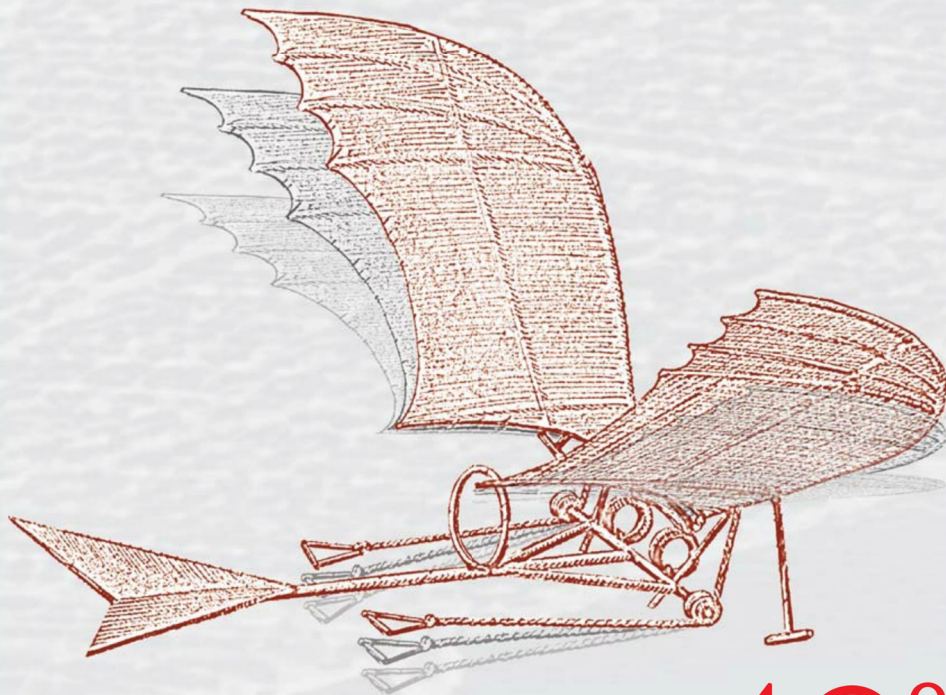


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# Virtual (Reality) for Urban Design Competitions: two case studies applications

Barbara E. A. Piga\*

THIS CONTRIBUTION FOCUSES ON THE ROLE OF REPRESENTATION MANDATORY REQUIREMENTS IN URBAN DESIGN COMPETITION BRIEFS, WITH PARTICULAR REFERENCE TO REALISTIC SIMULATION OF THE ENVIRONMENT. SPECIFICALLY, THE AUTHOR PROPOSES A METHODOLOGY FOR DEALING WITH THE TOPIC, AND SHE PRESENTS THE APPLICATION ON TWO CASE STUDIES, ONE AT THE NATIONAL AND THE OTHER AT THE INTERNATIONAL LEVEL (THE AUTHOR WAS INVOLVED IN THE DEVELOPMENT OF BOTH DESIGN BRIEFS). AFTER A SHORT INTRODUCTION ON THE SUBJECT, THE PAPER PRESENTS THE METHODOLOGY BASED ON A MIXED SOLUTION OF AUTHORIAL AND PRE-DEFINED MODES OF REPRESENTATION, ITS APPLICATION ON THE TWO CASES, AND THE CONCLUSIONS.

KEYWORDS: VIRTUAL REALITY, EXPERIENTIAL SIMULATION, URBAN DESIGN COMPETITION.

