

MASSIMO LIMONCELLI • MARIA POTENZA

# VIRTUAL RESTORATION

2

THE FRESCOES OF THE ROCK-CUT CHURCH OF  
LAMA D'ANTICO NEAR FASANO (ITALY)



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OF LAMA D'ANTICO NEAR FASANO (ITALY)

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e paesaggio  
per le province  
di Brindisi, Lecce  
e Taranto

FONDAZIONE



S. DOMENICO



## Virtual Restoration 2

The Frescoes of The Rock-Cut Church of Lama d'Antico Near Fasano (Italy)

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**Massimo Limoncelli, Maria Potenza**

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*To Marisa*





# FOREWORD

This second book in the “*Virtual Restoration*” series represents the natural or rather philological continuation of the previous volume published in 2017: *Virtual restoration 1. Paintings and Mosaics*. The first volume presented the topic of virtual restoration as applied to pictorial and mosaic surfaces via 38 case studies that looked at specific issues: from the survey of the surfaces to their representation, from the mapping of the decay to the analysis of colour, from the diagnostic analyses of the surface to the treatment of the missing parts and the virtual reconstruction. The aim was to illustrate, by means of numerous and varied examples, all the possibilities that *Information and Communication Technology* (ICT) now offers for the study of ancient paintings. The idea was to set out the basic tenets of the scientific method underlying the virtual reconstruction of frescoes and mosaics, adapting the potential of information technology to the principles, methods and rules of “real” restoration, from which virtual restoration was born.

In contrast, this second volume aims to illustrate all the applications of virtual pictorial restoration that can be put to use in a single context of study, the rock-cut church of Lama d’Antico in Fasano.

The church has been the subject of studies since the 1970s, when Antonio Chionna published *Il villaggio rupestre di Lama D’Antico* (1973) and *Insedimenti rupestri nel territorio di Fasano* (1975), after which came the research on the paintings conducted by Marina Falla Castelfranchi (*La pittura monumentale bizantina in Puglia*, 1991) and Maria Luisa Semeraro Hermann (*Arte medioevale nelle lame di Fasano*, 1996). Of the subsequent studies we shall cite here the articles included in the Acts of the first International Conference on Rock-cut Civilisations entitled “*Quando abitavamo in grotta*”, held in Savelletri di Fasano (BR) in November 2003. Organised by the Fondazione San Domenico, created in 2001 at the behest of Marisa Lisi Melpignano with the aim of promoting the study and recovery of the rock-cut settlements in the area of Fasano and Monopoli, this Conference saw the presentation of numerous papers on the rock-cut church of Lama d’Antico. Among these were “*Rilievi architettonici alla Lama d’Antico*” by Elia Putignano, “*La chiesa rupestre di Lama d’Antico e alcune proposte per una catalogazione degli insediamenti in rupe*” by Gioia Bertelli, Loredana Tedeschi and Giorgia Lepore, “*I programmi iconografici*

*del santuario nelle chiese rupestri del territorio di Fasano*" by Marina Falla Castelfranchi and "*Agiografia e iconografia a Lama d'Antico*" by Antonio Chionna.

More recently, new research has been conducted on the rock-cut church as part of the project entitled "*Arte e habitat rupestre in Cappadocia (Turchia) e nell'Italia centromeridionale. Roccia, architettura scavata, pittura: fra conoscenza, conservazione, valorizzazione*", part of an Italian Research Project of National Relevance (PRIN 2010-2011), coordinated by Professor M. Andaloro of the University of Tuscia and headed by Professors G. Bertelli and M. Falla Castelfranchi, respectively of the Universities of Bari and the Salento. This new research involved digital surveys, diagnostic analyses and the architectural study of the building and its decoration, obviously including the virtual restoration of the pictorial surfaces.

Virtual restoration uses innovative methods for the study of pictorial surfaces that reveal their true meaning and value, facilitating their appreciation by experts and laypersons alike; the application of these methods to the frescoes of the church, the results of which we present here, has made it possible to set up the *Virtual Museum of Rock-cut Churches*, the first of its kind, in the Rock-cut Park of Lama d'Antico.

