

## Reviews

Michele Calvano  
***Disegno digitale esplicito.  
 Rappresentazioni responsive  
 dell'architettura e della città***  
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The great wonder of the word “drawing” lies in the ability to understand in its meanings a vast heterogeneity of phenomena and activities, belonging to the sphere of perception, knowledge, imagination and communication. Noble meanings, able to specialize when the word is accompanied by adjectives that specify the application field. With *Disegno digitale esplicito* (Explicit digital drawing), Michele Calvano suggests to the readers to focus attention on a particular quality of drawing, which is prevalent in the digital meaning, consisting in the “explicitness” of the geometric-formal genesis: the synthetic and conceptual communication of the realization process of the drawing. This “narration” process takes place through indirect digital modeling tools, which are the modeling aids provided by the Visual Programming Language. These offer on the one hand the creative and expressive freedom characteristic of programming languages, and on the other hand the organizational and communicative capacity of flow charts.

Of the many technological innovations that have transformed the drawing over the past thirty years, the Visual Programming is certainly the most important and destined to be the most manifest. It is the most important because, unlike other transformations, it centers on the essence of digital innovation—that is information processing—and therefore it is the only one that did not exist before in any form. It is the

most manifest because more than the rendering and any other representation produced with digital aid, as well as influencing the visual culture, it has come to materialize into an architectural form.

The indirect digital modeling, performed through visual programming tools [1] is the origin, present and future of digital design. Underestimating its role, or even worse, relegating it to a non-pertinent technicality of the architect and more generally the designer, is an error far greater than that, which many of us have witnessed, of “passive resistance”. This term wants to represent the form of cultural contrast and consequent slowing of the change that has characterized the beginnings of the drawing and the digital design in the faculties of architecture.

In fact, in addition to the already mentioned values of the explicit form of digital drawing, there are many others. Among all, what concerns us more closely both as researchers and as teachers in the area of drawing, is the ability of this aid to be a twofold tool for organizing and verifying knowledge. It is an organizational tool because it allows to structure and communicate (visually) the methodology of formal analysis and every determining factor that we know about the architectural form through study, observation and survey. It is a verification tool since, being a rigorous process narrative, it allows an in-depth evaluation of the quality of

the path that our students follow, facing the same activities. The book *Disegno digitale esplicito* also presents a subtitle that has considerable importance: *Rappresentazioni responsive dell'architettura e della città* (Responsive representations of architecture and the city). The adjective "responsive" requires attention that goes beyond the simple association with a concept of mutant and dynamic form. Instead it assumes the role of discriminating quality to discern between an experience of digital architecture representation and a simply digitized one. In the first experience the role of the elaboration is essential prerogative of the architecture existence and of its continuous manifestation. In the second experience the processing is finalized to the architecture generation, but once generated it will no longer be useful to its manifestation. Digital technology in the first experience is therefore essence, while in the second experience it is instead only a tool.

The contribution offered by Michele Calvano to this innovative, complex, fertile and interesting scenario is clear and well calibrated. Therefore it appears useful for researchers and scholars who want to delve into the logic and potential of indirect modeling. The book *Disegno digitale esplicito* is in fact structured on three macro-topics: the theoretical framework in Chapter I, the principles of explicit design in chapter II and some application scenarios in Chapters III, IV, V and VI. The latter chapters range from survey procedures and data restitution, both on the architectural scale and on the urban scale, up to experimental procedures that test the interoperability between the BIM process and the Visual Programming Language. In the first chapter, *Pensiero algoritmico e modelli* (Algorithmic thinking and models), the author summarizes the origins

of thought that are the basis of what he defines Explicit Digital Drawing (EDD). Founding principle is the attention to the drawing process, rather than the result alone. A reasoned, controlled, finalized and optimized drawing: a drawing for knowledge (survey) or for communication (project). One of the starting points is the concept of the "drawing as a model", with reference to the work of Riccardo Migliari et al. This is understood in particular: in the quality of a heterogeneous drawing that is transformed with continuity in its different expressions; in the ability to integrate the information characteristic of digital drawing and above all—today—to be geographically distributed, shared and interoperable.

The first chapter is also dedicated to the three basic declinations of the drawing that the author identifies as: "drawing to think", expressive and evocative as are the conceptual sketches; "drawing to communicate", plausible and suggestive, as rendering images are today; finally, "drawing to realize", with a pragmatic value and technical content. The first chapter closes with a quick look at the recent past, in the particular work by Frei Otto, with the aim of highlighting how the primary concepts of DDE were already a need and research in a period that we can consider pre-digital. The second chapter, *Principi di disegno esplicito* (Principles of explicit drawing), is dedicated to taking up the theoretical and operational principles of digital modeling and showing how they can be reproduced, controlled and displayed, in the form of a process, with the help of the Visual Programming Language. Ample space is given by the author to the concept of mathematical model and numerical model and it is clear the association of the first one with Nurbs ge-

ometries and the second one with polyhedral geometries (mesh). The reading of this chapter is essential to gain access to the understanding of the processes that govern subsequent applications.

In the third chapter, *Analisi dei Web Data Set* (Web Data Set Analysis), in the fourth chapter, *Rappresentazioni esplicite del paesaggio urbano* (Explicit representations of the urban landscape), and in the fifth chapter, *Procedure geometriche nei panorami sferici* (Geometric procedures in spherical panoramas), as already mentioned, the author analyses problems and proposes solutions regarding the indirect survey and modeling of urban space, through the presentation of original, pertinent and conducted research results up to a mature testing phase of the methodologies. Particularly interesting are the examples of integration between direct and derivatives data: the first one understood as a product of a specifically planned survey campaign; the second one extracted through normalization procedures, operating on the datasets made accessible online by the multiple databases dedicated to the territory. Equally it is interesting the definition of specificities, the descriptive areas and the relative classification of the various tools that are useful to model urban space (GIS, SIM, BIM, DIM). These are summarized in the workflow of defining the RUM, namely the Responsive Urban Model: a set of models able to change as a result of the progressive variation of the data defining them. Concludes the set of application chapters related to urban space, an application to the small scale of architectural detail, where the DDE becomes a fundamental aid for navigating and measuring spherical panoramas. In the last chapter of the book Michele Calvano explores the relationships and

synergies between the DDE and the BIM, and does so by illustrating a remarkable experience in the design of a responsive façade, an example with which it reaches the synthesis of all the

concepts up to that moment exposed. *Disegno digitale esplicito* is the first volume of a new series called „*DL digital Landscape*” [2] which aims to publish scientific papers on digital processes

for the representation of the city, architecture and product: Michele Calvano's book is therefore also useful in understanding the approach and utility that the series will have in the near future.

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#### Notes

[1] We have to imagine them in their natural and predictable future transformation and innovation.

[2] The directors of the series are: Massimiliano Lo Turco and the same author Michele Calvano.

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