Literature about urban design competition is little (see for instance Strong 1996), (Nasar 1999), (Andersson et al. 2013), and almost non-existent is the one that, within this general topic, specifically focuses on representational issue. Nevertheless, the role of representation in design competitions is crucial from different perspectives. Andersson, Zettersten & Rönn (2013) assert that architectural competitions should imply that: (a) drawings and visualizations may transmit credible knowledge and (b) quality in architecture is something that may be seen and transmitted via images. The reliability of representation is then crucial for a proper evaluation. Photorealistic renders are more and more used to presents design projects, and it is thus relevant to remember that several authors pointed out the possible biases related to their improper production and usage (Appleyard, 1977), (Sheppard 1989, 2001, 2005), (Piga et al. 2015). This kind of visualizations are becoming more and more common thanks to the spread of user friendly and low cost 3D and render software, and their trustability for anticipating the experience of places should be seriously and critically reconsider, especially if these are used as one of the crucial support for evaluation of urban transformations. Anyhow, even if some criteria for a reliable production of realistic simulations exist, the passage from theory to practice is not that immediate, especially if mediated by competitions briefs. Nevertheless, guidelines that favor this approach can be easily adopted in design calls. The paper presents two case studies applications where representational rules became integral part of the contest program.

Generally, the representational mandatory requirements in urban design calls refer to specific formats or layouts to adopt, to the number of pages to deliver, to the weight and resolution of files, and so on; it is also common that cartographic materials are provided along with the competition program. The set indications provided do not generally include specific guidelines regarding the expected stylistic outcome of realistic simulations; rather, the representational style is free and becomes a relevant character for suggesting the atmosphere of

the design project. It is anyhow possible to presume that the authorial style plays a role and have an impact on steering the final evaluation. If on one side it is undoubtedly important to keep this stylistic possibility open, since it is an essential part for communicating the design project idea, on the other side it is equally important to highlight the risk of possible biases provided by this approach; it is particularly relevant to consider this when photorealistic renders are submitted for evaluation (Sheppard 2001), (Downes, Lange 2015). I argue that a combination of stylistic authorial and non-authorial representations constitutes a balanced opportunity that can take the advantages of both modalities for properly supporting decision-making.

The author's graphic style can boost the communication of the design concept, since it often contributes to deliver an emotional message aimed at describing the atmospheric dimension of the design solution. Nevertheless, participants obviously - and correctly - aim at winning the competition, hence, they try to "sell" their proposal; a good "make-up" of representation can favor their goal, but, as D. Appleyard already noticed in 1977, often simulations presents an idealized world "where the sun always shines, vegetation grows in luxuriant profusions, the water is pure, the streets clean, the people well-dressed and happy..." (p. 45-46); unfortunately, these "products do not always live up to the simulations" (p. 46), and this is a crucial point. Even if evaluators are supposed to be able to read the images intention beyond the mere project description, it is not easy to completely skip their influence. Moreover, the representational ability can differ from architect to architect, and it is reasonable to suppose that a great graphic competence can represent a vantage for participants, but the evaluation of entries should consider the architectural proposal only, and not the ability of the architect's to deliver the message; the key issue is, indeed, the performance potentially brought by the design project. Hence, how can we reduce the risk of biased evaluations while keeping the atmospheric and stylistic message by authors? The competitions' representational requirements might play a crucial role in this direction.

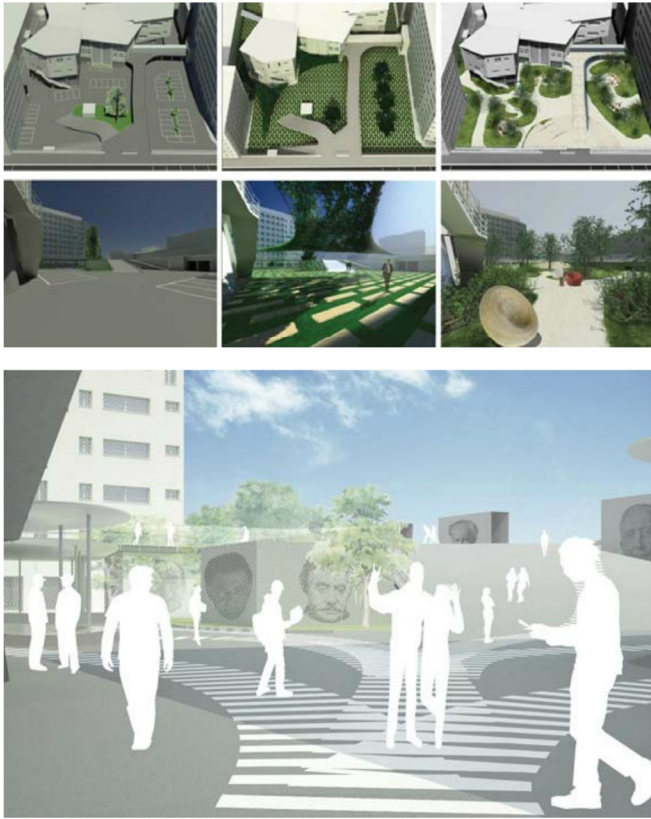
Considering the above mentioned possible problems related to realistic but not trustable representations, the author proposes a methodology based on calls briefs that combine mandatory and non-mandatory representation requirements for urban design competition. The approach was tested in two case study applications: (i) a competition for students of higher education in architecture and planning at the national level, where participants had to deliver a squared image of the solution, and (ii) an international competition, linked to an H2020 project, open to students and professionals where attendants had to produce spherical panoramas to be navigated with Head Mounted Displays.