The conception, creation and scientific curatorship of the Virtual Museum are the fruit of joint efforts by Dr Maria Potenza, restorer and archaeologist, Dr Giuseppe Donvito, art historian, the architect Giovanni Di Vito, who first proposed the museum project, subsequently executed by Claudio Donato, and the current author. The creation of the Museum was possible thanks to the financial contribution and logistical support provided by the above-mentioned Fondazione San Domenico and the permission granted by the *Soprintendenza* (the authority responsible for archaeology, fine art and the landscape) of the provinces of Brindisi, Lecce and Taranto, which was enthusiastic from the start.

The present volume therefore contains the results of a multidisciplinary research project conducted with the cooperation and involvement of various professional figures, including art historians, restorers, archaeologists and experts in information technology; scholars from different but complementary disciplines thus worked together on the creation of a complex approach to the interpretation of heterogeneous information arising from a range of historical and archaeological sources, thereby overcoming together the traditional tension between "the two cultures", i.e. sciences and the humanities.

The book follows a philological sequence that starts with an introduction to the building's surrounding context, i.e. the countryside and terrain near Fasano. It continues with the study of the architecture of the church of Lama d'Antico, based on the digital survey of the surfaces and the stratigraphic reading of excavation data, which helped to establish its volumetric and spatial evolution. This is followed by the description of the frescoes inside the church, including their position and state of

conservation, together with the iconographic analysis, a prerequisite for virtual restoration, which is the focus of this volume. Virtual restoration is presented in an extended methodological premise setting out the principles and methods guiding the digital intervention on the pictorial surfaces present in the rock-cut church. These digital techniques re illustrated singly, wall by wall, scene by scene, by means of specific records setting out in detail the operations performed on each painting and the results of the restoration.

The book continues with a historical and artistic re-reading of the frescoes, of which a fuller understanding is now possible, thanks to the new data emerging as a result of the virtual restoration, for example the new attributions of the figures of saints and the revised iconographic interpretation of the scenes.

The volume concludes with the presentation of the project for the *Virtual Museum of Rock-cut Churches* and a brief appendix illustrating the preliminary results of the work, still in progress, on the other two churches present in the Rock-cut Park of Lama d'Antico: San Lorenzo and San Giovanni.

The publication of this volume was possible thanks to the help of friends and colleagues with whom we shared ideas, work methods and results: Maria Potenza, Giuseppe Donvito, Giovanni Di Vito, Claudio Germinario and Roberto Rotondo. I shall take this opportunity to thank all those who contributed to the completion of this work, especially Marisa Lisi Melpignano, (President of the Fondazione San Domenico), Ettore Dazzara (secretary of the Fondazione San Domenico) and Maria Picarreta (head of the *Soprintendenza*, the authority responsible for archaeology, fine art and the landscape for the provinces of Brindisi, Lecce and Taranto). I thank Carmelo Di Fonzo (also of the *Soprintendenza*), for contributing to the creation of the Virtual Museum of Rock-cut Churches.

Lastly, I thank Marina Falla Castelfranchi, Manuela De Giorgi, Gioia Bertelli and Cosimo Damiano Fonseca whose contributions to the study of rock-cut civilisation made this research possible.

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Lecce, June 2020



# PREMISE

In the last two decades, technological progress in both instrumentation and information technology, especially in the field of software for the processing and management of data, has given rise to a number of innovations and improvements, with decisive consequences not only in the so-called “hard sciences”, but also in all disciplines linked to history.

One of the most significant outcomes of this progress is the development of virtual restoration, a discipline that emerged in the 1990s, immediately generating great interest due to its huge range of potential applications in a myriad of contexts. In addition, it represents a valid alternative in terms of diagnostics, the analysis of the artefact and its hypothetical reconstruction in cases where, for any number of reasons, direct intervention is difficult or impossible.

In step with other forms of technology, tools for conducting precision surveys and digital photogrammetry in both 2D and 3D are also continuously evolving. And yet, despite the introduction of increasingly sophisticated technical apparatus, the importance of professional figures with a solid training in the humanities emerges more clearly than ever. Indeed, they are indispensable in the delicate process of reading, analysis and recombination of the data with a view to correctly framing the artefact in its original context, without giving rise to the incongruities and misunderstandings to which the field was subject in the past.

