablature projecting from the walls and resting on individual columns, common in Syria and Asia Minor in the second century AD, especially in the workshops of Aphrodisias where there were artists full of fancy ornamental.

In Athens it will be repeated along the entire façade of the Library of Hadrian, while, in the forum of Nerva of the empire capital, it will be used as an ornament of the perimeter walls. The columns juxtapose to the wall and the entablature juts over them, running, then, on the back wall.

In Lepcis Magna it is used in a particular way which enhance the function of valuation and hierarchization of the façades. In fact, in order to emphasize the transition from the forum to the basilica, the choice of the severan architect is expressed in the use of columns with entablature autonomous elements inserted in the walls. The remaining background walls of the portico, however, are adorned by pilasters that reflect the pattern of arches on columns of the portico, giving a surface continuity to the masonry. About the isolated forms, the continuity between the element and the wall is found in the plasticity of the decoration of the entablature that turns, with the same characters, on the back wall. This solution, which is typical of the architecture of the late Roman Empire and that we will find in early Christian and Byzantine structures, confirm the abandonment of the trilithic system, dismissed by its structural significance. On the north -western wall of the apse of the basilica of Leptis Magna and on the wall of access to the so-called Sala delle Tredici Colonne of the severan forum, at the height of the entablature elements, there are niches or forums that contained part of the entablature element. Therefore it works as a freestanding cantilever shelf resting uselessly on a column which has only a decorative function.

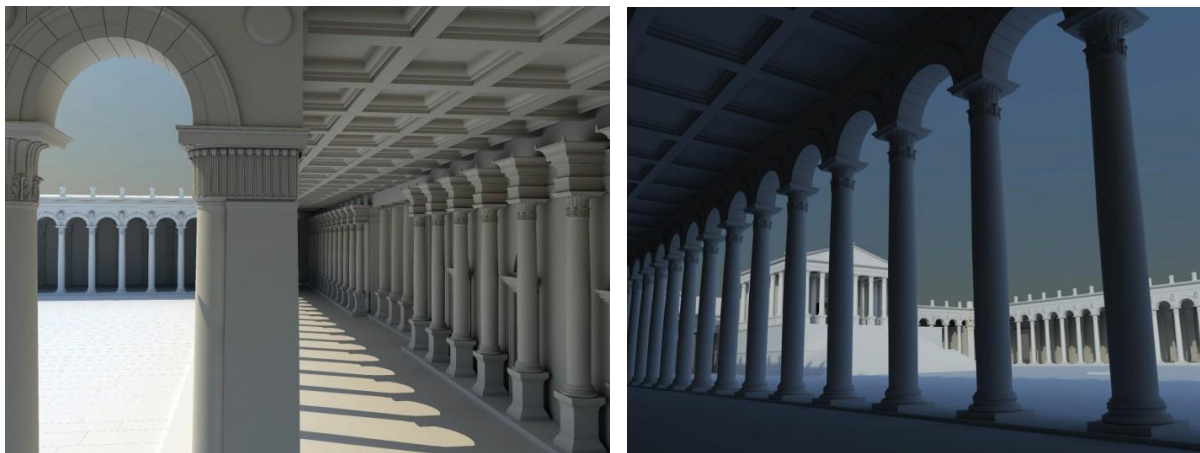


Figure 5: Three-dimensional reconstruction of the forum:

the space between the forum and the basilica (on the left); a view from the portico (on the right)

Also in this case you will not lose the spatial conception of the third century AD where, beyond the constructive value and compositional principle, the solution adopted during the design of space, was linked mainly to the visual suggestion for the viewer.

## 5 THE EASTERN CONTAMINATION

The originality of the monumental complex of Leptis Magna, especially for the severan forum, is the revolutionary grammar and construction compositional. Summary of the confluence of stylistic and morphological constructive peculiarities analyzed so far that anticipates the architectural characters of late antiquity.

Working on the construction site there were the local craftsmen (Punic) who performed the models of the master masons imported together with the materials from Attica (Pentelic and carystium marble) and from Asia Minor (Proconnesio marble). Some architectural elements arrived on site already

decorated by the artistic workshops nearby the marble quarries of Caria and Bithynia. A real response of the presence of artists Greek - oriental is given by different clues and artistic qualities visible on some architectural elements. The basics of some columns on which are engraved the names of craftsmen in Greek alphabet; the capitals of acanthus and water leaves of the forum portico and the colonnaded street are typically Pergamene; busts of the Gorgons and Atargatis were present on shield blocks placed between the colonnaded arches, with clear characters from Aphrodisia; stone blocks with scene of gigantomachy from the temple of the Gens Settimia find a relationship with the contemporary reliefs of Aphrodisia. However, the cold imitation and the low experience in the use of technical tools are to be attributed to the African artists, who were able to make an original look to some decorative motifs that it become characteristic not only in Leptis Magna, but across all Tripolitan area.