The proposed method simply consists in requiring two parallel modalities of design project representation based on: (i) free authorial



1/ Images from the students' competition "Riqualficazione degli spazi aperti del Campus Bonardi" (2012). The images in the first column represent the vistas embedded in the 3D model delivered by organizers to participants. The second column presents the project (untitled) by A. Rinaldi, J. Moncada, and M. Brocca; the third column presents the "Un giardino per i cristalli di Gio Ponti" project by S. De Crescenzo, A. Corbetta, and R. Brollo.

2/ First classified at the students competition "Riqualficazione degli spazi aperti del Campus Bonardi (2012): "Un altro agorà" by N. Ornaghi, R. Radaelli, F. Zorzi, F. Zhiguang.



stylistic approach; (ii) pre-defined views and style. As argued above, both are useful for the design concept depiction and the project description, and thus one reinforces the other. The authorial mode is supposed to be somehow subjective, enabling the author to define her\his personal modality for narrating the story of the urban transformation; the pre-defined mode, on the contrary, aims to be to a certain extent more objective, trying to flatten the illustrations of all the delivered design projects in order not to distinguish one from the other starting from the graphic style only. To make this procedure more efficient, organizers should deliver the 3D model of the context area together with the competition brief, so that the context is equal for all participants; along with it, they should provide mandatory pre-determined points of view\targets, and weather\seasons settings for the views to produce. This allows to collect comparable images of all the projects; these are generally less appealing but, exactly for this reason, this contributes to specifically focus the jury\audience attention on the contents of the architectural proposals.

In addition, requiring specific points of views and context targets stimulate participants in considering that particular visual cones as relevant ones, hence, encouraging a design development that take into account that vistas. Following the same logic, if the required setting of the views for the same frame includes different seasons or different atmospheric conditions, this will encourage a solution that considers the performance of the proposal over time. The same can be said for dynamic views, such as videos, that will allow to pose the attention on the kinesthetic experience induced by design. As a matter of fact, this approach, beyond enabling a better comparison among the different design projects, can be interpreted as a way for addressing peculiar design desiderata beyond the brief textual description.

The first case study application formulated by the author was a students' competition named "Riqualficazione degli spazi aperti del Campus Bonardi [Renovating the open spaces of Campus Bonardi]"<sup>1</sup> that was promoted and organized by the "Laboratorio di Simulazione Urbana Fausto Curti"<sup>2</sup> (labsimurb – E. Morello, B. Piga) in 2012 within the inter-university project "Città Studi Campus Sostenibile"<sup>3</sup> (Politecnico di Milano – Università degli Studi di Milano). The goal of the competition was to develop a preliminary design project for renovating an inner open area of POLIMI. Participants were asked to produce: (i) an A0 with a predefined layout containing technical drawings and two renders using the points of view provided with the 3D model; (ii) a second A0 with free layout and types of illustrations. For the predefined A0 no particular camera settings, such as weather conditions and similar, were required; neither stylist requirements, such as representation realisticness, were asked. Results shows that only few participants used realistic images (fig. 1), the others tended to be more abstract (fig. 2); moreover, the different style of the graphic reduced the efficiency of comparability within design solutions.