Hence the centrality of a study based on the synergism of various disciplines, with the archaeologist, the architect and the art historian working in a continuous and transversal dialogue, by now essential in the management of the complexity that characterises human sciences.

It is against this background that this, the second volume of *Virtual Restoration*, makes its appearance. Its distinctive feature is its focus on a single context, the rock-cut church of Lama d’Antico, one of the most famous and evocative structures in the Park of Lama d’Antico, a spectacular site in the countryside of Puglia. This approach was adopted in order to highlight precisely the complexity of the aspects and issues associated with this type of analysis, whose hallmark is the coordinated participation of scholars from a range of disciplines in a single broad-based study.

In the first part of the book, Roberto Rotondo contextualises the building in its native environment. Indeed, the characteristic geomor-

phology of the terrain has obviously conditioned many aspects of the settlement, for example the spatial distribution of the various structures of which it is composed, depending on their specific function (places of worship, dwellings, workshops, storage facilities).

The planning skills of the settlement's creators are also revealed in the attention to the water supply, with an integrated system of channels and underground cisterns, while the analysis of the material evidence and archive sources makes it possible to reconstruct the medieval agrarian and industrial landscape, needless to say quite different from that of today.

The nature, methods and objectives of digital surveying are now defined by the laws in force as constituting an essential preparatory stage before the execution of any restoration measures. This clearly goes beyond the antiquated conception of virtual restoration as mere measurement and graphic representation. Indeed, its function is now to provide a fully-fledged "annotated edition of the monumental text".

The various aspects of this theme are extensively dealt with in the essays by Massimo Limoncelli, who highlights the close link between the practice of instrumental digital surveying and the conservation of architectural, archaeological, historical, artistic and landscape heritage. Indeed, the surveys make it possible to regularly monitor any factors of decay present by means of mapping and quantitative analysis, and to respond to critical problems via virtual restoration.

The highly detailed structural analysis of the "negative" traces legible on the rocky surfaces of the church shows that the building, in its current form with two apses and oriented east-west, is the result of at least two phases of construction. Initially reflecting the stylemes typical of the area of Brindisi in the 10<sup>th</sup> and 11<sup>th</sup> centuries, the building was subsequently refurbished in accordance with Middle Byzantine models seen above all in southern Greece in the 12<sup>th</sup> and early 13<sup>th</sup> centuries. During this transformation however, it never lost sight of the centuries-old heritage of local building traditions, particularly evident in the interesting approaches to excavation.

The same level of detail characterises the cataloguing of the wall paintings by Maria Potenza, with a total of 25 scenes. The individual images, all of saints of the Eastern and Western Churches, are carefully and thoroughly analysed, in some cases leading to a revision of the identification proposed in the past and its replacement with a more convincing interpretation.

The rich panorama of parallels with other contexts in Puglia and the Aegean region concerning both the architecture and the pictorial decoration, together with the description of the other churches in Lama d'Antico, gives rise to a series of questions and interesting hypotheses regarding the patrons of these buildings: monuments to an ancient faith that regulated the rhythms of worship and labour in the daily life of the region's inhabitants and shaped the landscape of this corner of Italy in a way that is unique and unrepeatable.

This volume marks another decisive step on the road towards the full recognition of virtual restoration as a scientific interdisciplinary approach to the study of archaeological contexts. It is our wish that virtual restoration will become more widely adopted as a key part of a state-of-the-art system of investigation that is sensitive to the safeguard and appreciation of our cultural heritage, two themes which today appear to be more relevant than ever.

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# PRESENTATION

The research conducted by Massimo Limoncelli and Maria Potenza on the rock-cut church of Lama d'Antico and its paintings stems from the need to restore legibility to this extraordinary complex, which unites rock-cut architecture and pictorial decoration.

