Foreword

The book presented by Professor Giuseppe Amoruso offers a whole overview of modern drawing tools used on graphic research.

Both digital processes applied to representation as those applied to geometric issues, included in the first volume and their specific design tools presented in the second volume show us an international overview that reflects the achievements of modern technologies applied to graphic representation.

The contributions from Italy, Cyprus, Spain, Brazil, United Kingdom, United States, Portugal, Argentina, Switzerland and Turkey, collect top quality researches on the field of drawing. This includes both chapters on documentation on Architectural heritage and chapters on form and geometry of buildings and historical monuments.

This international nature allows checking the diffusion of the latest computing progresses followed simultaneously all over the world. Not only 3D scanning techniques using sophisticated and expensive equipment, but also digital processing of surveys using low-cost instruments, allow levels of accuracy and amount of information which was unthinkable just few years ago.

Equally, modeling processes from random digital images without the need of a previous orientation, have opened a field of research that allows virtual reconstructions for 3D environments as well as deep researches on geometry, construction processes, textures, etc.

Traditional photogrammetry has also evolved dramatically during the last decade. Processing digital images allows a much more intense use of the frames: rectification of images, generation of photo mosaics, ortho photo maps, spherical panoramas, and many other applications have converted the traditional documentary photography in an tool of recording and collections of metrical data.

As often commented by Professor Mario Docci, “the deep knowledge of a work of architecture is only achieved after an accurate survey of the building is done...”, and when the written documentation and the traces that history and time have left on the monument are verified.

Nowadays, apart from the humble sheet of paper and the humble pencil, there is an arsenal of tools and graphic procedures available. This allows more comprehensive and accurate survey than those done years ago, but it is has also to be kept in mind that the abuse of these instruments can lead to spectacular results at first glance but lacking a level of accuracy and definition which might allow us to achieve that “deep knowledge” which we quoted before.

The papers along these two volumes are exemplary in this sense. The first volume includes an overview on the use of leading computing procedures such as visualization, automatization, fractal geometry, Building Information Modeling, geometry, CAD, 3D modeling, etc. These are the emerging tools dedicated to drawing and to understanding of architectural spaces.
Geometry is a constant subject in this volume, either in purely theoretical articles or case studies of several historic monuments and buildings. This section includes examples of western architecture and also samples of other non-western traditions, such as the underlying geometry in Islamic Architecture or some researches on stereotomy patterns in historic buildings in Cairo.

Chapters included in the second volume are oriented to the specific tools for the generation and composition of complex shapes, which are known as digital modeling. Reinterpreting the conventional architectural design workflow using these new tools allows the exploration of their spatial and formal characteristics. This last section also includes papers on emerging and modern computational techniques, such as the generation of complex geometries, parametric design, algorithms for surface generation or sustainable urban design, etc.

In summary, a wonderful book on the latest advances on emerging digital tools which allows an accurate and correct approach to the geometric and spatial analysis of architecture.

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