The second case study application was a design competition for students and professionals named "Envisioning the City of the Future: Making the Invisible Visible" (Envisioning 2017)<sup>4</sup> that was launched by labsimurb (B. Piga) in connection with the H2020 EU project Sharing Cities (Grant Agreement N°691895). The goal of the competition was to envision and communicate scenarios of the city of the future. The evaluation procedure was divided in two phases, both with specific representational requirements. In particular, the usage of a user-friendly render software (Lumion by Act-3D, one of the sponsor), provided with the competition materials, was required for producing the final renders. A number of vistas with pre-defined point of view and effects (day, hour, sun and cloud condition, focal length and so on) were required. These specific settings were already embedded in the photorealistic 3D model of the context provided to participants (fig. 3). For promoting a design that pays attention to the final experience of users, subjective views rendered as spherical panoramas (fig. 4), navigable through monitor or Head Mounted Display,



3/ Render of the 3D model delivered by organizers to participants for the “Envisioning Competition 2017”.

4/ Comparable images extracted from the spherical panoramas delivered by participants admitted to the second phase of evaluation. From left to right, upper row: “Equilibrium” by F. Tabanelli, P. Barbero, L. Valenzisi; “Smart Ambiance” by V. Petri; “the New Interactive Beat of Public Space” by N. Marinkovic & I. Kovacevic; “Dynamorph” by J. C. Scremin; “T-e-t-MI-s” by M. Nedevska; “Sharing Cities” by R. Marra.



and only one top view (squared image - fig. 5) were required. The usage of immersive simulation is particularly useful for engaging both participants and evaluators in considering the human/environment perspective along the process. Certainly, even in this case, the ability to use the software had an impact on the final image; nevertheless, the scenarios of the different project were more comparable in this second case study application (fig. 4).

The more restrictive representational requirements applied in the second case study application have proved to be more effective for comparing the different proposals. At the same time this requires a bigger effort both on the side of organizers and of participants: on the organizers' side, indeed, more time should be spent in the elaboration of the 3D model to provide; on the participants' side, instead, having the model already well elaborated is an advantage, but having to use a specific software - needed for uniforming all the final outcomes - required and effort in learning how to use the tool; this can for sure even discourage the participation in the call, although the means is very easy to learn. Probably a solution that is prescriptive but not so strongly might be the best option. Undoubtedly, flattening the stylistic outcomes to a homogeneous standard assures a better comparison of design alternatives, focusing the attention on the architectural solution while reducing the influence related to the participants' graphic ability. On the other hand, it is certainly important to combine this approach with a more flexible one, that leaves space to the graphical expression of author's. The combination of the two modalities can provide a more comprehensive basis for evaluation. Lastly, no doubt that representation plays a pivotal role as an envisioning and informative tool, nevertheless, this alone cannot guarantee a proper decision-making; indeed, awarding the best solutions is a difficult task that involves several competences and that is



crucial for reaching meaningful results (Nasar 1999), (Chupin 2011); representation is only a piece of a mosaic that is much larger and complicated, even if it is a crucial part to get the entire picture.

#### Notes

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<sup>1</sup> Official webpage of the call: <http://www.campus-sostenibile.polimi.it/web/guest/bando>; virtual exhibition of results <http://www.campus-sostenibile.polimi.it/web/guest/mostra>

<sup>2</sup> Official labsimurb page: <http://www.labsimurb.polimi.it/>

<sup>3</sup> Official page of the inter-university project: <http://www.campus-sostenibile.polimi.it/>

<sup>4</sup> Official Envision 2017 call page: [https://www.eko.polimi.it/index.php/contest-env-2017/env\\_2017](https://www.eko.polimi.it/index.php/contest-env-2017/env_2017)

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