The essential starting point to this analysis was a digital architectural survey that led to the in-depth reconstructive study of the "construction" phases of the building by Roberto Rotondo. Through a rich series of projections and axonometric cross-sections, the rock-cut church presents itself in all its architectural peculiarity, an ever so precious documentation capable of displaying the complexity of the excavated volumes of the building. The pictorial decoration was subsequently displayed on the Photogrammetric cross-sections of the walls of the church: the objective was to virtually restore the paintings inside the church to their complete, or almost complete, integrity. Thanks to the digital survey and the mapping of the pictorial surface, conducted with the aid of UV and IR photography, Maria Potenza recovered illegible iconographic details, ultimately mending the figurative fabric of the painted image, through an interpretative approach based entirely on the existing data set and not on imaginative interpretation. The paintings are thus in constant dialogue with the architecture and liturgical furnishings. They are returned to the wall both in dialogue with the system of nearby images but also in their original location, of which they were an integral part. The virtual reconstruction of the church and its paintings tell us the exceptional story of the "rock", and of the new space created by subtracting matter to depict images that are different from those in conventionally constructed churches. These are "votive images juxtaposed to each other without apparent continuity", not derived from hagiographic narratives, but more probably from the funerary function of the edifice and perhaps the patronage of a high ranking member of the clergy given the high number of bishops depicted<sup>1</sup>. As Giuseppe Donvito points out in Chapter IV we now know more about numerous of these images, which creates an opportunity to review the iconography of the church.

This new stage in the work of Massimo Limoncelli, published three years after the *Virtual Restoration 1. Paintings and mosaics*, urges us to

consider “virtual restoration” as its own discipline, independent from traditional restoration, even if it is the natural outcome of the latter and has relied on this to establish its theoretical approach. Inevitably, “virtual” and traditional restoration are different, as the former deals with images and not matter. It is no coincidence that before an artwork is restored in the flesh virtual technology is employed to simulate the act. Indeed, it is in how gaps in knowledge are treated that the distance between “virtual” and “real” restoration becomes evident. In the latter, the act of filling these gaps has the aim of “*reducing the alterations generated by the interruption of the continuity of the shape to make the image the maximum presence it is still capable of while respecting the authenticity of creation and historical document*”<sup>2</sup>. For the paintings of Lama d’Antico, Massimo Limoncelli and Maria Potenza propose three different degrees of intervention: schematic reconstruction, neutral retouching and chromatic dampening, the latter leading to the “total retouch”, in other words to an “impossible restoration” which inevitably involves a digital edition of the image.

The restoration of the architecture and its paintings led to the *Lama D’Antico Virtual Restoration Experience* initiative of 2019. This allowed a broader audience to have an immersive experience of the space and images of the 13th-century rock-cut church, with the aid of video mapping technology. This represents a new way of interpreting and promoting medieval sites, which can also be compared with the 2016 reopening of the church of S. Maria Antiqua at the Roman Forum to the public. I participated in developing the narrative of this early experiment promoted by the Parco Archeologico del Colosseo, which led visitors to discover the 8th-century paintings in the two chapels of the church: one dedicated to the Medici Saints and the other to Saints Quirico and Giulitta. Massimo Limoncelli and Giovanni Di Vito give us a step-by-step account of storyboard and workflow choices at *Lama D’Antico Virtual Restoration Experience*, giving the audience an active role and allowing them to participate in the creative process and production of the project.

Massimo Limoncelli began this journey with his 2012 publication *Il restauro virtuale in archeologia*, which introduced us to his methodology through case studies. His research represents a starting point in understanding, visualizing and promoting monuments and their pictorial and/or plastic decorations through virtual restitution. His is a brave and generous approach, especially in the world of Digital Heritage where technologies develop at surprising rates and virtual reality constructs are produced often without the time to reflect on the meaning and quality of the content. The idea to create a permanent seminar on the theoretical and practical implications of virtual restoration was born from this urgent need. Massimo Limoncelli and other scholars working in Italy presented papers on this topic at the workshop held at the University of Roma Tre on 17 January 2020 (*Restauro virtuale tra teoria e prassi*). Our objective is to attempt to collaboratively build an ontology

of “virtual restoration”, to regulate workflow and standardizing best practices and methodologies as much as possible. Such protocols will assist in establishing state of the art quality standards and critical reflection, not only technology but also on virtual products and installations created in the context of Digital Heritage.

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## NOTES

<sup>1</sup> FALLA CASTELFRANCHI 2004.

<sup>2</sup> BRANDI 1963; MORA-PHILIPPOT 1999.