To keep alive the relationships between Leptis Magna and the East there was the wife of Septimius Severus, the Syrian Julia Domna (native of Emesa, current Hama). She was a noblewoman cultured and with a remarkable influence on the choices of the emperor, probably even artistic. The Syrian imprint is visible in her formal innovations especially in urban planning. Observation points and the points of view of the architecture were designed according to the imperial character to be transmitted to the user. The spaces, limited by concluded topics, could be perceived from inside with their monumentality. From outside, in fact, the high walls that enclosed squares or streets, do not let to see the magnificence and grandeur of the spaces. Only going through them, one after the other, the user was involved by a sense of grandeur and unusual prestige.

In conclusion, the Severan Forum of Leptis Magna is a product of popular cultural areas of the eastern provinces, defined by the relationship between imperial commission and workers from Syrian, Asian and Punic. It belongs only in part to Roman thought, in his magnificent and imposing character, and in part to African unrefined thought, simple and immediate in the execution. Basically it is a product of areas of the eastern provinces where prevail the dynamic and irrational element and where are rich chromatic contrasts.

From this heterogeneous mix of experiences, cultures, styles and fonts, will rise Byzantine art.

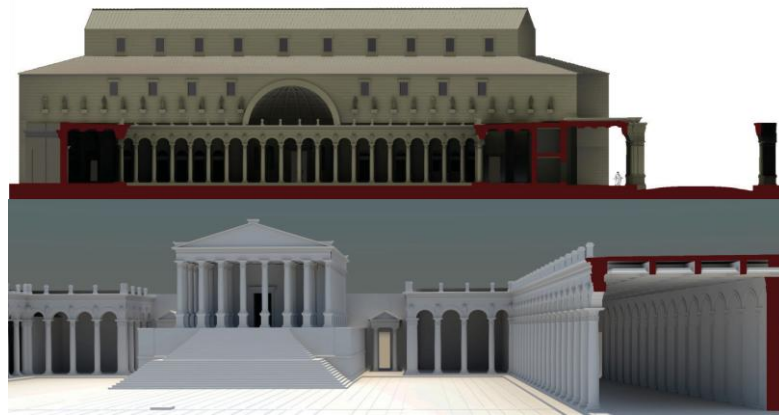






Figure 6: Three-dimensional reconstruction of the forum.  
On the previous page: section and prospective section of the portico.  
In this page: view of the forum from the open space towards the basilica.

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1. It is so-called because its construction, which began in 205 AD and lasted for over 12 years, is next to the so-called *forum vetus*, or the old forum, the center of the old Punic-Roman city;
2. Considering the study by the professor Antonino Di Vita (Di Vita A., 1982) and clear evidence of clues found in situ, such as the immense esplanade of a quadrangular area north-east of the basilica and the high wall that closes, without reason, the eastern façade of the basilica;
3. Iacovuzzi, A. (2013), «La trasformazione del pensiero artistico, letterario e religioso tra età imperiale e tardo antico», Youcanprint (Self-Publishing), Tricase, 2013
4. Analysis carried out in *situ* by the professors A. Di Vita, G. Rocco and M. Livadiotti, along with the author of this article, during the scientific mission in 2009, on the basis of comparisons and evaluations of technical architecture.
5. Scientific mission to Leptis Magna made from 6 April to 6 May 2009 on the occasion of the restoration design of a part of the severan forum entrusted to the Faculty of Architecture of the Polytechnic of Bari and commissioned by the Libyan government.
6. For further details please refer to the PhD thesis of Alessandro Iacovuzzi titled: «Le variazioni morfologiche dei complessi monumentali nel periodo storico tra età imperiale e tardo antico. Caso di studio: il foro severiano di Leptis Magna, Libia», 2011
7. Ibid.
8. Space between the forum and Severan basilica, north-east of the site with trapezoidal shape, enhanced by an odd number of columns juxtaposed on the walls.